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1998 Nonmethane Organic Compounds (NMOC) And Speciated Nonmethane Organic Compounds (SNMOC) Monitoring Program

1998 Nonmethane Organic Compound (NMOC) and Speciated Nonmethane Organic Compound (SNMOC) Monitoring Program

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LIST OF ABBREVIATIONS

AIRS	Aerometric Information Retrieval System
AQS	Air Quality Subsystem (of the Aerometric Information and Retrieval System)
BTEX	benzene, toluene, ethylbenzene, and xylenes (*o*-, *m*-, and *p*-xylene)
EPA	U.S. Environmental Protection Agency
FID	flame ionization detection
GC	gas chromatography
HPLC	high-performance liquid chromatography
MIR	maximum incremental reactivity
mph	miles per hour
MSD	mass selective detection
MTBE	methyl *tert*-butyl ether
NAAQS	national ambient air quality standard
NCDC	National Climatic Data Center
ND	nondetect
NJDEP	New Jersey Department of Environmental Protection
NYSDEC	New York State Department of Environmental Conservation
PDFID	preconcentration direct flame ionization detection
ppbC	parts per billion (by volume, on a carbon basis)
ppbv	parts per billion (by volume)
RPD	relative percent difference
SNMOC	speciated nonmethane organic compound
TNRCC	Texas Natural Resource Conservation Commission
total NMOC	total nonmethane organic compounds
TRI	Toxics Release Inventory
UV	ultraviolet
VOC	volatile organic compounds

Monitoring Stations

CAMS5	Dallas, Texas (1)
CAMS13	Fort Worth, Texas
DLTX	Dallas, Texas (2)
JUMX	Juarez, Mexico
LINY	Long Island, New York
NWNJ	Newark, New Jersey

ABOUT THIS REPORT

This report summarizes and interprets ambient air monitoring data collected during the summer of 1998 as part of the National Nonmethane Organic Compound and Speciated Nonmethane Organic Compound Monitoring Program, which is also called the NMOC/SNMOC Monitoring Program. Designed to characterize levels of air pollution in regions with ground-level ozone problems, the NMOC/SNMOC Monitoring Program measures air concentrations of several groups of pollutants that participate in the photochemical reactions that form "smog." The 1998 NMOC/SNMOC Monitoring Program spanned 4 months (June to September), during which ambient air samples were collected daily between 6:00 a.m. and 9:00 a.m., local time, at six monitoring locations. These samples were analyzed for NMOC, SNMOC, volatile organic compounds (VOC), carbonyls, or some combination of these categories. Overall, nearly 30,000 ambient air concentrations were measured during the 1998 program.

This report uses various graphical, numerical, and statistical analyses to identify and illustrate meaningful trends and patterns in this large volume of ambient air monitoring data. Some of the analyses in this report, such as the concise data summary tables, intentionally follow the same data analysis framework used in earlier reports on past National Program elements. This consistent use of certain analyses facilitates comparisons between the 1998 program and earlier NMOC/SNMOC programs. To provide the reader with a new perspective on the NMOC/SNMOC monitoring data, however, this report includes several analyses that have not been addressed previously, such as a detailed review of annual variations in air quality. Though the analyses in this report highlight many trends in the data collected during the 1998 program, researchers are encouraged to further examine the NMOC/SNMOC ambient air monitoring data to better understand the complex ozone formation processes. Accordingly, the 1998 NMOC/SNMOC monitoring data have been made publicly available in electronic format on the U.S. Environmental Protection Agency's Aerometric Information Retrieval System (AIRS).

The structure of this report differs significantly from that of earlier NMOC/SNMOC reports in one important regard: instead of commenting primarily on the *compound-specific* trends observed during the air monitoring program, as was done previously, this report instead focuses on *site-specific* air quality trends. This revised structure allows for a much more thorough review of data trends that are unique to a given metropolitan area—a topic suspected to be of interest to the agencies that sponsor the NMOC/SNMOC monitoring stations. Site-specific trends presented in this report should not be assumed to apply to geographical areas not considered in the 1998 NMOC/SNMOC Monitoring Program.

Though readers are encouraged to read this report in its entirety, a quick overview of the major site-specific findings can be found in the following sections: Section 5 addresses the monitoring data collected in the Dallas–Fort Worth metropolitan area; Section 6, the data collected in Juarez, Mexico; Section 7, the data collected on Long Island, New York; and Section 8, the data collected in Newark, New Jersey.

1.0 Introduction

This report summarizes ambient air monitoring data collected in or near three metropolitan areas as part of the National "1998 Nonmethane Organic Compounds (NMOC) and Speciated Nonmethane Organic Compounds (SNMOC) Monitoring Program." Every year since 1984, the U.S. Environmental Protection Agency (EPA) has sponsored the NMOC/SNMOC Monitoring Program to provide state and local environmental agencies with important information on the composition and magnitude of air pollution in or near areas that are not in attainment with the Agency's national ambient air quality standard (NAAQS) for ozone. In recent years, this program has entailed intensive field sampling—up to 4 months of daily measurements—of four groups of compounds that affect ozone formation: total NMOC, SNMOC, volatile organic compounds (VOC), and carbonyls. This report summarizes and interprets the nearly 30,000 air quality measurements that were made during the 1998 NMOC/SNMOC Monitoring Program.

To supplement findings from previous NMOC/SNMOC Monitoring Programs and other local air monitoring efforts, this report includes detailed numerical and statistical analyses of the ambient air monitoring data collected during the 1998 program. So that new and historical data can easily be compared, the descriptive summary statistics presented in this report have a format identical to previous NMOC/SNMOC reports. To offer greater insight into the current data, however, much of this report focuses on topics that previous NMOC/SNMOC reports have not addressed in detail. Overall, there are four basic goals for this report:

- To provide thorough, site-specific summaries of the data collected during the 1998 NMOC/SNMOC Monitoring Program.
- To identify and characterize associations between levels of air pollution and variations in selected meteorological conditions.
- To illustrate how ambient air concentrations of the most prevalent components of air pollution changed from one year to the next.

- To conduct additional data analyses, as appropriate, to explain noteworthy trends and patterns in the large volume of air monitoring data.

Unlike previous NMOC/SNMOC reports, which focused on *compound-specific* air quality trends, this report focuses on *site-specific* air quality trends. Thus, rather than presenting separate analyses for NMOC, SNMOC, VOC, and carbonyls, as was done in prior reports, this report instead presents separate analyses for monitoring data collected at Dallas–Fort Worth, Juarez (Mexico), Long Island, and Newark. This site-specific approach allows for much more detailed analyses of the local factors (e.g., unique meteorological conditions, motor vehicle sources, industrial sources) that affect air quality differently from one metropolitan area to the next.

As previous NMOC/SNMOC reports have explained, the series of photochemical reactions that contribute to ozone formation are extremely complex. As a result, the analyses in this report, though extensive, do not offer a comprehensive description of air quality at the monitoring stations that participated in the 1998 program. For a more informed understanding of air pollution in ozone non-attainment areas, state and local environmental agencies are encouraged to evaluate emission inventories, photochemical dispersion modeling results, and additional monitoring data on ozone precursors (e.g., nitrogen oxides), in addition to evaluating the data presented in this report. To facilitate further analysis of the 1998 NMOC/SNMOC sampling results, appendices to this report present the entire set of ambient air monitoring data. Moreover, these data have been made available in electronic format on the Air Quality Subsystem (AQS) of the Aerometric Information Retrieval System (AIRS), an electronic database that EPA maintains.

This report is organized into ten sections; Table 1-1 lists the contents of each section. Sections 2 and 3 present necessary background information on the monitoring program and the methodology used to interpret the monitoring data, and Section 4 provides an overview of the total NMOC measurements collected during the 1998 program. Sections 5 through 8 then present detailed analyses of the data collected at the six monitoring stations that comprised the 1998 NMOC/SNMOC Monitoring Program. Finally, Section 9 reviews the major findings of

the report and offers several recommendations for future programs. Section 10 lists the references cited throughout the report. As with previous NMOC/SNMOC reports, all figures and tables in this report appear at the ends of their respective sections (figures first, followed by tables).

Table 1-1
Organization of the 1998 NMOC/SNMOC Summary Report

Report Section	Section Title	Overview of Contents
2	The 1998 NMOC/SNMOC Monitoring Program	This section provides background information on how the 1998 NMOC/SNMOC Monitoring Program was implemented. Topics of discussion include sampling locations, compounds selected for sampling, sampling and analytical methods, measurement accuracy and precision, and sampling schedules.
3	Data Analysis Methodology	This section outlines the data analysis methodology used in Sections 5 through 9 to analyze and interpret the large volume of NMOC/SNMOC monitoring data.
4	General Results from the 1998 NMOC/SNMOC Monitoring Program	This section presents a general overview of the sampling results from the 1998 program, by comparing average concentrations of total NMOC that were observed at the six monitoring stations that participated in the program. The section compares this general trend to relevant data from previous NMOC/SNMOC reports.
5	Monitoring Results for Dallas and Fort Worth	These sections provide site-specific summaries of sampling results collected during the 1998 NMOC/SNMOC Monitoring Program. Each section summarizes the data collected during the 1998 program, compares trends in the monitoring data to trends in local meteorological conditions, and examines how concentrations of certain compounds have changed over the past couple of years.
6	Monitoring Results for Juarez	
7	Monitoring Results for Long Island	
8	Monitoring Results for Newark	
9	Conclusions and Recommendations	This section summarizes the most significant findings of the 1998 NMOC/SNMOC Monitoring Program and makes several recommendations for future programs.
10	References	This section lists the references cited throughout this report.

2.0 The 1998 NMOC/SNMOC Monitoring Program

This section describes four fundamental features—the monitoring locations, compounds selected for monitoring, sampling and analytical methods, and sampling schedules—of the 1998 NMOC/SNMOC Monitoring Program. These four features are important to consider when interpreting the results of any ambient air monitoring program. In general, the 1998 program included six monitoring stations, all of which have participated in previous NMOC/SNMOC programs. Monitoring devices at these stations collected 3-hour integrated samples according to site-specific schedules, from June 1998 to September 1998. During this time frame, more than 600 air samples were collected and nearly 30,000 ambient air concentrations were measured, including concentrations of total NMOC, SNMOC, VOC, and carbonyls. The remainder of this section describes in greater detail these relevant features of the 1998 NMOC/SNMOC Monitoring Program.

2.1 Monitoring Locations

The NMOC/SNMOC Monitoring Program is an EPA-sponsored program, in which state and local environmental agencies can voluntarily participate. EPA works with participating agencies to select appropriate monitoring locations. Figure 2-1 shows the locations of the six monitoring stations that participated in the 1998 NMOC/SNMOC Monitoring Program. Table 2-1 presents additional information on these monitoring stations, including (1) each station's NMOC/SNMOC site code, which was used to track samples from the field to the laboratory, (2) each station's unique nine-digit AIRS site code, which was used to index monitoring results in the AIRS database, and (3) each station's starting and ending sampling dates for the 1998 program, which Section 2.4 describes further.

At each of the monitoring stations, air sampling equipment was installed in a small enclosure (e.g., a trailer or a shed) with air sampling probes protruding through the roof; every air monitor in this program sampled air at heights of approximately 5 to 20 feet above local ground level. Sections 5 through 8 of this report include detailed maps and descriptions of the

surroundings of the six monitoring stations. These descriptions identify local emissions sources that might have affected each station's monitoring results.

The locations of the monitoring stations shown in Figure 2-1 present two important limitations on the data analyses documented throughout this report:

- The monitoring stations that participated in the 1998 program are located in or near only three metropolitan areas in the United States and Mexico: the Dallas–Fort Worth metropolitan area, the El Paso–Juarez metropolitan area, and the New York–Newark metropolitan area. As a result, the monitoring data characterize air quality in a *very small subset* of ozone nonattainment areas, and trends in the data presented in this report should not be viewed as being representative of air quality trends in other ozone nonattainment areas in the United States or Mexico.

- The monitoring stations shown in Figure 2-1 characterize air quality at only discrete locations within the three metropolitan areas. Because the number of emissions sources, such as freeways and industrial facilities, varies with location in any given metropolitan area, ambient air concentrations of certain compounds also vary within metropolitan areas, sometimes by many orders of magnitude and over very short distances. Therefore, the air quality data presented in this report should be viewed as a depiction of air quality in the *immediate vicinity* of the monitoring stations and not necessarily as a depiction of air quality for an entire metropolitan area.

To ensure that the NMOC/SNMOC monitoring data are interpreted in proper context, the implications of the aforementioned data limitations are revisited throughout this report.

2.2 Compounds Selected for Monitoring

The agencies that sponsor NMOC/SNMOC monitoring stations decide what compounds are to be measured. Agencies that participated in the 1998 program selected their monitoring options from the following four groups of compounds:

- *Total NMOC.* In this option, air samples are analyzed to obtain a single value (total NMOC) that characterizes the overall levels of hydrocarbons in the air. Some computer models use total NMOC concentrations as a critical input for forecasting ozone

concentrations. Section 2.3.1 describes the NMOC sampling and analytical method in greater detail.

- *SNMOC.* Stations implementing this option collect air samples that are analyzed for ambient air concentrations of 80 hydrocarbons, as well as for the concentration of total NMOC. SNMOC concentrations also are used as inputs to certain ozone forecasting simulations. Table 2-3 lists the 80 compounds identified by this monitoring option, and Section 2.3.2 describes the SNMOC sampling and analytical method in greater detail.[1]

- *VOC.* With this monitoring option, ambient air samples are analyzed for concentrations of 47 compounds, which include hydrocarbons, halogenated hydrocarbons, oxygenated compounds, and nitriles.[2] Most of these 47 compounds are not measured by the SNMOC analytical method. Table 2-5 lists the compounds identified by this monitoring option, and Section 2.3.3 describes salient features of the VOC sampling and analytical method, including a noteworthy improvement made to this method prior to the start of the 1998 program.

- *Carbonyls.* Stations also could opt to have samples analyzed for concentrations of 16 carbonyls, all of which are not currently identified by either the SNMOC or VOC monitoring options.[3] Table 2-6 lists the 16 compounds identified by this option, and Section 2.3.4 presents relevant background information on the carbonyl sampling and analytical method.

Table 2-1 indicates the compound groups that were selected for monitoring at the six stations participating in the 1998 NMOC/SNMOC Monitoring Program. Since nearly 90 percent of the air samples collected during the 1998 program were analyzed for either NMOC or SNMOC, the data analyses throughout this report focus on interpreting trends and patterns in the

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[1] The SNMOC analytical method actually reports concentration values for only 78 different compounds for each sample. Since the chromatographic analysis cannot differentiate isobutene from 1-butene or *m*-xylene from *p*-xylene, a single concentration is reported for these pairs. Therefore, the 78 values measured by this method characterize ambient levels of 80 compounds.

[2] The VOC analytical method actually reports concentration values for only 46 different compounds for each sample. Since the chromatographic analysis cannot differentiate *m*-xylene from *p*-xylene, a single concentration is reported for this pair. Therefore, the 46 values measured by this method characterize ambient levels of 47 compounds.

[3] The carbonyl analytical method actually reports concentration values for only 13 different compounds for each sample. Since the chromatographic analysis cannot differentiate butyraldehyde from isobutyraldehyde, a single concentration is reported for this pair; and, since the method cannot distinguish the three tolualdehyde isomers, a single concentration is reported for this trio. Therefore, the 13 values measured by this method characterize ambient levels of 16 compounds.

large volume of NMOC and SNMOC monitoring results. Consistent with previous NMOC/SNMOC reports, this report places a lesser emphasis on evaluating the VOC and carbonyl monitoring results.

The compounds selected for monitoring present one important limitation on the conclusions that can be drawn from the NMOC/SNMOC Monitoring Program: Though this program measures ambient air concentrations of numerous compounds that contribute to ozone formation, the program does not characterize ambient levels of *all compounds* that participate in the photochemical reactions that form ozone. Thus, the data presented in this report provide an extensive, but not a comprehensive, account of air quality in ozone nonattainment areas. Sponsoring agencies are encouraged to evaluate data trends for other compounds (e.g., nitrogen oxides) that participate in photochemical reactions that form "smog."

2.3 Sampling and Analytical Methods

The sampling and analytical methods used in a monitoring program ultimately determine what compounds can be identified in air samples, and at what ranges of concentrations. As noted previously, four different sampling and analytical methods were used during the 1998 NMOC/SNMOC Monitoring Program to measure ambient air concentrations of total NMOC, SNMOC, VOC, and carbonyls. Since the final reports for the 1996 and 1997 NMOC/SNMOC Monitoring Programs describe these sampling and analytical methods in detail (ERG 1997b, 1999), the following subsections only briefly highlight how air samples were collected and analyzed. For quick reference, Table 2-2 summarizes general attributes (detection limits, units of measurement, etc.) of the four sampling and analytical methods.

The following subsections also estimate how precisely the sampling and analytical methods measured ambient air concentrations during the 1998 program. As is typical for air monitoring programs, precision was determined by reviewing results of duplicate samples that were analyzed in replicate. As previous NMOC/SNMOC reports have explained, comparison of concentrations measured in replicate analyses characterizes *analytical precision* (how

precisely the laboratory analyzes environmental samples), and comparison of concentrations from duplicate samples characterizes *sampling and analytical precision* (how precisely field sampling techniques and laboratory analytical techniques, combined, measure levels of environmental contamination). This report uses the relative percent difference (RPD) and the average concentration difference to quantify both types of precision. Previous NMOC/SNMOC reports have defined these parameters and explained their significance, as does the sidebar below, "Estimating Measurement Precision."

Estimating Measurement Precision

This report uses two parameters to quantify how precisely ambient air concentrations were measured during the 1998 NMOC/SNMOC Monitoring Program. First, as an absolute indicator of precision, the *average concentration difference* simply quantifies how multiple measurements obtained by the same procedures differ. Applied to this monitoring program, average concentration differences were calculated for each compound group (1) for concentrations measured from replicate analyses and (2) for concentrations measured from duplicate samples. The calculated average concentration difference is an important consideration when interpreting ambient air monitoring data for specific compounds. For example, if a compound's average concentration difference exceeds or nearly equals the compound's arithmetic mean ambient air concentration, then the arithmetic mean concentration might be largely influenced by measurement uncertainty. Data interpretations for such compounds should be made with caution.

As a relative indicator of precision, the *relative percent difference* (RPD) expresses average concentration differences relative to the magnitude of the concentration observed. The RPD is calculated using the following equation:

$$RPD = \frac{|X_1 - X_2|}{X} \times 100$$

Where X_1 is the ambient air concentration of a given compound measured in one sample; X_2 is the concentration of the same compound measured during replicate analysis or in a duplicate sample; and X is the arithmetic mean of X_1 and X_2.

By this equation, compounds with relatively low measurement variability will have lower RPDs (and better precision), and compounds with relatively high measurement variability will have higher RPDs (and poorer precision). Many sampling and analytical methods suggest that monitoring programs should be able to achieve RPDs of 30 percent or better, if the methods are applied correctly.

2.3.1 Total NMOC

The 1998 program measured ambient air concentrations of total NMOC according to EPA Compendium Method TO-12 (USEPA 1988)—the same sampling and analytical method that was used in previous NMOC/SNMOC Monitoring Programs. Following this method, 3-hour integrated air samples were collected in passivated stainless steel canisters, the contents of which were later analyzed using cryogenic traps and flame ionization detection (FID). Concentrations of total NMOC are reported in units of parts per billion on a carbon basis (ppbC) (see sidebar below, "The Importance of Units of Measurement") and the detection limit for this method is approximately 5 ppbC. All total NMOC concentrations measured during the 1998 program were considerably higher than this detection limit.

The Importance of Units of Measurement

Units of measurement express results of scientific analyses in standard formats. The units used in a particular study, however, depend largely on the conventions followed by other researchers within a particular scientific field. In ambient air monitoring efforts, for example, scientists often report air concentrations in different units of measurement, such as parts per billion on a volume basis (ppbv) and parts per billion on a carbon basis (ppbC). This report adopts the conventions EPA (USEPA 1988; 1989; 1997a; 1997b) and other air monitoring researchers employ, expressing raw total NMOC and SNMOC monitoring data in units of ppbC and expressing raw VOC and carbonyl monitoring data in units of ppbv. For a given compound, concentrations can be converted between these units of measurement according to the following equation:

$$Concentration\ (ppbC) = Concentration\ (ppbv) \times Number\ of\ Carbons$$

As an example, benzene (C_6H_6) has six carbon atoms. Therefore, by definition, a benzene concentration of 6.0 ppbC is equal to a benzene concentration of 1.0 ppbv. Because failure to consider subtle differences in units of measurement can result in significant misinterpretations of ambient air monitoring results, readers of this report should pay particular attention to units of measurement, especially when comparing monitoring results presented in this report to those of other studies. To avoid any confusion, every table and figure in this report clearly indicates the corresponding units of measurement.

During the 1998 program, results from 22 duplicate NMOC samples, all of which were analyzed in replicate, indicated that the total NMOC sampling and analytical method consistently generated highly precise results. More specifically, the program-average RPD for total NMOC measurements was lower than 10 percent, both for analytical precision and for sampling and analytical precision. In other words, total NMOC concentrations measured in duplicate samples and replicate analyses consistently differed by 10 percent or less. Moreover, total NMOC concentrations in duplicate samples and replicate analyses had an average concentration difference lower than ±25 ppbC. Since program-average NMOC concentrations were approximately 10 times higher than this average concentration difference (see Figure 4-1), the variability introduced by the sampling and analytical method has little bearing on the general trends in the total NMOC monitoring data. Sections 7 and 8 revisit this issue.

2.3.2 SNMOC

The 1998 NMOC/SNMOC Monitoring Program used an EPA research protocol called "Determination of C_2 through C_{12} Ambient Air Hydrocarbons in 39 U.S. Cities from 1984 through 1986" (USEPA 1989) to measure ambient air concentrations of SNMOC. This protocol requires air samples to be collected in passivated stainless steel canisters, which are later analyzed using a capillary gas chromatography (GC) column coupled with the FID. With this analytical approach, SNMOC air samples are analyzed for ambient air concentrations of 80 organic compounds and total NMOC. Table 2-3 lists these 80 compounds and their corresponding detection limits. The sidebar on the following page, "Appreciating Detection Limits," provides important background information on the meaning and derivation of detection limits. All SNMOC concentrations were reported in units of ppbC, following standard convention for this analytical method. As explained later in this report, concentrations of some compounds were also converted to units of parts per billion on a volume basis (ppbv) to perform certain data analyses.

During the 1998 NMOC/SNMOC Monitoring Program, 39 SNMOC samples were collected in duplicate and analyzed in replicate; results from these samples and analyses indicate

Appreciating Detection Limits

The detection limit of an analytical method must be considered carefully when ambient air monitoring data are interpreted. By definition, the detection limit is the lowest level at which laboratory equipment can *reliably* quantify concentrations of selected compounds to a specific confidence level. If a compound's concentration in ambient air does not exceed the method sensitivity (as gauged by the detection limit), the analytical method might not differentiate the compound from other compounds in the sample or from the random "noise" inherent in laboratory analyses. Therefore, when samples contain concentrations at levels below their respective detection limits, multiple analyses of the same sample might lead to a wide range of results, including highly variable concentrations or "nondetect" observations. Because analytical methods do not quantify concentrations at levels below the detection limits accurately or precisely, data analysts must exercise caution when interpreting monitoring data that have many concentrations at levels near or below the corresponding detection limits.

For reference, the detection limits for the NMOC, SNMOC, VOC, and carbonyl analytical methods were all determined according to EPA guidance specified in "Definition and Procedure for the Determination of the Method Detection Limit" (FR 1984).

that the SNMOC sampling and analytical method generated highly precise results. According to performance criteria established in the SNMOC method documentation, analytical precision for compounds with concentrations greater than 2 ppbC should have an RPD less than 30 percent, and analytical compounds with concentrations lower than 2 ppbC should have an RPD less than 95 percent (USEPA 1989). As Table 2-4 shows, the precision estimates for the SNMOC measurements during the 1998 program met these performance criteria: The RPDs for 74 of the 80 SNMOC were lower than 30 percent; the six remaining compounds (*n*-dodecane, 1-dodecene, 1-heptene, *n*-tridecane, 1-tridecene, and 1-undecene) had average concentrations lower than 2 ppbC and had RPDs considerably lower than 95 percent.

Corroborating the findings of the RPDs, the average concentration differences observed in duplicate SNMOC samples and replicate analyses were typically better than ±1 ppbC—a level indicative of excellent measurement precision. Therefore, the SNMOC monitoring data presented in this report are of a known and high quality.

2.3.3 VOC

Following EPA's Compendium Method TO-14A (USEPA 1999a), ambient air concentrations of 47 VOC were measured by collecting ambient air in passivated stainless steel canisters and analyzing the sampled air using a capillary gas chromatography column with mass selective detection and flame ionization detection (GC/MSD-FID). The analytical techniques used during the 1998 program differed from those used in earlier programs in one important regard: Nafion® dryers were removed from the analytical apparatus, thus allowing for the measurement of nine compounds that previous air toxics programs could not detect. Table 2-5 lists the 47 VOC identified during the 1998 program and their corresponding detection limits. Following standard convention for this method, all VOC concentrations were reported in units of ppbv.

Because only one monitoring station (Newark) collected VOC samples during the 1998 program, too few duplicate sampling results and replicate analyses were available to assess measurement precision of the VOC sampling and analytical method. Nonetheless, the VOC results presented for the Newark monitoring station are believed to be highly precise, largely because the central laboratory for the NMOC/SNMOC Monitoring Program has a long record of analyzing VOC samples to a high level of precision (ERG 1997a; 1999).

2.3.4 Carbonyls

Following the specifications of EPA's Compendium Method TO-11A (USEPA 1999b), concentrations of 16 carbonyl compounds were measured by passing ambient air over silica gel cartridges coated with 2,4-dinitrophenylhydrazine (DNPH), a compound known to react reversibly with carbonyls (i.e., aldehydes and ketones). For chemical analysis, the sampling cartridges are eluted with acetonitrile, which liberates the hydrazones (the DNPH-carbonyl derivatives) from the sampling matrix. The acetonitrile solution is then analyzed for chemical constituents using high-performance liquid chromatography (HPLC) with ultraviolet detection. The 16 carbonyl compounds identified by this method are listed in Table 2-6, with their detection limits.

During the 1998 NMOC/SNMOC Monitoring Program, four carbonyl samples were collected in duplicate and analyzed in replicate, thus providing a limited basis for estimating measurement precision. Table 2-7 presents the RPDs calculated both for sampling precision and for sampling and analytical precision. Both sets of RPDs indicate that the carbonyl sampling and analytical method precisely measured air concentrations of most compounds: All compounds had analytical precision lower than 20 percent and sampling and analytical precision of roughly 50 percent and lower. Measurement precision was particularly good for acetaldehyde, acetone, and formaldehyde—the three carbonyls consistently present at the highest concentrations in air samples. In short, the carbonyl monitoring data presented in this report, like the NMOC, SNMOC, and VOC monitoring data, are believed to be of high quality.

2.4 Sampling Schedules

Each year, stations participating in the NMOC/SNMOC Monitoring Program collect ambient air samples according to site-specific schedules. The agencies that sponsor these monitoring stations ultimately decide how frequently each type of samples is to be collected. Tables 2-1 and 2-8 summarize the sampling schedules implemented at the six monitoring stations that comprised the 1998 program. As Table 2-8 indicates, every station collected daily samples that were analyzed for either NMOC or SNMOC, and five of the six stations periodically collected samples that were analyzed for carbonyls or VOC. As part of the sampling schedule, site operators collected duplicate samples on roughly 10 percent of the sampling days. These duplicate samples were analyzed in replicate to characterize the precision of the sampling and analytical methods.

Overall, the site-specific sampling schedules have two features in common, both of which introduce important limitations to the data analyses; these limitations are emphasized throughout this report:

- On each sampling day, ambient air is continuously sampled for 3 hours, starting at 6:00 a.m., local time. This sampling duration has been used in the previous NMOC/SNMOC Monitoring Programs, because many ozone transport models require

ambient air concentrations measured between 6:00 a.m. and 9:00 a.m. as an input. However, this sampling duration should be kept in mind when interpreting the air monitoring data: All concentrations presented in this report characterize local air quality during only three morning hours. Since concentrations of many compounds are known to vary considerably between the day and night, comparisons between the NMOC/SNMOC monitoring data and other data sets with different sampling durations (e.g., 24-hour average samples) should be made with caution.

- Sampling during the NMOC/SNMOC Monitoring Program is typically limited to the summer months (June through September), since ambient air concentrations of ozone peak during this time of year. Though the NMOC/SNMOC monitoring data thoroughly characterize levels of air pollution during these summer months, the monitoring data are not useful for evaluating seasonal changes in air quality. Moreover, because this program does not consider levels of air pollution during the fall, winter, and spring, the average concentrations of certain pollutants presented in this report might differ considerably from their corresponding annual-average levels.

Figure 2-1
Locations of the 1998 NMOC/SNMOC Monitoring Stations

Note: The alphanumeric codes shown were used primarily to track samples from the monitoring stations to the analytical laboratory.

Table 2-1
Background Information for the 1998 NMOC/SNMOC Monitoring Stations

1998 NMOC/ SNMOC Site Code	AIRS Site Code	Location	Sampling Schedule		Monitoring Options Selected			
			Starting Date	Ending Date	NMOC	SNMOC	VOC	Carbonyl
CAMS5	48-113-0045	Dallas, TX (1)	June 23, 1998	September 30, 1998		T		T
CAMS13	48-439-1002	Fort Worth, TX	June 22, 1998	September 30, 1998		T		T
DLTX	48-113-0069	Dallas, TX (2)	June 22, 1998	September 30, 1998		T		T
JUMX	80-006-0001	Juarez, Mexico	August 25, 1998	September 29, 1998		T		T
LINY	36-059-0005	Long Island, NY	June 4, 1998	September 30, 1998	T			
NWNJ	34-013-0011	Newark, NJ	June 12, 1998	September 29, 1998	T	T	T	T

Note: Due to construction activities, sampling at Juarez, Mexico, could not start in June, as was originally planned.
As Section 2.3.2 describes, the SNMOC monitoring option measures NMOC as well as the 80 compounds listed in Table 2-3.

Table 2-2
Summary of Sampling and Analytical Methods

Parameter	NMOC	SNMOC	VOC	Carbonyl
Sampling apparatus	Stainless steel canisters	Stainless steel canisters	Stainless steel canisters	Silica gel cartridge coated with DNPH
Analytical approach	Cryogenic trap and flame ionization detection	Cryogenic trap at the inlet of a capillary gas chromatography column with flame ionization detection	Capillary gas chromatography with mass selective detection and flame ionization detection	High-performance liquid chromatography with ultraviolet detection
Output of analysis	Concentration of the total amount of nonmethane organic compounds in the sample	Concentrations of 80 different organic hydrocarbons [b]	Concentrations of 47 different volatile organic compounds [c]	Concentrations of 16 different carbonyl compounds [d]
Units of measurement [a]	ppbC	ppbC	ppbv	ppbv
Detection limit [a]	5 ppbC	See Table 2-3	See Table 2-5	See Table 2-6

[a] Refer to the sidebars in Section 2.3 for information on the significance of units of measurement and detection limits.

[b] The SNMOC analytical method actually reports only 78 different concentrations for each sample. The method cannot differentiate isobutene from 1-butene or *m*-xylene from *p*-xylene. Therefore, a single concentration is reported for these pairs.

[c] The VOC analytical method actually reports only 46 different concentrations for each sample. The method cannot differentiate *m*-xylene from *p*-xylene and therefore reports a single concentration for this pair.

[d] The carbonyl analytical method actually reports only 13 different concentrations for each sample. The method cannot differentiate butyraldehyde from isobutyraldehyde and therefore reports a single concentration for this pair. The method also cannot distinguish the three tolualdehyde isomers and therefore reports a single concentration for this trio.

Table 2-3
SNMOC Detection Limits

Compound	Detection Limit (ppbC)	Compound	Detection Limit (ppbC)
Acetylene	0.33	3-Methyl-1-Butene	0.16
Benzene	0.23	Methylcyclohexane	0.51
1,3-Butadiene	0.16	Methylcyclopentane	0.23
n-Butane	0.16	2-Methylheptane	0.36
cis-2-Butene	0.16	3-Methylheptane	0.36
trans-2-Butene	0.16	2-Methylhexane	0.51
Cyclohexane	0.23	3-Methylhexane	0.51
Cyclopentane	0.16	2-Methylpentane	0.23
Cyclopentene	0.16	3-Methylpentane	0.23
n-Decane	0.28	2-Methyl-1-Pentene	0.23
1-Decene	0.28	4-Methyl-1-Pentene	0.23
m-Diethylbenzene	0.28	*n*-Nonane	0.28
p-Diethylbenzene	0.28	1-Nonene	0.28
2,2-Dimethylbutane	0.23	*n*-Octane	0.36
2,3-Dimethylbutane	0.23	1-Octene	0.36
2,3-Dimethylpentane	0.51	*n*-Pentane	0.16
2,4-Dimethylpentane	0.51	1-Pentene	0.16
n-Dodecane	0.28	*cis*-2-Pentene	0.16
1-Dodecene	0.28	*trans*-2-Pentene	0.16
Ethane	0.33	"-Pinene	0.28
2-Ethyl-1-Butene	0.23	$-Pinene	0.28
Ethylbenzene	0.28	Propane	0.33
Ethylene	0.33	*n*-Propylbenzene	0.28
m-Ethyltoluene	0.28	Propylene	0.33
o-Ethyltoluene	0.28	Propyne	0.33
p-Ethyltoluene	0.28	Styrene	0.28
n-Heptane	0.51	Toluene	0.51
1-Heptene	0.51	*n*-Tridecane	0.28
n-Hexane	0.23	1-Tridecene	0.28
1-Hexene	0.23	1,2,3-Trimethylbenzene	0.28
cis-2-Hexene	0.23	1,2,4-Trimethylbenzene	0.28
trans-2-Hexene	0.23	1,3,5-Trimethylbenzene	0.28
Isobutane	0.16	2,2,3-Trimethylpentane	0.36
Isobutene/1-Butene	0.16	2,2,4-Trimethylpentane	0.36
Isopentane	0.16	2,3,4-Trimethylpentane	0.36
Isoprene	0.16	*n*-Undecane	0.28
Isopropylbenzene	0.28	1-Undecene	0.28
2-Methyl-1-Butene	0.16	*m,p*-Xylene	0.28
2-Methyl-2-Butene	0.16	*o*-Xylene	0.28

Reference: FR, 1984.

Table 2-4
Precision Estimates for SNMOC Measurements

Compound	Analytical Precision		Sampling and Analytical Precision	
	Number of Observations	RPD (%)	Number of Observations	RPD (%)
Acetylene	77	9%	39	5%
Benzene	77	9%	39	6%
1,3-Butadiene	77	13%	39	9%
n-Butane	77	7%	39	5%
cis-2-Butene	77	8%	39	6%
trans-2-Butene	77	11%	39	9%
Cyclohexane	77	8%	39	22%
Cyclopentane	77	9%	39	7%
Cyclopentene	77	15%	39	13%
n-Decane	77	12%	39	13%
1-Decene	0	NA	0	NA
m-Diethylbenzene	77	20%	39	13%
p-Diethylbenzene	77	23%	39	14%
2,2-Dimethylbutane	77	10%	39	7%
2,3-Dimethylbutane	77	9%	39	6%
2,3-Dimethylpentane	77	11%	39	8%
2,4-Dimethylpentane	77	10%	39	6%
n-Dodecane	72	21%	36	42%
1-Dodecene	59	60%	28	49%
Ethane	76	9%	38	4%
2-Ethyl-1-Butene	77	9%	39	7%
Ethylbenzene	0	NA	0	NA
Ethylene	77	14%	39	7%
m-Ethyltoluene	77	10%	39	7%
o-Ethyltoluene	77	14%	39	10%
p-Ethyltoluene	77	13%	39	7%
n-Heptane	77	9%	39	5%
1-Heptene	4	44%	2	64%
n-Hexane	77	8%	39	6%
1-Hexene	77	13%	39	13%

Note: The number of observations for analytical precision indicates the number of replicates in which the compound was detected in both analyses; the number of observations for sampling and analytical precision indicates the number of duplicates in which the compound was detected in the four analyses of the duplicate samples. By definition, both types of precision cannot be evaluated for compounds with zero observations, hence compounds with no observations show an RPD of "NA."

Table 2-4 (Continued)
Precision Estimates for SNMOC Measurements

Compound	Analytical Precision		Sampling and Analytical Precision	
	Number of Observations	RPD (%)	Number of Observations	RPD (%)
cis-2-Hexene	71	17%	36	15%
trans-2-Hexene	75	18%	38	14%
Isobutane	77	6%	39	4%
Isobutene/1-Butene	77	7%	39	5%
Isopentane	75	6%	38	8%
Isoprene	77	10%	39	8%
Isopropylbenzene	77	14%	39	8%
2-Methyl-1-Butene	77	11%	39	8%
2-Methyl-2-Butene	77	12%	39	11%
3-Methyl-1-Butene	71	24%	36	23%
Methylcyclohexane	77	10%	39	5%
Methylcyclopentane	77	10%	39	6%
2-Methylheptane	77	10%	39	6%
3-Methylheptane	77	12%	39	7%
2-Methylhexane	77	11%	39	8%
3-Methylhexane	77	8%	39	5%
2-Methylpentane	77	8%	39	6%
3-Methylpentane	77	8%	39	5%
2-Methyl-1-Pentene	77	14%	39	11%
4-Methyl-1-Pentene	53	22%	26	15%
n-Nonane	77	9%	39	7%
1-Nonene	75	26%	38	24%
n-Octane	77	9%	39	5%
1-Octene	73	26%	36	27%
n-Pentane	77	7%	39	4%
1-Pentene	77	12%	39	7%
cis-2-Pentene	77	9%	39	6%
trans-2-Pentene	77	9%	39	6%
"-Pinene	74	21%	37	23%
$-Pinene	77	19%	39	26%

Note: The number of observations for analytical precision indicates the number of replicates in which the compound was detected in both analyses; the number of observations for sampling and analytical precision indicates the number of duplicates in which the compound was detected in the four analyses of the duplicate samples. By definition, both types of precision cannot be evaluated for compounds with zero observations, hence compounds with no observations show an RPD of "NA."

Table 2-4 (Continued)
Precision Estimates for SNMOC Measurements

Compound	Analytical Precision		Sampling and Analytical Precision	
	Number of Observations	RPD (%)	Number of Observations	RPD (%)
Propane	77	7%	39	3%
n-Propylbenzene	77	12%	39	7%
Propylene	77	7%	39	4%
Propyne	70	27%	34	21%
Styrene	77	14%	39	21%
Toluene	77	8%	39	5%
n-Tridecane	75	40%	37	37%
1-Tridecene	16	48%	5	27%
1,2,3-Trimethylbenzene	77	19%	39	13%
1,2,4-Trimethylbenzene	77	10%	39	8%
1,3,5-Trimethylbenzene	77	13%	39	8%
2,2,3-Trimethylpentane	77	12%	39	8%
2,2,4-Trimethylpentane	77	9%	39	5%
2,3,4-Trimethylpentane	77	9%	39	5%
n-Undecane	77	12%	39	23%
1-Undecene	60	31%	27	37%
m,p-Xylene	77	9%	39	7%
o-Xylene	77	9%	39	7%

Note: The number of observations for analytical precision indicates the number of replicates in which the compound was detected in both analyses; the number of observations for sampling and analytical precision indicates the number of duplicates in which the compound was detected in the four analyses of the duplicate samples. By definition, both types of precision cannot be evaluated for compounds with zero observations, hence compounds with no observations show an RPD of "NA."

Table 2-5
VOC Detection Limits

Compound	Detection Limit (ppbv)	Compound	Detection Limit (ppbv)
Acetonitrile	0.21	*cis*-1,3-Dichloropropene	0.03
Acetylene	0.07	*trans*-1,3-Dichloropropene	0.03
Acrylonitrile	0.06	Ethyl Acrylate	0.04
Benzene	0.06	Ethylbenzene	0.10
Bromochloromethane	0.04	Ethyl *tert*-Butyl Ether	0.05
Bromodichloromethane	0.05	Methylene Chloride	0.10
Bromoform	0.12	Methyl Ethyl Ketone	0.03
Bromomethane	0.04	Methyl Isobutyl Ketone	0.07
1,3-Butadiene	0.05	Methyl Methacrylate	0.06
Carbon Tetrachloride	0.09	Methyl *tert*-Butyl Ether	0.03
Chlorobenzene	0.04	*n*-Octane	0.09
Chloroethane	0.06	Propylene	0.03
Chloroform	0.04	Styrene	0.11
Chloromethane	0.06	*tert*-Amyl Methyl Ether	0.06
Chloroprene	0.03	1,1,2,2-Tetrachloroethane	0.05
Dibromochloromethane	0.04	Tetrachloroethylene	0.10
m-Dichlorobenzene	0.09	Toluene	0.10
o-Dichlorobenzene	0.09	1,1,1-Trichloroethane	0.06
p-Dichlorobenzene	0.10	1,1,2-Trichloroethane	0.03
1,1-Dichloroethane	0.03	Trichloroethylene	0.06
1,2-Dichloroethane	0.08	Vinyl Chloride	0.07
trans-1,2-Dichloroethylene	0.05	*m,p*-Xylene	0.08
1,2-Dichloropropane	0.09	*o*-Xylene	0.03

Reference: FR, 1984.

Table 2-6
Carbonyl Detection Limits

Compound	Detection Limit (ppbv)
Acetaldehyde	0.009
Acetone	0.002
Acrolein	0.008
Benzaldehyde	0.008
Butyr/Isobutyraldehyde	0.009
Crotonaldehyde	0.009
2,5-Dimethylbenzaldehyde	0.007
Formaldehyde	0.004
Hexanaldehyde	0.011
Isovaleraldehyde	0.009
Propionaldehyde	0.008
Tolualdehydes	0.023
Valeraldehyde	0.011

Note: The carbonyl detection limit varies with the volume of ambient air drawn through the sampling apparatus. The detection limits in this table are based on a sample volume of 1,000 liters of ambient air.

Reference: FR, 1984.

Table 2-7
Precision Estimates for Carbonyl Measurements

Compound	Analytical Precision		Sampling and Analytical Precision	
	Number of Observations	RPD (%)	Number of Observations	RPD (%)
Acetaldehyde	7	4%	3	21%
Acetone	7	15%	3	23%
Acrolein	7	18%	3	31%
Benzaldehyde	7	12%	3	10%
Butyr/Isobutyraldehyde	7	19%	3	51%
Crotonaldehyde	0	NA	0	NA
2,5-Dimethylbenzaldehyde	5	19%	2	42%
Formaldehyde	7	5%	3	24%
Hexanaldehyde	4	19%	2	40%
Isovaleraldehyde	5	16%	2	21%
Propionaldehyde	7	19%	3	23%
Tolualdehydes	0	NA	0	NA
Valeraldehyde	2	12%	1	11%

Notes: The number of observations for analytical precision indicates the number of replicate analyses in which the compound was detected; the number of observations for sampling and analytical precision indicates the number of duplicate samples in which the compound was detected. By definition, analytical precision and sampling and analytical precision cannot be evaluated for compounds with zero observations; these compounds have an RPD of "NA."

Table 2-8
Sampling Schedules Implemented During the 1998 NMOC/SNMOC Program

Monitoring Option	Monitoring Location	Sampling Schedules
NMOC	Long Island, NY Newark, NJ	Both sites sampled NMOC every weekday of the monitoring program, except holidays.
SNMOC	Dallas (1), TX Dallas (2), TX Fort Worth, TX Juarez, Mexico	These sites sampled SNMOC every weekday of the monitoring program, except holidays. All samples were analyzed for both NMOC and the 80 target SNMOC.
	Newark, NJ	This site sampled SNMOC on 10 days throughout the monitoring program. All samples were analyzed for both NMOC and the 80 target SNMOC.
Carbonyl	Dallas (1), TX Dallas (2), TX Fort Worth, TX Juarez, Mexico Newark, NJ	These sites sampled carbonyls periodically over the course of the program, according to site-specific schedules. The number of sampling events for each station ranged from 4 to 11.
VOC	Newark, NJ	This site sampled VOC on 10 days throughout the monitoring program.

3.0 Data Analysis Methodology

This section describes the methodology used in this report to summarize and interpret the 1998 NMOC/SNMOC ambient air monitoring data. This methodology includes various graphical, numerical, and statistical techniques that help identify the most meaningful trends in the large volume of NMOC/SNMOC monitoring data. So that readers can easily compare the 1998 monitoring results to monitoring results from previous years, some elements of the data analysis methodology are identical to those used in earlier NMOC/SNMOC reports (e.g., data summary parameters). To provide a different perspective on the monitoring data, however, some elements of the methodology are included that have not been used previously (e.g., detailed analyses of annual variations). In general, four categories of data analysis are used in this report:

- *Data summary parameters* use basic descriptive statistical parameters to provide a succinct overview of the monitoring data (see Section 3.1)
- *Comparison to selected meteorological parameters* in order to identify and characterize relationships between levels of air pollution and certain meteorological conditions (see Section 3.2)
- *Analyses of annual variations* comment on long-term trends in air quality (see Section 3.3)
- *Other analyses* are used, as necessary, to interpret notable data trends that do not fall under the previous three categories (see Section 3.4)

The remainder of this section describes these four types of data analyses. Sections 5 through 8 then use these analyses to interpret the site-specific air quality trends identified during the 1998 NMOC/SNMOC Monitoring Program.

3.1 Data Summary Parameters

Since previous NMOC/SNMOC reports define the four parameters that have been used to summarize monitoring data generated in this program, as well as the limitations of using these parameters, the following discussion only briefly reviews how these parameters efficiently characterize the results of extensive ambient air monitoring studies. More information on these

parameters, and their limitations, can be found in earlier NMOC/SNMOC reports (ERG 1996; 1997b; 1999).

In general, the four data summary parameters—prevalence, concentration range, central tendency, and variability—are used to provide a complete but succinct overview of the nearly 30,000 ambient air concentrations that were measured during the 1998 NMOC/SNMOC Monitoring Program. Sections 5 through 8 present these summary parameters in a series of tables, one for each category of compounds measured at each monitoring station. Brief definitions and descriptions of the four data summary parameters follow:

- *Prevalence* of air monitoring data refers to the frequency with which compounds, or groups of compounds, are detected; it is typically expressed as a percentage (e.g., a compound detected in 15 of 20 samples has a prevalence of 75 percent). Compounds that are never detected have a prevalence of 0 percent, and those that are always detected have a prevalence of 100 percent. Because sampling and analytical methods cannot reliably quantify concentrations of compounds at levels near their detection limits, summary statistics for compounds with low prevalence values should be interpreted with caution. It should be noted that compounds with a prevalence of zero might still be present in ambient air, but at levels below the sensitivity of the corresponding sampling and analytical methods.

- The *concentration range* of ambient air monitoring data refers to the span of measured concentrations, from lowest to highest. Because the NMOC/SNMOC program only measures 3-hour average concentrations during the summer months, the lowest and highest concentrations presented in this report should not be viewed as the minimum and maximum concentrations observed during an entire year. Since ambient levels of total NMOC, SNMOC, VOC, and carbonyls might rise to higher levels during times of day or times of year not considered in this program, the concentration range data presented in this report might not be comparable to those from monitoring programs with different sampling durations and schedules.

- The *central tendency* of air monitoring data gives a sense of the long-term average ambient air concentrations. This report uses medians, arithmetic means, and geometric means to characterize the central tendencies of concentration distributions. Previous NMOC/SNMOC reports have explained the differences between these measures of central tendency. Readers should note that the central tendencies in this report are based only on ambient air concentrations sampled during the morning hours of the summer of 1998. Because ambient air concentrations of certain compounds might be consistently

higher or lower during the colder winter months, the central tendencies presented in this report might not be comparable to those calculated from *annual* air monitoring efforts. As noted above, the central tendency data for compounds with low prevalence should be interpreted with caution, due to the bias introduced by many nondetect observations.

- *Variability* in ambient air monitoring data indicates the extent to which concentrations of certain compounds fluctuate with respect to the central tendency. This report characterizes data variability using standard deviations and coefficients of variation. The standard deviation is a commonly used statistical parameter that provides an absolute indicator of variability, and the coefficient of variation (calculated by dividing the standard deviation by the arithmetic mean) offers a relative indicator of variability. The coefficient of variation is better suited for comparing variability across data distributions for different sites and compounds.

All data summary parameters presented in this report were calculated from a database of processed 1998 NMOC/SNMOC ambient air monitoring data. This database was generated by manipulating the raw monitoring data in two steps. First, all nondetect observations were assigned a concentration equal to one-half the corresponding detection limit; second, the results of all duplicate sampling events and replicate laboratory analyses were averaged so that only one concentration was considered for each compound for each sampling date. These data processing steps are identical to those used to process the 1995, 1996, and 1997 NMOC/SNMOC monitoring data.

3.2 Comparison to Selected Meteorological Parameters

The 1997 NMOC/SNMOC report examined how local meteorological conditions related to ambient air concentrations of total NMOC. Though several potential data trends were identified, the trends were not confirmed by tests for statistical significance, nor were they validated against other data sets. To build on the analyses presented in the 1997 report, this report also examines relationships between air quality and local meteorological conditions, with an emphasis placed on determining whether trends are statistically significant and whether these trends are consistent with those documented in the 1997 report.

Though many meteorological parameters are suspected of influencing air quality, Sections 5 through 8 examine how a subset of these parameters—wind speed, wind direction, temperature, relative humidity, and precipitation—seems to affect the total NMOC concentrations. Several different techniques are used to characterize correlations between the meteorological parameters and the air concentrations: Pearson correlation coefficients are calculated to characterize the magnitude and direction of data correlations, graphs are presented to illustrate the influences of meteorological parameters on the ambient air monitoring data, and results of two-sample t-tests are documented to identify which trends are statistically significant.[1] Finally, the trends are compared to those listed in the 1997 NMOC/SNMOC report. As with the previous report, meteorological data for each monitoring station were obtained from the nearest meteorological station that submits daily summary reports to the National Climatic Data Center (NCDC). Data from the following meteorological stations were considered in this report:

- Meteorological data from the Dallas–Fort Worth International Airport was considered to be representative of conditions at the CAMS5, CAMS13, and DLTX monitoring stations.
- Meteorological data from the El Paso International Airport was considered to be representative of conditions at the JUMX monitoring station.
- Meteorological data from the John F. Kennedy International Airport was considered to be representative of conditions at the LINY monitoring station.
- Meteorological data from the Newark International Airport was considered to be representative of conditions at the NWNJ monitoring station.

It is important to note that the sources for meteorological data considered in this report are identical to those considered in the 1997 NMOC/SNMOC report.

[1] Previous NMOC/SNMOC reports, and most basic texts on statistics, define Pearson correlation coefficients, and how they characterize pairwise data correlations. Information on the two-sample t-test has not been presented in previous NMOC/SNMOC reports, but is well documented in many statistics texts (e.g., Harnett 1982).

Though extensive, the analyses of meteorological parameters in this report should not be viewed as comprehensive. For example, sophisticated computer simulations, such as detailed atmospheric dispersion modeling analyses, might provide greater insight into how local meteorological conditions affect air quality. Conducting such simulations, however, is beyond the scope of the current work. As another example, this report does not address all meteorological parameters that are known to affect ozone formation and transport. Detailed analyses of parameters such as mixing heights, solar radiation, and upper atmosphere wind patterns are needed for a more complete understanding of the impact of meteorological conditions on levels of air pollution. As a result, agencies that sponsor NMOC/SNMOC monitoring stations are encouraged to conduct further research on the influence of local meteorological conditions on both the ambient air monitoring data and ozone formation processes.

3.3 Analyses of Annual Variations

When assessing trends in air pollution over the long term, data analysts typically try to answer one basic question: Are levels of air pollution generally increasing or decreasing? To help agencies answer this question, Sections 5 through 8 assess how annual average concentrations of total NMOC and selected SNMOC have changed from one NMOC/SNMOC Monitoring Program to the next. Annual variations in ambient air concentrations of VOC and carbonyls are not considered, due to the limited number of samples available for these compound groups.

Analyses of annual variations in *SNMOC concentrations* are based only on monitoring data collected during the current procurement, which spanned the 1995 to 1998 programs. Though some stations might have collected SNMOC samples as part of other programs prior to 1995, data from these earlier programs are not considered in this report because important features of the current monitoring program (e.g., detection limits, laboratory analytical equipment, field sampling equipment) might differ from similar features of the previous monitoring programs. Since the Long Island and Newark stations have participated in the

NMOC/SNMOC Monitoring Program for roughly 10 years, annual variations in *total NMOC concentrations* are presented for the entire history of these stations.

To characterize annual variations in air quality, Sections 5 through 8 present figures that illustrate how average concentrations of total NMOC and selected SNMOC have changed from one summer to the next. The graphs depict 95-percent confidence intervals of the average concentrations as an indicator of the uncertainty associated with each value. For greater insight into the annual variations, statistical tests (two-sample t-tests) were performed to distinguish statistically significant annual variations from anomalous ones. Combined, these analyses of annual variations not only characterize the extent to which levels of air pollution have changed from year to year, but they also indicate whether these changes are statistically significant.

Though the annual variations presented in Sections 5 through 8 might suggest notable trends in air quality, these trends should be interpreted in proper context. For instance, many different factors could cause statistically significant changes in air quality from one year to the next: Environmental regulations might have caused decreased emissions from certain industrial sources, traffic patterns and the composition of motor vehicle fuels might change in a given year, and certain meteorological conditions that affect photochemical reactivity and atmospheric transport might fluctuate considerably. One factor considered in this report is the impact of EPA's recent requirement that, starting in 1995, all motor vehicles in certain parts of the country (including the Dallas–Fort Worth and New York City metropolitan areas) use oxygenated fuels or "reformulated fuels," which have a notably different chemical composition from "conventional fuels." Though this report attempts to explain likely causes of annual variations in air quality, participating agencies are encouraged to research the apparent causes of such variations in greater detail.

3.4 Other Analyses

To highlight other notable site-specific air quality trends, Sections 5 through 8 present additional data analyses, as appropriate, that do not fall under the data analyses categories discussed above. The following additional analyses are considered in this report:

- *Reactivity of air masses.* The SNMOC monitoring data provide a wealth of information on the composition of hydrocarbons found in ambient air. With studies showing that some hydrocarbons are much more reactive in air than others (Carter 1994), the SNMOC data can be used to characterize the relative ozone formation potential of air masses. Using compound-specific "maximum incremental reactivities" reported in the literature (see Table 3-1), the analyses in Sections 5 and 6 present reactivity-weighted concentrations. These analyses indicate an important finding that is not readily apparent from the SNMOC monitoring data: The compounds with the highest concentrations (on a ppbC basis) are often different from the compounds that are most reactive in air. The reactivity-weighted concentrations, therefore, provide additional insight into the ozone formation potential of the complex mixture of hydrocarbons in ambient air. (Note: This analysis of air mass reactivity is also described and summarized in the 1996 NMOC/SNMOC report; Sections 7 and 8 do not present analyses of chemical reactivity because the Long Island and Newark monitoring stations did not collect SNMOC samples daily.)

- *Fate of airborne aromatic hydrocarbons.* The presence of three ambient air monitoring stations in the Dallas–Fort Worth metropolitan area allowed for detailed analyses of how the composition of an air mass varies within an air-shed. As Section 5 describes, the breakdown of SNMOC concentrations at the CAMS13 station was found to be notably different from that at the CAMS5 and DLTX stations. To explain this spatial variation, Section 5 uses results of studies reported in the scientific literature, particularly those on the fate of aromatic hydrocarbons in ambient air, to postulate mechanisms that might account for the unique air quality trend observed among the Dallas–Fort Worth stations.

- *Concentrations of methyl tert-butyl ether.* Ever since motor vehicles in many parts of the country started using reformulated fuels, which contain as much as 15 percent methyl *tert*-butyl ether (MTBE), many environmental agencies have assessed the impact of this fuel usage on the environment. One aspect of the many environmental impacts of use of reformulated fuels is the increased ambient air concentrations of MTBE in regions where such fuel use is required. Analyses in Section 8 identify several subtle, yet meaningful, trends in the air monitoring data for MTBE at the Newark monitoring station—the only monitoring station in the 1998 NMOC/SNMOC Monitoring Program that analyzed air samples for this compound.

Table 3-1
Maximum Incremental Reactivities (MIRs) for SNMOC

Compound	MIR (mole O_3/mole compound)	Compound	MIR (mole O_3/mole compound)
Acetylene	0.14	Isobutane	0.37
Benzene	0.11	Isobutene/1-Butene	2.60
1,3-Butadiene	NA	Isopentane	0.41
n-Butane	0.31	Isoprene	2.58
cis-2-Butene	2.92	Isopropylbenzene	0.60
trans-2-Butene	2.92	2-Methyl-1-Butene	NA
Cyclohexane	0.37	2-Methyl-2-Butene	1.87
Cyclopentane	0.70	3-Methyl-1-Butene	NA
Cyclopentene	2.19	Methylcyclohexane	0.53
n-Decane	0.17	Methylcyclopentane	0.82
1-Decene	NA	2-Methylheptane	0.29
m-Diethylbenzene	NA	3-Methylheptane	0.29
p-Diethylbenzene	NA	2-Methylhexane	0.32
2,2-Dimethylbutane	0.25	3-Methylhexane	0.42
2,3-Dimethylbutane	0.32	2-Methylpentane	0.45
2,3-Dimethylpentane	0.39	3-Methylpentane	NA
2,4-Dimethylpentane	0.45	2-Methyl-1-Pentene	NA
n-Dodecane	NA	4-Methyl-1-Pentene	1.29
1-Dodecene	NA	*n*-Nonane	NA
Ethane	0.08	1-Nonene	NA
2-Ethyl-1-Butene	NA	*n*-Octane	0.18
Ethylbenzene	0.75	1-Octene	NA
Ethylene	2.16	*n*-Pentane	0.31
m-Ethyltoluene	NA	1-Pentene	1.81
o-Ethyltoluene	NA	*cis*-2-Pentene	2.57
p-Ethyltoluene	NA	*trans*-2-Pentene	2.57
n-Heptane	0.24	"-Pinene	NA
1-Heptene	NA	$-Pinene	NA
n-Hexane	0.29	Propane	0.15
1-Hexene	NA	*n*-Propylbenzene	0.58
cis-2-Hexene	1.96	Propylene	2.75
trans-2-Hexene	1.96	Propyne	NA

Notes: MIRs were copied from Sonoma 1996.
Compounds with an MIR of "NA" do not have a maximum incremental reactivity listed in the reference.

Table 3-1 (Continued)
Maximum Incremental Reactivities (MIRs) for SNMOC

Compound	MIR (mole O_3/mole compound)	Compound	MIR (mole O_3/mole compound)
Styrene	NA	2,2,3-Trimethylpentane	NA
Toluene	0.74	2,2,4-Trimethylpentane	0.28
n-Tridecane	NA	2,3,4-Trimethylpentane	0.48
1-Tridecene	NA	*n*-Undecane	0.12
1,2,3-Trimethylbenzene	2.60	1-Undecene	NA
1,2,4-Trimethylbenzene	2.45	*m,p*-Xylene	2.05
1,3,5-Trimethylbenzene	2.81	*o*-Xylene	NA

Notes: MIRs were copied from Sonoma 1996.
Compounds with an MIR of "NA" do not have a maximum incremental reactivity listed in the reference.

4.0 General Results of the 1998 NMOC/SNMOC Program

This section briefly summarizes how the total NMOC concentrations, on average, varied from station to station between the 1995 and 1998 NMOC/SNMOC Monitoring Programs. This brief overview of spatial variations gives a sense of the relative levels of air pollution at the six monitoring stations—a topic not considered in the site-specific analyses presented in Sections 5 through 8. The spatial variations preview several key findings that are discussed in much greater detail later in the report. Overall, the data presented in this section allow agencies that sponsor monitoring stations to compare air quality within their jurisdictions to air quality in other parts of the country. As discussed below, however, it is very important that these comparisons be made in proper context.

4.1 Total NMOC Concentrations During the 1998 Program

Figure 4-1 illustrates how total NMOC concentrations, on average, varied among the six monitoring stations that participated in the 1998 program. The following notable spatial variations are readily apparent from inspection of the figure:

- *Relatively higher concentrations of NMOC at JUMX*. During the 1998 program, the average concentration of total NMOC at JUMX (2.06 ppmC) was more than four times higher than the average concentration at the other monitoring stations—a concentration difference that was found to be statistically significant. As Section 6 describes, the average concentration at JUMX is largely influenced by the detection of several "outlier" concentrations. Nonetheless, even when these outliers are excluded from the computation of average concentrations, the average total NMOC levels at JUMX are still higher than those at the other five stations, though only marginally so. Though Figure 4-1 clearly illustrates a statistically significant spatial variation, readers should remember that this monitoring program measures levels of air pollution at only discrete locations within large metropolitan areas. As a result, even though the total NMOC concentrations at the JUMX monitoring station were considerably higher than those at the other monitoring stations, it does not necessarily follow that the air throughout the El Paso–Juarez area is more polluted than the air throughout the Dallas–Fort Worth and Newark–New York City metropolitan areas. Ambient air monitoring at many other locations in these metropolitan areas and for many other pollutants must be conducted and reviewed to support such a conclusion.

- *Moderate levels of total NMOC at CAMS13 and NWNJ.* On average, concentrations of total NMOC at CAMS13 and NWNJ during the 1998 program were roughly twice as high as the levels observed at CAMS5, DLTX, and LINY. The difference in concentration between CAMS13 and the three other stations (CAMS5, DLTX, and LINY) was found to be statistically significant, but the difference in concentration between NWNJ and the average concentrations at two of the other three stations was not. As Section 8 describes, total NMOC concentrations at Newark were highly variable during the 1998 program. This variability likely explains why statistically significant differences were not observed between the total NMOC concentration at Newark and those at the other stations. As emphasized above, readers should interpret the findings for CAMS13 and NWNJ with caution: The spatial variations shown in Figure 4-1 compare levels of air pollution observed in only three metropolitan areas, and only for discrete locations within these metropolitan areas.

- *Relatively low levels of total NMOC at CAMS5, DLTX, and LINY.* Average levels of total NMOC at the three remaining monitoring stations—CAMS5, DLTX, and LINY—were comparable in magnitude and considerably lower than the average levels at the three stations discussed previously. More specifically, the average concentrations of total NMOC at CAMS5, DLTX, and LINY were no more than 15 percent different from each other; none of these differences were found to be statistically significant.

The analyses in Sections 5 through 8 thoroughly examine notable site-specific data trends that are not readily apparent from examining spatial variations. For additional perspective on the spatial variations, however, the following discussion compares the spatial variations observed during the 1998 NMOC/SNMOC Monitoring Program to those observed in the three previous programs.

4.2 Total NMOC Concentrations During the 1995–1997 Programs

Figure 4-2 indicates how the spatial variations in total NMOC concentrations changed from the 1995 to the 1997 NMOC/SNMOC Monitoring Programs. The figure is included to comment on how spatial variations observed during the current program (see Figure 4-1) compare to those observed previously. An overview of the past spatial variations follows:

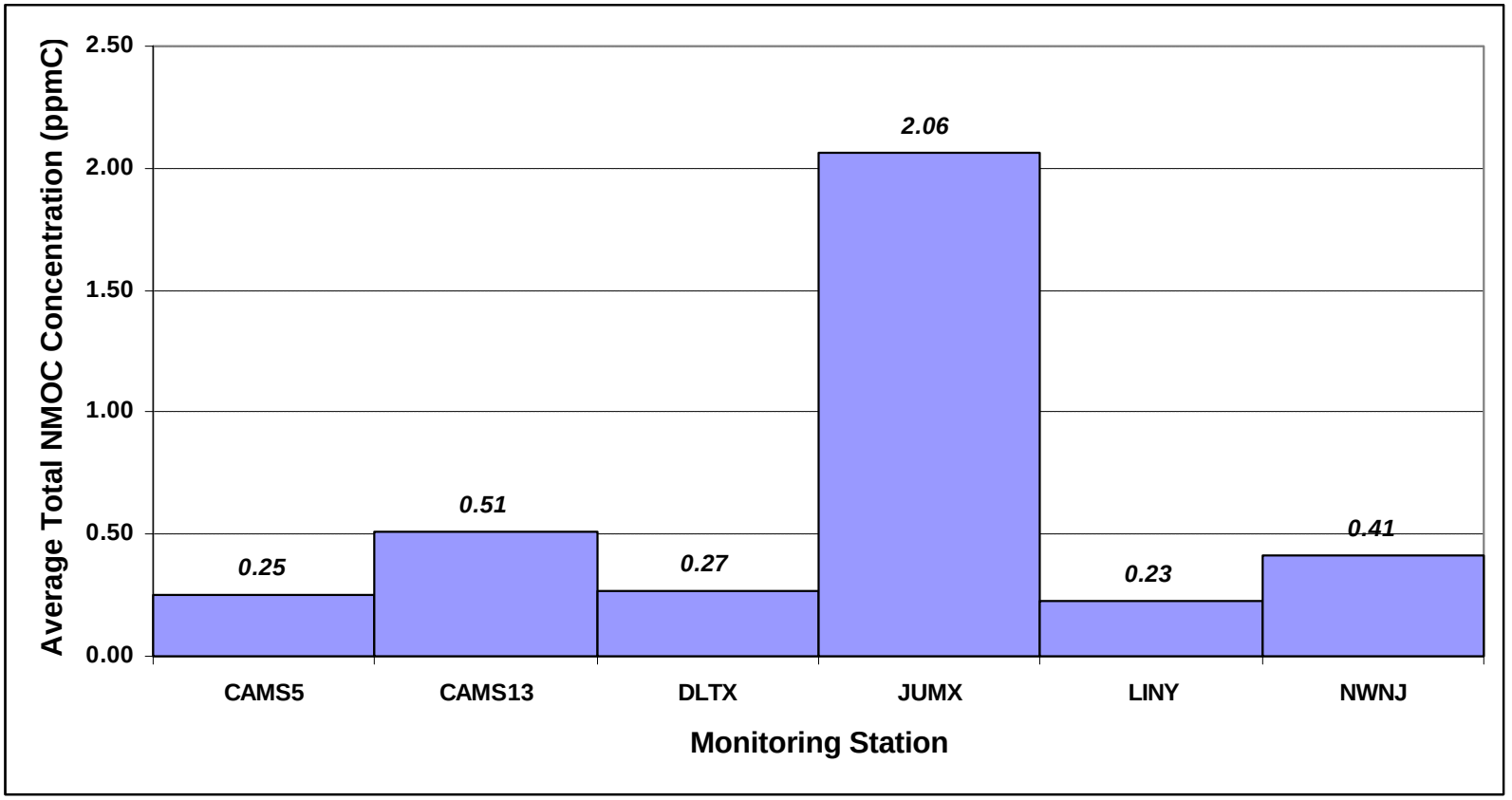
- *Trends that have remained unchanged over the years.* The graphs in Figure 4-2 highlight certain data trends that, to a certain extent, did not change over the previous three NMOC/SNMOC Monitoring Programs. For instance, in the 1995, 1996, and 1997

programs, total NMOC concentrations at JUMX and NWNJ were relatively high, particularly when compared to levels observed at DLTX and LINY. Further, total NMOC concentrations at DLTX and LINY, on average, have been comparable during the summers of 1995, 1996, and 1997. Both of these trends are consistent with those observed during the 1998 program, which Section 4.1 described.

- *Trends that have notably changed from one year to the next.* Though the relative levels of total NMOC at DLTX, JUMX, LINY, and NWNJ have been somewhat consistent over the past 4 years, the relative levels observed at CAMS5 and CAMS13 have exhibited unique trends. More specifically, the average ambient air concentration of total NMOC at CAMS5 ranked among the highest during the 1996 program, but average levels at this station have ranked among the lowest in the years since. On the other hand, the relative amounts of total NMOC at CAMS13 have exhibited the opposite trend, changing from ranking among the lowest to ranking among the highest. Section 5.1.3 examines why average levels of total NMOC observed at the three monitoring stations in the Dallas–Fort Worth metropolitan area have exhibited notably different annual variations.

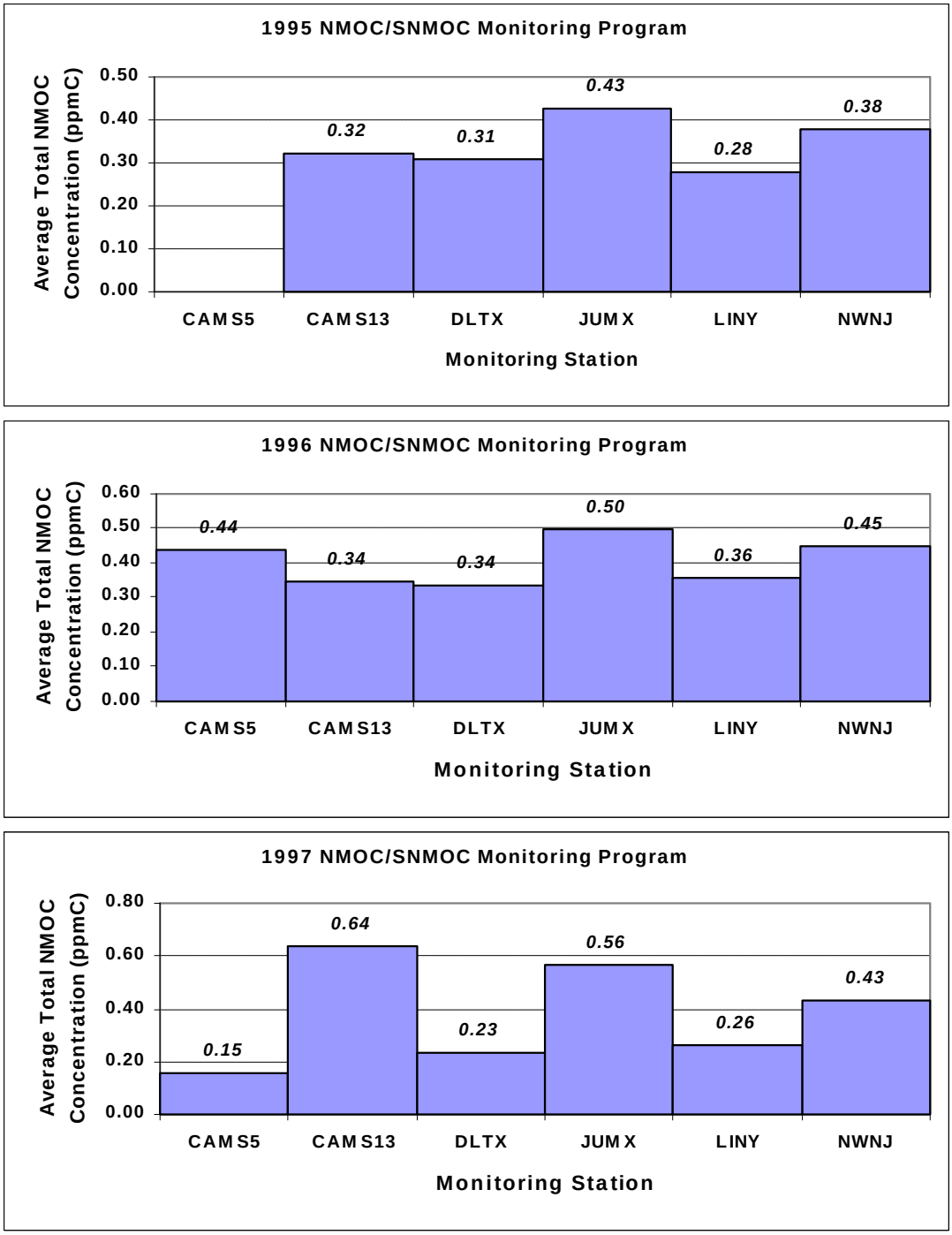
Overall, this historical perspective on spatial variations indicates that no universal trend can explain how levels of total NMOC have changed at the six monitoring stations since the 1995 program. This observation is not surprising, however, because *local* influences on air quality (e.g., industrial emissions sources, motor vehicle traffic, fluctuating weather conditions) ultimately determine how levels of air pollution change at a given location from one year to the next. Sections 5 through 8 examine these local influences by presenting detailed site-specific analyses of annual variations.

Figure 4-1
Average Concentrations of Total NMOC for the 1998 NMOC/SNMOC Monitoring Program



Note: As Section 6 describes, the average concentration of total NMOC at JUMX is biased high, largely due to two outlier concentrations. Refer to Section 4.1 for interpretations of this figure, including several important caveats regarding the displayed data trends.

Figure 4-2
Average Concentrations of Total NMOC Observed During the 1995–1997 NMOC/SNMOC Monitoring Programs



Notes: The CAMS5 station did not participate in the 1995 NMOC/SNMOC Monitoring Program.
The three graphs in this figure are shown on different scales.

5.0 Monitoring Results for Dallas and Fort Worth, Texas (CAMS5, CAMS13, DLTX)

This section summarizes and interprets the total NMOC, SNMOC, and carbonyl monitoring data collected at two locations in Dallas, Texas (CAMS5 and DLTX), and at one location in Fort Worth, Texas (CAMS13), during the 1998 NMOC/SNMOC Monitoring Program. The ambient air monitoring data from these three locations offer an extensive profile of the air quality in the Dallas–Fort Worth metropolitan area.

Figures 5-1, 5-2, and 5-3 show the locations of the CAMS5, CAMS13, and DLTX monitoring stations, respectively. The different numbers and types of emissions sources near these locations account, in part, for the different levels of air pollution measured at these stations. The CAMS5 monitoring station is located at a school in a suburban area, approximately 8 miles north of downtown Dallas. The Dallas North Tollway and Interstate 635 both pass within 1 mile of the CAMS5 station. The DLTX monitoring station, on the other hand, is located much closer to downtown Dallas, just 3 miles northwest of the city center. The station is in an area of mixed industrial and commercial uses, and several heavily traveled roadways, including Interstate 35-E and State Highway 183, pass within 1 mile of the DLTX station. Located in the city of Fort Worth, the CAMS13 station is roughly 25 miles west of the CAMS5 and DLTX stations. Land use surrounding CAMS13 is primarily residential, though open fields, an airport, and several busy surface streets are located in the station's immediate proximity. At all three stations, emissions from a great variety of sources likely influence the local air quality.

During the 1998 NMOC/SNMOC Monitoring Program, SNMOC samples were collected at CAMS5 on 74 days, and valid sampling results were obtained on 68 of those days; SNMOC samples were collected at CAMS13 on 70 days, and valid results were obtained on 69 of them; and SNMOC samples were collected at DLTX on 63 days, and valid results were obtained on 62 of them. Overall, the completeness of the SNMOC sampling, defined as the percentage of attempted sampling events that were valid, was 92 percent at CAMS5, 99 percent at CAMS13, and 98 percent at DLTX. Between the three monitoring stations, 30 carbonyl sampling events were scheduled during the 1998 program, and 29 of these events generated valid results. Thus,

the completeness of the carbonyl sampling (at all three stations combined) was 97 percent. The high completeness figures for all three monitoring stations suggest that samples were collected and handled efficiently at the CAMS5, CAMS13, and DLTX stations throughout the program.

The remainder of this section puts the large volume of ambient air monitoring data collected in the Dallas–Fort Worth area into perspective. Section 5.1 summarizes the total NMOC data collected at the three stations, compares these data to selected meteorological conditions, and discusses annual variations in total NMOC levels. Section 5.2 then reviews the SNMOC data, comments on the composition of SNMOC in ambient air, and assesses the reactivity of the air masses at the three stations. Finally, Section 5.3 briefly discusses trends and patterns among the limited carbonyl monitoring data collected during the 1998 program. For quick reference, Section 5.4 provides an overview of the key air quality trends identified for the Dallas–Fort Worth area during the 1998 NMOC/SNMOC Monitoring Program.

5.1 Total NMOC Monitoring Data

As Section 2.3.2 explained, the SNMOC sampling and analytical method measures both total NMOC concentrations and concentrations of 80 individual hydrocarbons. The following discussion focuses on the total NMOC measurements made by this method in the Dallas–Fort Worth area. More specifically, the discussion provides a concise summary of the total NMOC data (Section 5.1.1), characterizes associations between total NMOC levels and meteorological conditions (Section 5.1.2), and describes how total NMOC concentrations have changed in Dallas and Fort Worth from year to year (Section 5.1.3).

When reading these sections, readers should note that total NMOC concentrations include concentrations of a wide range of organic compounds, including, but not limited to, alkanes, olefins, aromatics, oxygenates, and halogenated hydrocarbons. Although total NMOC levels characterize ambient air concentrations of various compounds that affect ozone formation processes, total NMOC does not include many air pollutants common to urban environments, such as inorganic acids and particulate matter. In other words, the total NMOC concentrations

presented below provide a measure of many different air pollutants typically found in ambient air, but do not provide a measure of *every* air pollutant found in ambient air.

5.1.1 Data Summary

Using the four data summary parameters defined in Section 3.1, Table 5-1 provides a thorough overview of the total NMOC concentrations measured at CAMS5, CAMS13, and DLTX during the 1998 program. An overview of the data summary follows:

- *Prevalence.* Total NMOC was detected in every sample collected at CAMS5, CAMS13, and DLTX, and every total NMOC concentration was at least an order of magnitude greater than the estimated method detection limit of 0.005 ppmC (or 5 ppbC). Therefore, the prevalence of total NMOC at these stations was 100 percent. The summary statistics presented below are believed to be highly representative of total NMOC levels in the Dallas–Fort Worth area, since none of the statistics are biased by nondetect observations.

- *Concentration range.* According to Table 5-1, the concentration ranges of total NMOC at CAMS13 and DLTX were much broader than that at CAMS5. In fact, the highest total NMOC concentration measured at CAMS5 (0.645 ppmC) is roughly half the highest levels measured at CAMS13 (1.165 ppmC) and DLTX (1.267 ppmC). The reason for this spatial variation in concentration ranges is not known. However, examining the quartiles of the concentration distributions offers a different perspective on the spatial variations. More specifically, the 25^{th}, 50^{th}, and 75^{th} percentile concentrations at CAMS13 are all considerably higher than those at both CAMS5 and DLTX. This trend suggests that the entire concentration distribution at CAMS13 is centered on higher total NMOC levels than the distributions at the other two stations.

  To illustrate this trend, Figure 5-4 presents histograms of the total NMOC concentrations measured at the three stations in the Dallas–Fort Worth area. The figure clearly shows that the concentration distribution at CAMS13 is indeed centered on higher total NMOC levels than the other two distributions. Further, the figure indicates that concentrations of total NMOC at CAMS5 and DLTX predominantly fell into very narrow ranges of concentrations, with relatively few outliers. The distribution at CAMS13, on the other hand, was far more dispersed. The central tendency and variability summary parameters, discussed below, reflect these differences in the concentration distributions.

  When reviewing the concentration ranges, readers should remember that this monitoring program measures ambient air concentrations only during the summertime morning hours. Levels of total NMOC during other times of the day, and during other times of year, might have risen to higher or lower levels than the summary statistics indicate.

- *Central tendency*. As Table 5-1 shows, the three different measures of central tendency concentration of total NMOC at CAMS13 (i.e., the median, arithmetic mean, and geometric mean) were all roughly twice as high as those for CAMS5 and DLTX; these concentration differences were statistically significant. The marginal difference in total NMOC levels at CAMS5 and DLTX, however, was not statistically significant. The analyses of annual variations (Section 5.1.3) and SNMOC monitoring data (Section 5.2) put the concentration differences in the Dallas–Fort Worth area into perspective.

  At all three stations, concentrations of total NMOC during August and September were, on average, higher than those in June and July. These monthly variations in central tendency levels were most pronounced at CAMS13, where the average concentrations of total NMOC during August and September were nearly 70 percent greater than those during June and July, but this concentration difference was not statistically significant. Therefore, although concentrations of total NMOC during the morning hours changed from one month to the next at selected locations in Dallas and Fort Worth, the trend is possibly anomalous and should be confirmed by additional monitoring.

- *Variability*. The standard deviations of the total NMOC concentrations measured in the Dallas–Fort Worth area reflect the shapes of the concentration distributions shown in Figure 5-4: The variability was least for CAMS5 (the station with the narrowest spread in its concentration distribution) and highest for CAMS13 (the station with the widest spread in its concentration distribution). The greater variability at CAMS13 suggests that the factors that contribute to total NMOC levels at this station change considerably from day to day. The lower variability at CAMS5 and DLTX, however, suggests that the factors that affect total NMOC levels most do not vary greatly from one morning to the next. A possible explanation for this trend is that morning rush-hour traffic, which likely does not change dramatically from one weekday to the next, has a strong impact on air quality at CAMS5 and DLTX, and that other factors—possibly long-range transport of emissions or emissions from a local source—have a strong impact on air quality at CAMS13. These hypotheses are revisited throughout this section.

5.1.2 Comparison to Selected Meteorological Conditions

To identify noteworthy air quality trends for the Dallas–Fort Worth metropolitan area, the following discussion characterizes associations between total NMOC concentrations at CAMS5, CAMS13, and DLTX and selected meteorological conditions. More specifically, the discussion considers 3-hour average observations of humidity, precipitation, temperature, wind direction, and wind speed, all of which were measured between 6:00 a.m. and 9:00 a.m. at the Dallas–Fort Worth International Airport. Since the CAMS5, DLTX, and CAMS13 monitoring stations are all

located within approximately 20 miles of this airport, the meteorological data are believed to be reasonably representative of conditions at the three monitoring stations. In the following analysis, data trends that are statistically significant are clearly distinguished from those that are not.

To enable readers to compare data trends identified during the current program to those from earlier programs, this section follows a framework almost identical to that presented in Section 5.2.3.1 of the 1997 NMOC/SNMOC report.

A review of the comparisons of total NMOC levels in Dallas and Fort Worth to local meteorological conditions follows:

- *Humidity.* As Figure 5-5 illustrates, no trend is readily apparent between total NMOC concentrations at CAMS5, CAMS13, and DLTX and concurrent observations of relative humidity at the Dallas–Fort Worth International Airport. Moreover, most of the concentration differences depicted in the figure are not statistically significant. As further support of the absence of data trends, the Pearson correlation coefficient between the total NMOC concentrations and relative humidity was -0.09 at CAMS5, 0.03 at CAMS13, and 0.00 at DLTX. These low correlation coefficients indicate that relative humidity was essentially uncorrelated with the air quality measurements in the Dallas–Fort Worth area during the 1998 program.

  It is interesting to note that the data collected during the 1997 program suggested that total NMOC levels at the three monitoring stations in Dallas and Fort Worth tended to decrease with increasing humidity (ERG 1999). The contradictory findings from the 1997 and 1998 programs suggests that humidity might only be weakly associated, if not completely unassociated, with total NMOC levels in the Dallas–Fort Worth area. The inconsistent trends also underscore an inherent difficulty with assessing impacts of local meteorological conditions on air quality: Since so many different factors influence levels of air pollution, the effect of a single factor (e.g., humidity) might be masked in years when other factors (e.g., temperature) have unusually high or low levels. Conducting multivariate statistical analyses on the data set might help researchers understand how different combinations of meteorological conditions affect ambient air quality. Such analyses, however, are not included in the scope of this project.

- *Precipitation.* Measurable rain was recorded at the Dallas–Fort Worth International Airport during only two mornings when valid SNMOC samples were collected at the

CAMS5, CAMS13, and DLTX monitoring stations. As a result of the limited sample size, no statistically significant trends were observed between total NMOC concentration on rainy days and total NMOC concentrations on days with no measurable precipitation. Though the science of atmospheric dispersion generally predicts that levels of most kinds of air pollution are lower on or after rainy days (USEPA 1995), this trend could not be verified by the SNMOC monitoring data collected in the summer of 1998 in Dallas and Fort Worth.

- *Temperature.* One of the most pronounced features of the meteorological conditions in the Dallas–Fort Worth metropolitan area during the 1998 NMOC/SNMOC Monitoring Program was the record heat. Temperatures during approximately two-thirds of the sampling events were greater than 84 degrees, and temperatures exceeded 100 degrees at the Dallas–Fort Worth International Airport on 29 consecutive days during the program. According to the *Dallas Morning News* (September 9, 1998), the summer of 1998 was the second warmest summer on record for the cities of Dallas and Fort Worth. As a result, the monitoring data for the 1998 program offer insight into the extent to which elevated temperatures affect ambient air concentrations of total NMOC.

  As one indication of how temperature relates to air quality, Figure 5-5 indicates how total NMOC concentrations, on average, varied with temperature. Clearly, for the categories of temperature ranges selected, the temperature during a sampling event seemed to have little bearing on the magnitude of the total NMOC concentration. Corroborating this finding is the fact that Pearson correlation coefficients between total NMOC levels at CAMS5, CAMS13, and DLTX and temperature were all less than 0.1. In other words, the total NMOC levels and temperature were essentially uncorrelated, which is the same conclusion that was reached for these sampling locations in both the 1996 and 1997 reports.

  As Section 5.1.3 notes, ambient air concentrations of total NMOC during the record heat of the 1998 program were not unusually higher or lower than those observed during previous years—an observation that further supports the finding that temperature is weakly associated with, if not completely unassociated with, ambient air concentrations of total NMOC during the morning hours in Dallas and Fort Worth.

- *Wind Speed.* As Figure 5-5 illustrates, ambient air concentrations of total NMOC at CAMS5, CAMS13, and DLTX on windy days tended to be lower than those on days with calm or light winds. Moreover, the concentration differences for most wind speed categories shown in the figure were statistically significant. The Pearson correlation coefficients between wind speed and total NMOC concentration are generally consistent with the data trends indicated in Figure 5-5: The correlation coefficients for CAMS5, CAMS13, and DLTX were -0.52, -0.46, and -0.47, respectively. These negative correlation coefficients indicate that total NMOC levels at the three monitoring stations tended to be lower when wind speeds were higher, and vice versa. This same data trend

was observed at the three monitoring stations in Dallas and Fort Worth during the 1997 NMOC/SNMOC Monitoring Program and is generally consistent with air dispersion modeling algorithms, which predict that higher wind speeds enhance dispersion of pollutants in the atmosphere (USEPA 1995).

- *Wind Direction.* The scatter plots in Figure 5-6 show how total NMOC concentrations at CAMS5, CAMS13, and DLTX varied with wind direction. The plots do not include results from the six valid samples that were collected when winds were either variable or calm. Though Figure 5-6 clearly indicates that southerly winds occurred most frequently during the morning hours at the Dallas–Fort Worth International Airport, the scatter plots suggest that total NMOC concentrations during the 1998 program were not considerably elevated when winds blew from any particular direction. More simply, the magnitude of total NMOC concentrations at the three monitoring stations during the morning hours appeared to be largely independent of the wind direction. The 1997 report reached the same conclusion.

In review, ambient air concentrations of total NMOC that were measured during the morning hours at three locations in Dallas and Fort Worth were very weakly correlated, if not completely uncorrelated, with several meteorological parameters (humidity, temperature, wind direction), but were negatively correlated with wind speed. This finding suggests that wind speed has a much greater influence on levels of total NMOC during the morning hours in the Dallas–Fort Worth area than other meteorological parameters. However, the absence of correlations for certain meteorological parameters suggests either that the parameters have no influence on levels of air pollution in Dallas and Fort Worth or that the parameters' influence on levels of air pollution is masked by the influences of other parameters (such as wind speed). To better understand the combined influences of different parameters, researchers are encouraged to conduct multivariate statistical analyses on the NMOC/SNMOC monitoring data. Such analyses, however, are not included in the scope of this report.

5.1.3 Annual Variations

The CAMS13 and DLTX monitoring stations have participated in the NMOC/SNMOC Monitoring Program since 1995, and the CAMS5 station has participated in the program since 1996, thus providing several years of data for evaluating annual variations in total NMOC levels in the Dallas–Fort Worth metropolitan area. However, since these stations did not participate in

this program in years prior to when reformulated fuels were introduced to the Dallas–Fort Worth area (i.e., prior to 1995), the monitoring data from 1995 to 1998 are not sufficient for assessing the air quality impacts of this environmental initiative.

To put long-term air quality trends for this area into perspective, the following discussion reviews how average levels of total NMOC and peak levels of total NMOC have changed at CAMS5, CAMS13, and DLTX from year to year. It is important to remember that the annual variations presented in this section only characterize changes in total NMOC concentrations during the summertime morning hours. Annual variations based on concentrations measured during other times of day and other times of year might differ considerably from the annual variations discussed below.

An overview of the long-term trends in total NMOC concentrations in Dallas and Fort Worth follows:

- *Changes in average concentrations of total NMOC.* Figure 5-7 shows how the average concentrations of total NMOC have changed at CAMS5, CAMS13, and DLTX since the summer of 1995. Several important observations can be made from the data presented in the figure. For example, the annual variations depicted in Figure 5-7 clearly differ among the three monitoring stations in the Dallas–Fort Worth metropolitan area. As a result, one cannot determine, based on the data collected in this monitoring program, whether total NMOC levels *throughout this urban area* have generally increased, decreased, or stayed the same. Further, though temperatures during the 1998 program were consistently higher than those during earlier programs, average concentrations of total NMOC at all three monitoring stations during the 1998 program were not unusually higher or lower than those from prior programs. The absence of considerable changes in total NMOC levels during the record heat of 1998 confirms a finding presented in the previous section: Concentrations of total NMOC during the morning hours at CAMS5, CAMS13, and DLTX appeared to be largely independent of temperature.

  The data shown in Figure 5-7 allow for the interpretation of site-specific trends. For instance, according to the figure, the average concentration of total NMOC at CAMS5 decreased by more than a factor of two from the summer of 1996 to the summer of 1997 (a statistically significant decrease) and then increased slightly between the summers of 1997 and 1998. Average levels of total NMOC at DLTX also decreased from 1996 to 1997, but only by 23 percent (a statistically significant decrease). The annual variations

at CAMS13, on the other hand, *increased* by nearly a factor of two from 1996 to 1997 (a statistically significant increase). The reasons for these conflicting trends are not readily apparent, and researchers are encouraged to examine local emissions inventories, if they are available, to understand why annual variations in total NMOC levels vary across the three monitoring stations.

- *Changes in peak concentrations of total NMOC.* As another indicator of annual variations in air quality, Figure 5-8 illustrates how the frequency of peak levels of total NMOC (defined here as concentrations greater than 1.0 ppmC) changed at CAMS5, CAMS13, and DLTX since the 1995 NMOC/SNMOC Monitoring Program. As the figure shows, concentrations of total NMOC at the two stations in Dallas (CAMS5 and DLTX) exceeded 1.0 ppmC in fewer than 2 percent of the samples collected in the 1995, 1996, 1997, and 1998 programs; the opposite trend, however, was observed at CAMS13. Not only were elevated concentrations at CAMS13 more frequent than those at the other stations, but the frequency of elevated concentrations during the summers of 1997 and 1998 were more than twice as high as those during 1995 and 1996. In short, total NMOC concentrations greater than 1.0 ppmC appear to be more common at CAMS13 than at CAMS5 and DLTX, and the frequency of elevated concentrations at CAMS13 has increased in recent years.

Overall, the analyses of annual variations do not indicate consistent trends for the entire Dallas–Fort Worth area: In some parts of these cities (e.g., CAMS13), average concentrations of total NMOC during the morning hours increased in recent years; in other parts of these cities (e.g., CAMS5 and DLTX), concentrations have decreased. Though some of the changes in total NMOC levels from year to year were considerable, ambient air monitoring data from several more years are needed to determine whether distinct long-term trends in air quality are apparent for this region. Moreover, detailed information on site-specific emissions is also needed to put the annual variations into perspective.

5.2 SNMOC Monitoring Data

During the 1998 NMOC/SNMOC Monitoring Program, SNMOC samples were collected on weekday mornings at the three monitoring stations in the Dallas–Fort Worth area. These samples were analyzed for concentrations of 80 organic compounds (all hydrocarbons) as well as for the concentration of total NMOC. Following the data analysis methodology presented in Section 3, the following discussion reviews the large volume of SNMOC monitoring data

collected at CAMS5, CAMS13, and DLTX. More specifically, the discussion presents a brief overview of the SNMOC monitoring data (Section 5.2.1), comments on the composition of air pollutants in the SNMOC samples (Section 5.2.2), analyzes annual variations in ambient air concentrations of selected SNMOC (Section 5.2.3), and assesses the reactivity of the air mass in Dallas and Fort Worth (Section 5.2.4).

5.2.1 Data Summary

Using the data summary parameters defined in Section 3.1, Tables 5-2, 5-3, and 5-4 summarize the SNMOC monitoring data collected at CAMS5, CAMS13, and DLTX, respectively. An overview of the data summary parameters follows:

- *Prevalence.* As the data summary tables show, 76 of the 80 hydrocarbons identified by the SNMOC sampling and analytical method were detected in more than 50 percent of the samples collected at CAMS5, CAMS13, and DLTX during the 1998 program. The summary statistics for these compounds, many of which had a prevalence of 100 percent, are believed to be highly representative of air quality during the summertime morning hours, since few nondetect observations were recorded. The fact that 76 compounds were detected in most samples indicates that ambient air in Dallas and Fort Worth contains a wide range of pollutants.

  Four compounds (1-decene, 2-ethyl-1-butene, 1-heptene, and 1-tridecene), on the other hand, were detected in fewer than 50 percent of the sampling events at the three monitoring stations. Summary statistics for these compounds should be interpreted with caution, since they are likely to be biased by the frequent nondetect observations. As explained in Section 2, nondetects were replaced in the SNMOC air monitoring database with an estimated concentration of one-half the detection limit.

- *Concentration range*. Not surprisingly, ambient air concentrations of the 80 SNMOC varied greatly among the samples collected at the three monitoring stations in Dallas and Fort Worth. As Tables 5-2, 5-3, and 5-4 indicate, the majority of the compounds were never measured at concentrations exceeding 25 ppbC in the Dallas–Fort Worth area. At the CAMS5 monitoring station, ten compounds had at least one ambient air concentration greater than 25 ppbC, and the highest concentrations were observed for isopentane (69.60 ppbC), *n*-tridecane (61.56 ppbC), and toluene (44.78 ppbC). At CAMS13, 13 compounds had at least one concentration greater than 25 ppbC, with the highest concentrations observed for isopentane (160.84 ppbC), 2,3-dimethylbutane (97.60 ppbC), and *n*-butane (85.89 ppbC). Finally, at DLTX, nine compounds had at least one concentration greater than 25 ppbC and the highest levels were observed for toluene

(940.16 ppbC), cyclohexane (84.57 ppbC), and isopentane (82.67 ppbC). Since the highest concentrations might occur following, or during, a one-time release of certain compounds from a nearby emissions source, the compounds with the highest concentrations often differ from those with consistently elevated concentrations. The following bullet item emphasizes this distinction.

As noted throughout this report, the concentration range data in the summary tables should be interpreted in proper context: The data characterize concentration ranges for only weekday mornings during the summer. Ambient air concentrations for many SNMOC may have risen to higher levels or fallen to lower levels during other times of day and other times of the year.

- *Central tendency*. Tables 5-2, 5-3, and 5-4 present three different measures of central tendency concentrations (the median, arithmetic mean, and geometric mean) for the 80 hydrocarbons identified by the SNMOC sampling and analytical method. Due to the high prevalence for most SNMOC, the three measures of central tendency are expected to accurately represent actual central tendency levels for most compounds. The following observations are apparent from the central tendency data listed in the data summary tables:

  (1) Most of the 80 compounds identified by the SNMOC sampling and analytical method had geometric mean concentrations lower than 5 ppbC. More specifically, 70 of the 80 compounds at CAMS5, 60 of the 80 compounds at CAMS13, and 71 of the 80 compounds at DLTX had geometric mean concentrations lower than 5 ppbC.

  (2) For insight into trends among the central tendency levels, Table 5-5 lists the compounds with the ten highest geometric mean concentrations at CAMS5, CAMS13, and DLTX. As the table shows, the following compounds have geometric mean concentrations that rank among the ten highest at all three monitoring stations in the Dallas–Fort Worth area: *n*-butane, 2,3-dimethylbutane, isopentane, 2-methylpentane, *n*-pentane, propane, toluene, and *m,p*-xylene. Thus, a small subset of the 80 SNMOC was consistently measured at elevated levels at the three monitoring stations in Dallas and Fort Worth. Moreover, for each of the three stations, the sum of the concentrations of the compounds listed in Table 5-5 accounts for roughly half of the total concentration of compounds identified by the SNMOC sampling and analytical method. In other words, even though the ambient air in Dallas and Fort Worth contains a wide range of hydrocarbons, a small number of these compounds comprise a large portion of the airborne SNMOC.

  (3) Despite the similarities between the compounds with the highest concentrations at the three stations, Table 5-5 clearly demonstrates a distinct difference in the

magnitude of ambient air concentrations in the Dallas–Fort Worth area: The highest geometric mean concentrations observed at CAMS13 for most compounds listed in Table 5-5 are roughly two or three times higher than those observed at CAMS5 and DLTX. The analyses in Section 5.2.2 examine these concentration differences in greater detail.

(4) Comparison of the central tendency data in Table 5-5 to the concentration range data in Tables 5-2, 5-3, and 5-4 shows that, in some cases, the compounds with the highest geometric mean concentrations differ from those with the highest concentrations. For example, though the peak concentration of cyclohexane at DLTX and of *n*-tridecane at CAMS5 ranked among the highest concentrations observed at these stations, neither compound's geometric mean concentration ranked among the top ten central tendency concentrations shown in Table 5-5. For these compounds, therefore, the highest concentrations appear to be outliers, as supported by the variability data in the following bullet item.

Overall, the central tendency data provide useful insight into the relative quantities of individual SNMOC. Section 5.2.2 comments further on this topic by characterizing how the composition of SNMOC air samples differed among the three monitoring stations in Dallas and Fort Worth.

- *Variability*. According to Tables 5-2, 5-3, and 5-4, most SNMOC at CAMS5, CAMS13, and DLTX have coefficients of variation lower than 1.0, suggesting that most compounds' ambient air concentrations have comparable variability in the Dallas–Fort Worth area during the morning hours. The compounds with the most variable ambient air monitoring data (i.e., the compounds with coefficients of variation greater than 1.0) generally fall into two categories. First, highly variable air monitoring data were observed for compounds with extreme data outliers, such as *n*-tridecane at CAMS5 and cyclohexane at all three stations. Second, because calculations of coefficients of variations from concentrations measured in units of ppbC inherently give greater weight to compounds with more carbon atoms, highly variable air monitoring data also were observed for compounds with 10 or more carbons, such as *n*-dodecane at CAMS5 and DLTX, *n*-undecane at DLTX and CAMS13, and 1-dodecene at CAMS13.

5.2.2 Composition of Air Samples

The relative quantities of pollutants in ambient air are useful for identifying the predominant sources of air pollution in a given area and for evaluating the extent to which air pollution varies from one year to the next. To reveal notable trends among the complex mixture of air pollutants at the three monitoring stations in the Dallas–Fort Worth metropolitan area, the following discussion considers three different measures of composition: the relative quantities

of “unknown” and “identified” compounds; the relative quantities of alkanes, olefins, and aromatic compounds;[1] and the relative quantities of benzene, toluene, ethylbenzene, and xylene isomers (collectively known as the BTEX compounds).

5.2.2.1 “Identified” vs. “Unknown” Compounds

As Section 2.3.2 explained, the SNMOC sampling and analytical method measures ambient air concentrations of total NMOC as well as concentrations of 80 hydrocarbons (i.e., the “identified” compounds). In any given sample, the sum of the concentrations of the identified compounds is lower than the corresponding concentration of total NMOC. The concentrations of the various compounds that the SNMOC sampling and analytical method cannot identify (i.e., the “unknown” compounds) account for the difference between the identified compounds and total NMOC. The unknown compounds include, but are not limited to, oxygenated hydrocarbons, halogenated hydrocarbons, and other substituted hydrocarbons.

According to the data in Tables 5-2, 5-3, and 5-4, the identified compounds, on average, accounted for 80 percent of the total NMOC at CAMS5, 84 percent of the total NMOC at CAMS13, and 79 percent of the total NMOC at DLTX. These composition figures are nearly identical to those documented in the 1997 NMOC/SNMOC report. Several observations can be made based on the breakdown of identified and unknown compounds in Dallas and Fort Worth:

- At the CAMS5, CAMS13, and DLTX monitoring stations, the 80 hydrocarbons identified by the SNMOC sampling and analytical method account for more than three-fourths of the airborne organic compounds. As a result, pollution control initiatives focused on reducing emissions of the 80 identified compounds are expected to have a greater impact on reducing ambient air concentrations of total NMOC than initiatives focused on reducing emissions of other compounds.

[1] Two alkynes, acetylene and propyne, were identified by the SNMOC analytical method. These compounds were considered in the olefin category for the composition calculations. Some compounds (e.g., styrene) include both olefinic and aromatic functional groups. Such compounds were considered to be aromatics for the analyses of chemical composition.

- The relative amounts of identified and unknown compounds do not differ dramatically across the three monitoring stations in the Dallas and Fort Worth area. The consistent proportions of these two classes of compounds suggest that widespread reductions in emissions of the 80 identified compounds would be likely to lead to a considerable reduction in levels of total NMOC throughout the Dallas–Fort Worth area, and not just in any particular location.

- Since the relative quantities of identified and unknown compounds at the three monitoring stations changed little in previous summers, the relative magnitude of emissions of identified and unknown compounds also likely did not change considerably during this time.

Though the previous observations offer insight into air quality trends for the cities of Dallas and Fort Worth, the relative amounts of "identified" and "unknown" compounds provide a very limited basis for characterizing the composition of air pollution. A more detailed review of the composition of the SNMOC samples follows.

5.2.2.2 Alkanes, Olefins, and Aromatic Compounds

The relative amounts of alkanes, olefins, and aromatic compounds in ambient air are useful for identifying the types of emissions sources suspected of having the greatest impacts on air quality. As an example of such analyses, the following discussion presents relevant composition trends for CAMS5, CAMS13, and DLTX, and interprets the significance of these trends.

Figure 5-9 depicts the relative amounts of alkanes, olefins, and aromatic compounds that were measured at CAMS5, CAMS13, and DLTX during the morning hours of the 1998 program. To avoid biasing the composition calculations by the number of carbon atoms in each compound, the data in Figure 5-9 are based on ambient air concentrations of SNMOC in units of ppbv. The composition data in Figure 5-9 highlight two subtle trends among the air monitoring data for the Dallas–Fort Worth area: The relative quantities of alkanes were highest at CAMS13, followed next by those at CAMS5, and last by those at DLTX; and the relative quantities of olefins were highest at DLTX, followed next by those at CAMS5, and last by those at CAMS13. The same

trends in chemical composition were documented in the 1997 NMOC/SNMOC report. Closer examination of the SNMOC monitoring data for the three stations offers insight into the factors that possibly account for the composition trends depicted in Figure 5-9, as documented below:

- *Compounds that account for the spatial variations in chemical composition.* To understand why the composition of air masses differed at the three monitoring stations in Dallas and Fort Worth, the relative quantities of every alkane and olefin were calculated for the SNMOC monitoring data. Figures 5-10 and 5-11 depict the results of these calculations, by illustrating how the composition of the most abundant olefins and alkanes, respectively, varied across the CAMS5, CAMS13, and DLTX monitoring stations. Two consistent trends are apparent from the figures.

  First, as Figure 5-10 shows, ambient air at DLTX contained the greatest proportion of each of the most abundant olefins (acetylene, ethylene, isobutene, 1-butene, and propylene), followed by the ambient air at CAMS5, and followed last by the ambient air at CAMS13. Conversely, as Figure 5-11 shows, with two exceptions, ambient air at CAMS13 contained the greatest proportion of each of the most abundant alkanes (*n*-butane, 2,3-dimethylbutane, *n*-hexane, isopentane, 2-methylpentane, 3-methylpentane, and *n*-pentane), followed by the ambient air at CAMS5, and followed last by the ambient air at DLTX. For two alkanes (ethane and propane), however, the relative amounts were greatest at DLTX, followed by CAMS5, and followed last by CAMS13. These figures indicate that no single compound appears to account for the general trends depicted in Figure 5-9. Rather, the relative amounts of the most abundant olefins were consistently highest at DLTX and lowest at CAMS13, and the relative amounts of the most abundant alkanes were consistently highest at CAMS13 and lowest at DLTX. The significance of this finding is highlighted in the next bullet item.

- *Comparison of the chemical composition to emissions source profiles.* When interpreting air quality trends, researchers often compare the composition of ambient air at a given location to emissions source profiles. Since many different types of emissions sources are commonly found in urban areas, the composition of ambient air is not expected to match the emissions profile of any single source. However, similarities between the composition of air samples and the composition of emissions can indicate the types of sources that appear to have the greatest influence on air quality at a given location.

  To interpret the composition of air samples indicated by Figures 5-10 and 5-11, the composition data were compared to emissions source profiles that were recently documented in the scientific literature (Scheff and Wadden 1993). Table 5-6 summarizes these profiles, by indicating the relative amounts of selected alkanes and olefins reported as being emitted by motor vehicles, gasoline vapor, and petroleum refineries. Three key

features of these source profiles help explain the composition trends in the Dallas–Fort Worth area.

First, according to the source profile data in Table 5-6, mobile source emissions contain a greater proportion of the most abundant olefins than the emissions from either gasoline vapor or petroleum refineries. This source profile offers a possible explanation for the data trends depicted in Figure 5-10: The relatively greater proportion of olefins in the air at DLTX (when compared to the air at CAMS13) suggests, though certainly does not prove, that mobile source emissions might have a greater impact on the air quality at DLTX than on the air quality at CAMS13.

Second, according to the source profiles, emissions from gasoline vapor as well as emissions from petroleum refineries contain a greater proportion of several alkanes, namely *n*-butane, *n*-hexane, isopentane, 2-methylpentane, 3-methylpentane, and *n*-pentane, when compared to emissions from mobile sources. These source profile data help explain the composition trends depicted in Figure 5-11: The relatively greater proportion of the aforementioned alkanes in the air at CAMS13 (when compared to the air at DLTX) suggests, though again does not prove, that emissions from gasoline vapor or from petroleum refineries might have a greater impact on the air quality at CAMS13 than on the air quality at DLTX. Data trends outlined in the next paragraph, however, rule out the possibility that emissions from petroleum refineries account for the composition trends observed at CAMS13.

Third, according to the source profiles, emissions from motor vehicles generally contain a greater proportion of ethane and propane than emissions from gasoline vapor, and emissions from petroleum refineries generally contain a far greater proportion of propane than emissions from motor vehicles. The source profile data for ethane and propane support some of the hypotheses raised in the previous paragraphs. More specifically, Figure 5-11 clearly shows that the air at DLTX contained a greater proportion of ethane and propane than the air at CAMS13, thus further supporting the hypothesis that mobile source emissions have a greater influence on the air at DLTX than on the air at CAMS13. Moreover, since the relative amounts of propane at most stations are comparable to those for other alkanes, the composition data for all stations are not consistent with the source profile for petroleum refineries. Therefore, the relatively greater quantities of alkanes measured at CAMS13 appear to be associated with a greater influence from gasoline vapor emissions than from petroleum refinery emissions.

Overall, comparisons between the composition data and emissions source profile data offer insight into why the relative quantities of alkanes, olefins, and aromatic compounds vary with location in Dallas and Fort Worth. In short, the data considered in this section provide compelling evidence that mobile source emissions have a greater influence on air quality at

DLTX than at CAMS13 and that gasoline vapor emissions have a greater influence on air quality at CAMS13 than at DLTX. A detailed review of emissions inventory, including the number and locations of gasoline stations, is needed to confirm this hypothesis.

Despite the many consistencies between the composition data and the emissions source profiles, readers should note two limitations in the above analyses. First, this report considers the findings of just one emissions source study, which characterized the composition of emissions from only a subset of the types of emissions sources commonly found in urban environments. A more detailed review of emissions source profiles might provide other explanations for the composition trends depicted in Figures 5-10 and 5-11. Second, this section offered only qualitative comparisons between the composition data and source profiles. For a more rigorous comparison of the data, researchers are encouraged to perform "factor analyses" or use other statistical tools to quantify the extent to which certain source profiles are reflected in the ambient air monitoring data. Such statistical analyses, however, are not included in the scope of this report.

5.2.2.3 BTEX Concentration Profiles

To identify the emissions sources that have the strongest effect on local air quality, many researchers have compared the relative quantities of benzene, toluene, ethylbenzene, and the xylene isomers (BTEX) compounds in ambient air to the relative quantities of these compounds emitted by different sources. In fact, the previous NMOC/SNMOC reports have shown a striking similarity between the relative quantities of BTEX compounds in ambient air at most monitoring locations and mobile source emissions profiles of BTEX compounds. Consistent with this finding from previous reports, Figure 5-12 shows that the BTEX concentration profiles at the three monitoring stations in the Dallas–Fort Worth area were again quite similar. Not shown in Figure 5-12 is the fact that the concentration profiles observed during the 1998 NMOC/SNMOC Monitoring Program were nearly identical to a mobile source emissions profile recently reported in the scientific literature (Conner et al. 1995).

The similarity in the BTEX concentration profiles at CAMS5, CAMS13, and DLTX strongly suggests that the aromatic compounds originate, to a great extent, from an emissions source common to the three distinct locations, rather than from site-specific emissions sources. Moreover, the similarity between the concentration profiles and the mobile source emissions profiles provides compelling evidence that mobile source emissions account for a considerable portion of the airborne aromatic compounds at CAMS5, CAMS13, and DLTX. This same finding was presented in the 1996 and 1997 NMOC/SNMOC reports.

5.2.3 Annual Variations

Since the CAMS5, CAMS13, and DLTX monitoring stations have sampled SNMOC for at least 3 years, a large volume of monitoring data is available for evaluating long-term trends in air quality in the Dallas–Fort Worth area. This section presents and interprets trends for the most abundant SNMOC at each of the three stations. Researchers interested in characterizing annual variations for other SNMOC should refer to the raw ambient air monitoring that have been submitted to AIRS.

Figures 5-13, 5-14, and 5-15 illustrate the annual variations for the most abundant SNMOC (on a ppbC basis) at CAMS5, CAMS13, and DLTX, respectively. An overview of these annual variations follows:

- *Annual Variations at CAMS5.* The annual variations for most of the compounds considered in Figure 5-13 exhibit similar trends as the annual variations in total NMOC at CAMS5 (see Figure 5-7). More specifically, with some exceptions, concentrations of the most abundant SNMOC exhibited a statistically significant decrease between the 1996 and 1997 programs, and a marginal increase occurred between the 1997 and 1998 programs. For many compounds, the increase between the 1997 and 1998 programs was not statistically significant. The similar annual variations for the many different SNMOC suggests that changes in a particular source—possibly mobile source emissions—might account for most of the annual variations depicted in Figure 5-13.

  As exceptions to the general trend mentioned above, ambient air concentrations for acetylene, ethane, ethylene, and propane remained virtually unchanged during the summers of 1996, 1997, and 1998. The reason for the relatively constant ambient levels

for these compounds is not known. As another exception, the average concentration of 2,3-dimethylbutane increased by more than 700 percent between the 1997 and 1998 programs (a statistically significant increase), while the concentrations of most other compounds exhibited only marginal increases over this time frame. Although the considerably higher concentrations of 2,3-dimethylbutane during the 1998 program parallel the considerably higher temperatures observed in the Dallas–Fort Worth area during the summer of 1998, additional monitoring data must be reviewed and collected to determine whether temperature exhibits a particularly strong influence on ambient air concentrations of this one compound.

- *Annual Variations at CAMS13.* As Figure 5-14 shows, the annual variations in average levels of the most abundant SNMOC at CAMS13 were generally similar to the annual variations for this station's total NMOC data. These annual variations, in general terms, exhibit the following features: Average concentrations for the 1995 and 1996 programs were similar and considerably lower than the average levels during the 1997 and 1998 programs. To a certain extent, the annual variations for *n*-butane, benzene, *n*-hexane, isopentane, 2-methylpentane, 3-methylpentane, *n*-pentane, toluene, and *m,p*-xylene all exhibit these general features of the total NMOC trends. The consistent data trends for these compounds suggest that their ambient air concentrations are collectively influenced by the same group of sources. This hypothesis can be confirmed by comparing the air quality trends depicted in Figure 5-14 to annual variations in emissions inventories for the area surrounding CAMS13.

  Despite the consistent annual variations for most compounds shown in Figure 5-14, some compounds exhibited unique annual variations at CAMS13. For example, concentrations of acetylene, ethane, and propane changed little at this station during the summers of 1995, 1996, 1997, and 1998. The reason for the relatively constant levels of these compounds, during times when concentrations of other hydrocarbons changed considerably, is not known; however, it is interesting to note that this same trend was observed at the CAMS5 station (see previous bullet item). As another example of a unique trend, of the compounds shown in Figure 5-14, only 2,3-dimethylbutane exhibited a statistically significant increase in average concentrations between the 1997 and 1998 programs. In fact, concentrations of the compound increased by roughly 200 percent between these summers. Though the increase for 2,3-dimethylbutane might be linked to the record heat observed during the 1998 program, analysis of additional monitoring data is needed to verify this theory.

- *Annual Variations at DLTX*. According to Figure 5-7, the annual variations in total NMOC concentrations at DLTX were much weaker than those observed at CAMS5 and CAMS13. Consistent with the trend observed for total NMOC levels, Figure 5-15 indicates that concentrations of the most abundant SNMOC at DLTX generally changed little between the summers of 1995 and 1998, and many of the concentration differences shown in Figure 5-15 were not statistically significant.

As exceptions to the trend described above, the average concentrations of two compounds (2,3-dimethylbutane and toluene) at DLTX during the summer of 1998 were considerably higher than those observed during the three previous summers. First, the average concentration of 2,3-dimethylbutane during the 1998 program was roughly 400 percent higher than that observed during the 1995, 1996, and 1997 programs. Not only was this concentration difference statistically significant, but it parallels data trends observed at the two other monitoring stations in the Dallas–Fort Worth area. Further research is needed to confirm whether the notably elevated concentrations of 2,3-dimethylbutane at CAMS5, CAMS13, and DLTX during the summer of 1998 were linked to the record heat.

As the second unique data trend at DLTX, the average concentration of toluene during the 1998 program (29.63 ppbC) was considerably higher than the average concentrations during the earlier programs. However, this concentration difference is not statistically significant and appears to be largely influenced by a single outlier concentration of toluene during the 1998 program (i.e., a concentration of 940.16 ppbC on September 30, 1998). Excluding this outlier from the data analysis, the average concentration of toluene at DLTX during the 1998 program is only 14.70 ppbC—a level that is comparable to the average concentrations during the 1995, 1996, and 1997 programs.

Although the annual variations in SNMOC differ among the three monitoring stations in the Dallas–Fort Worth area, some consistent trends were observed. First, the long-term trends in concentrations of the most abundant SNMOC typically mirror the long-term trends in total NMOC concentrations. Second, the concentrations of acetylene, ethane, and propane exhibited relatively weak annual variations at all stations over the last 4 years. Third, concentrations of 2,3-dimethylbutane at CAMS5, CAMS13, and DLTX during the 1998 program were considerably higher than levels observed during the 1995, 1996, and 1997 programs. Though the elevated levels of 2,3-dimethylbutane occurred during the summer with the warmest temperatures, additional research is needed to determine whether or not this correspondence is coincidental.

When reviewing the annual variations depicted in Figures 5-13 to 5-15, readers should note a key limitation posed by reviewing only 4 years of monitoring data: Though the data are

sufficient for characterizing how levels of air pollution vary from year to year, it is impossible to determine whether these variations are merely naturally occurring fluctuations in air quality or part of continuing trends over the long term. Review of a longer record of ambient air monitoring data is needed to make this distinction.

5.2.4 Reactivity of the Air Mass

Though identifying the compounds with the highest ambient air concentrations is useful for characterizing the composition of air pollution, such evaluations do not always identify the compounds having the greatest potential to form ozone. In some cases, highly reactive compounds with relatively low concentrations exhibit a greater ozone formation potential than less reactive compounds with relatively high concentrations. To put the reactivity of the air mass into perspective, this section presents an "ozone index" for the most abundant SNMOC. As Section 3.4 defined, the ozone indices in this report are the product of a compound's maximum incremental reactivity (MIR) (see Section 3.4) and its geometric mean ambient air concentration. In other words, the ozone index represents a reactivity-weighted concentration.

To illustrate the ozone formation potential of selected compounds, Figures 5-16, 5-17, and 5-18 show ozone indices for the 20 SNMOC with the highest geometric mean concentrations at CAMS5, CAMS13, and DLTX, respectively. According to these three figures, the compounds with the greatest potential for forming ozone (i.e., the compounds with the highest ozone index) are not always the same as the compounds with the highest ambient air concentration. More specifically, ethylbenzene, isopentane, toluene, 1,2,4-trimethylbenzene, and *m,p*-xylene had the highest ozone indices at the three monitoring locations in Dallas and Fort Worth, even though some of these compounds did not rank among the ten with the highest ambient air concentrations. Since this analysis highlights the importance of interpreting the SNMOC monitoring data by different metrics, researchers are encouraged to perform more detailed analyses on the reactivity of the air in the Dallas–Fort Worth area, possibly through use of photochemical modeling.

5.3 Carbonyl Monitoring Data

During the 1998 NMOC/SNMOC Monitoring Program, the monitoring stations in Dallas and Fort Worth collected carbonyl samples roughly once a week, and only during the months of July, August, and September. This weekly sampling provides insight into ambient air concentrations of 16 carbonyls, all of which the SNMOC sampling and analytical method does not identify. The ambient air concentrations of carbonyls are of particular interest because this group of compounds participates in the complex series of photochemical reactions that produce ozone.

Because the CAMS5, CAMS13, and DLTX collected a limited number of carbonyl samples (i.e., 11 or fewer), not enough data are available for identifying statistically significant trends and patterns among the data. As a result, this section only presents descriptive summary statistics for the carbonyl monitoring. Using the data summary parameters that were defined in Section 3.1, Tables 5-8, 5-9, and 5-10 summarize the carbonyl monitoring data collected at CAMS5, CAMS13, and DLTX, respectively, during the summer of 1998. An overview of these summary parameters follows:

- *Prevalence.* According to the data summary tables, eight carbonyls were detected in more than half of the samples collected at all three stations. In other words, these compounds (acetaldehyde, acetone, benzaldehyde, butyraldehyde, formaldehyde, hexanaldehyde, isobutyraldehyde, and propionaldehdye) were consistently found in the ambient air at all three stations during the morning hours of weekdays. These compounds' summary statistics are believed to be highly representative of carbonyl concentrations during the morning hours in Dallas and Fort Worth, since few of the samples were nondetects. In addition to the eight carbonyls mentioned above, acrolein also had high prevalence figures, but only at the monitoring stations in Dallas.

  For the remaining carbonyls, summary statistics should be interpreted with caution, since they might be biased by the many nondetect observations. As explained earlier in this report, nondetects were replaced in the air monitoring database with a concentration of one-half the detection limit.

- *Concentration range.* At all three monitoring stations in Dallas and Fort Worth, the three carbonyls with the highest concentrations were acetaldehyde, acetone, and formaldehyde; ambient air concentrations of the other carbonyls rarely exceeded 1.0 ppbv. Though this

same data trend was observed during the 1996 and 1997 programs, readers should note two limitations when interpreting the concentration range data in Tables 5-8, 5-9, and 5-10. First, because ambient air concentrations of many carbonyl compounds reach their highest levels during the early afternoon hours (Brimblecombe, 1995), and not during the scheduled sampling times for the NMOC/SNMOC program (i.e., between 6:00 a.m. and 9:00 a.m.), concentrations of the 16 carbonyls during the 1998 program might have actually reached higher levels than the concentration range data indicate. Second, the concentration range data in Tables 5-8 to 5-10 should be compared to annual air monitoring efforts with caution, since the NMOC/SNMOC Monitoring Program does not consider air quality during the spring, fall, or winter.

- *Central tendency*. Consistent with data trends from the 1996 and 1997 programs, the central tendency parameters in Tables 5-8 to 5-10 indicate a clear break in the carbonyl monitoring data: At all three stations, the compound with the highest geometric mean concentration was formaldehyde, followed by acetone, then by acetaldehyde; and all three compounds had geometric mean concentrations greater than 1.0 ppbv. The remaining carbonyls, on the other hand, had geometric mean concentrations less than 0.5 ppbv. In fact, at all three stations, acetaldehyde, acetone, and formaldehyde accounted for more than 90 percent of the total concentration of carbonyls detected in the air samples.

  To put the geometric mean concentrations of carbonyls into perspective, the carbonyl monitoring data were converted to units of ppbC and compared to the concentrations of total NMOC at the three monitoring stations in Dallas and Fort Worth. According to this analysis, the 16 carbonyls identified by the sampling and analytical method accounted for, on average, 11 percent of total NMOC at CAMS5 and 8 percent of total NMOC at DLTX, but for only 3 percent of total NMOC at CAMS13. Thus, ambient air at CAMS5 and DLTX contains a considerably greater proportion of carbonyls than the ambient at CAMS13. Since mobile sources emit many of the carbonyls considered in this program (Grosjean 1991), the relatively greater proportion of carbonyls in the air at CAMS5 and DLTX suggests that mobile source emissions have a greater influence on air quality at these stations when compared to CAMS13—a hypothesis that was raised in Section 5.2.2.2.

  Not only did the relative quantities of the 16 carbonyls combined vary across the three monitoring stations, but the relative quantities of individual carbonyls also differed at CAMS5, CAMS13, and DLTX. For instance, of the 80 SNMOC and 16 carbonyls monitored during the 1998 program at CAMS5, formaldehyde had the highest geometric mean concentration (on a ppbv basis), and acetone had the fourth highest. A similar trend was observed at DLTX: Formaldehyde had the fourth highest geometric mean concentration, and acetone had the fifth highest. At CAMS13, however, ambient levels of the most abundant carbonyls ranked much lower than at the other stations in the area: Formaldehyde had the ninth highest geometric mean concentration, and acetone had the twelfth highest. These rankings of individual compounds are generally consistent with the

trends highlighted in the previous paragraph; namely, ambient air concentrations of carbonyls accounted for a greater portion of air pollution at CAMS5 and DLTX than at CAMS13.

- *Variability.* According to the data summary tables, no consistent trends on data variability are readily apparent. Some carbonyl compounds had highly variable monitoring data at one of the stations in Dallas and Fort Worth, but moderately variable data at the other two stations. In many cases, the compounds with the most variable data (e.g., crotonaldehyde at CAMS5, acrolein at CAMS13, and valeraldehyde at DLTX) had a prevalence less than 50 percent. The variability data for these compounds should be interpreted with caution, since they are likely to be biased by the many nondetect observations of these compounds.

Though the carbonyl monitoring data collected at CAMS5, CAMS13, and DLTX are limited, they highlight several important air quality trends. First, at all three stations, only three compounds (acetaldehdye, acetone, and formaldehyde) account for most of the airborne carbonyls considered in this program. Second, the concentrations of these three carbonyls were consistently higher than the concentrations of most of the 80 SNMOC. Third, carbonyls comprised a larger portion of total NMOC levels at CAMS5 and DLTX than at CAMS13—a trend that is consistent with the hypothesis that mobile source emissions have a greater effect on the ambient air at CAMS5 and DLTX than on the ambient at CAMS13.

5.4 Chapter Summary

The 1998 NMOC/SNMOC Monitoring Program extensively characterized air quality during summertime morning hours at three locations in the Dallas–Fort Worth area, and revealed several notable spatial and temporal variations in levels of air pollution. As a measure of the overall levels of airborne organics, total NMOC concentrations at CAMS13 (in Fort Worth) were, on average, roughly twice as high as the levels at CAMS5 and DLTX (both in Dallas). At all three stations, ambient air concentrations of total NMOC were very weakly correlated with, if not completely uncorrelated with, humidity, precipitation, temperature, and wind direction. On the other hand, total NMOC concentrations on windier days were consistently lower than those on days with calm or light winds; this trend was statistically significant. Since the summer of

1995, average concentrations of total NMOC increased in some areas (CAMS13), but decreased in others (CAMS5 and DLTX). No regional trends were apparent in the annual variations in air quality, suggesting that local factors might account for the changes in total NMOC levels from year to year.

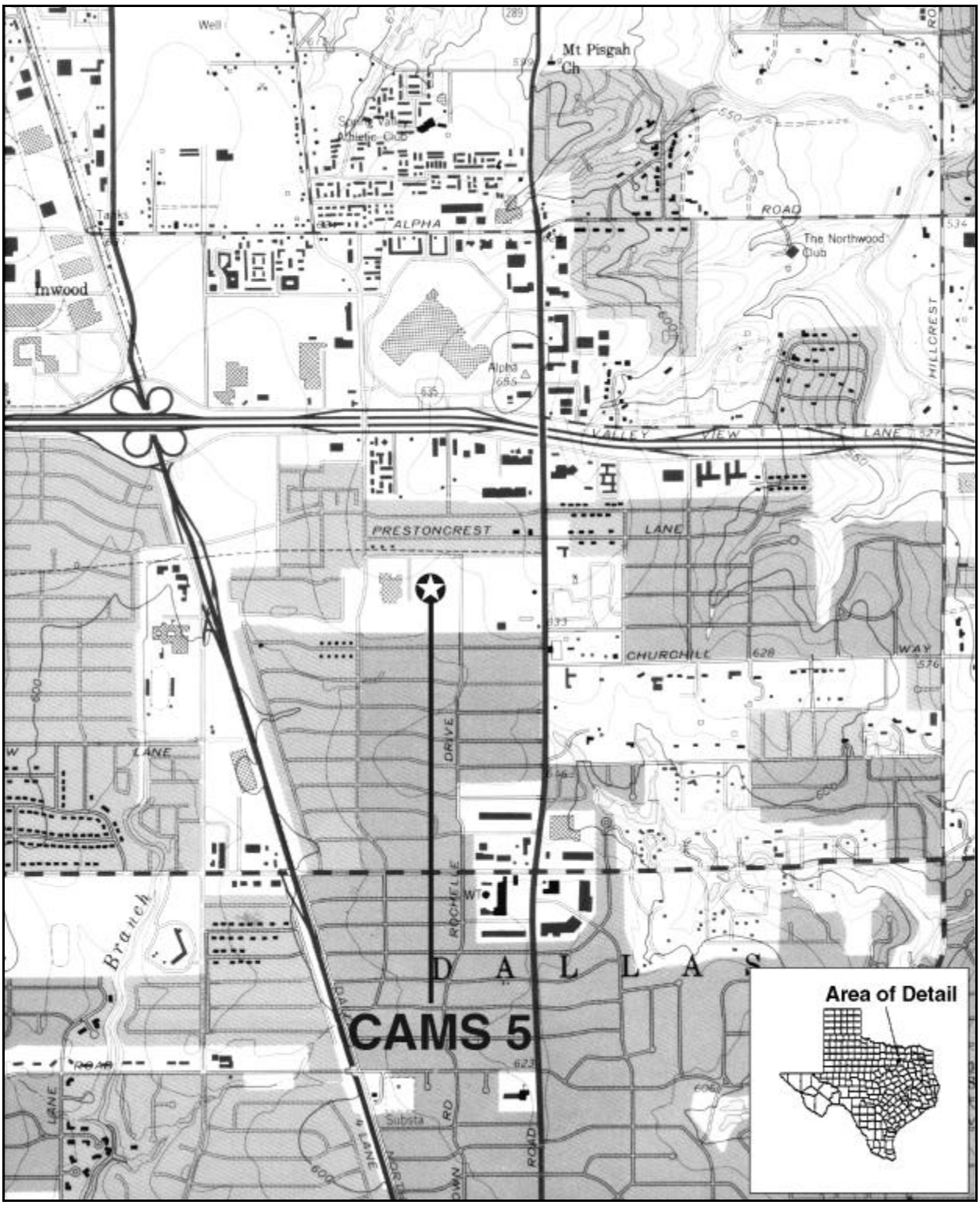
The SNMOC measurements clearly indicated that air pollution in both Dallas and Fort Worth generally contains more than 70 different hydrocarbons, though a small subset of these compounds accounts for a large portion of the total airborne organic compounds. Close examination of the SNMOC data revealed that the relative quantities of alkanes were greatest at CAMS13 and least at DLTX, while the relative quantities of olefins exhibited the opposite trend. The composition of the air samples collected at these stations suggested that mobile source emissions have a greater influence on air quality at DLTX than at CAMS13 and that gasoline vapor emissions have a greater influence on air quality at CAMS13 than at DLTX, though both types of sources undoubtedly contribute to air pollution at both locations. The analyses of BTEX concentration profiles confirmed that mobile source emissions account for a considerable portion of air pollution at CAMS5, CAMS13, and DLTX. Nonetheless, researchers are encouraged to compare the SNMOC monitoring data for these stations to site-specific emissions inventories to test the hypotheses raised in this report.

Annual variations in most SNMOC at the three monitoring stations paralleled the annual variations in total NMOC concentrations, with two notable exceptions. First, average levels of acetylene, ethane, and propane exhibited relatively weak annual variations at all three stations, but the reason for the relatively unchanging concentrations of these compounds is not known. Second, at all three monitoring stations in Dallas and Fort Worth, the average concentration of 2,3-dimethylbutane during the 1998 program was considerably higher than the average levels during the 1995, 1996, and 1997 programs. Though this statistically significant concentration difference might be linked to the record heat observed during the 1998 program, further research is encouraged to identify the factors that accounted for this unique annual variation.

The carbonyl monitoring data collected at CAMS5, CAMS13, and DLTX offer a more complete account of air quality in Dallas and Fort Worth. At all three stations, acetaldehyde, acetone, and formaldehyde accounted for more than 90 percent of the airborne carbonyls identified by the sampling and analytical method—a trend that has been observed at these stations over the three previous summers. Further, carbonyls accounted for a greater portion of total NMOC at CAMS5 and DLTX than at CAMS13. Since mobile source emissions are known to contain elevated levels of several carbonyls, the trend in composition of carbonyls further supports the hypothesis that mobile source emissions have a greater impact on air quality at CAMS5 and DLTX than on air quality at CAMS13. Once again, review of site-specific emissions inventories is needed to test this hypothesis.

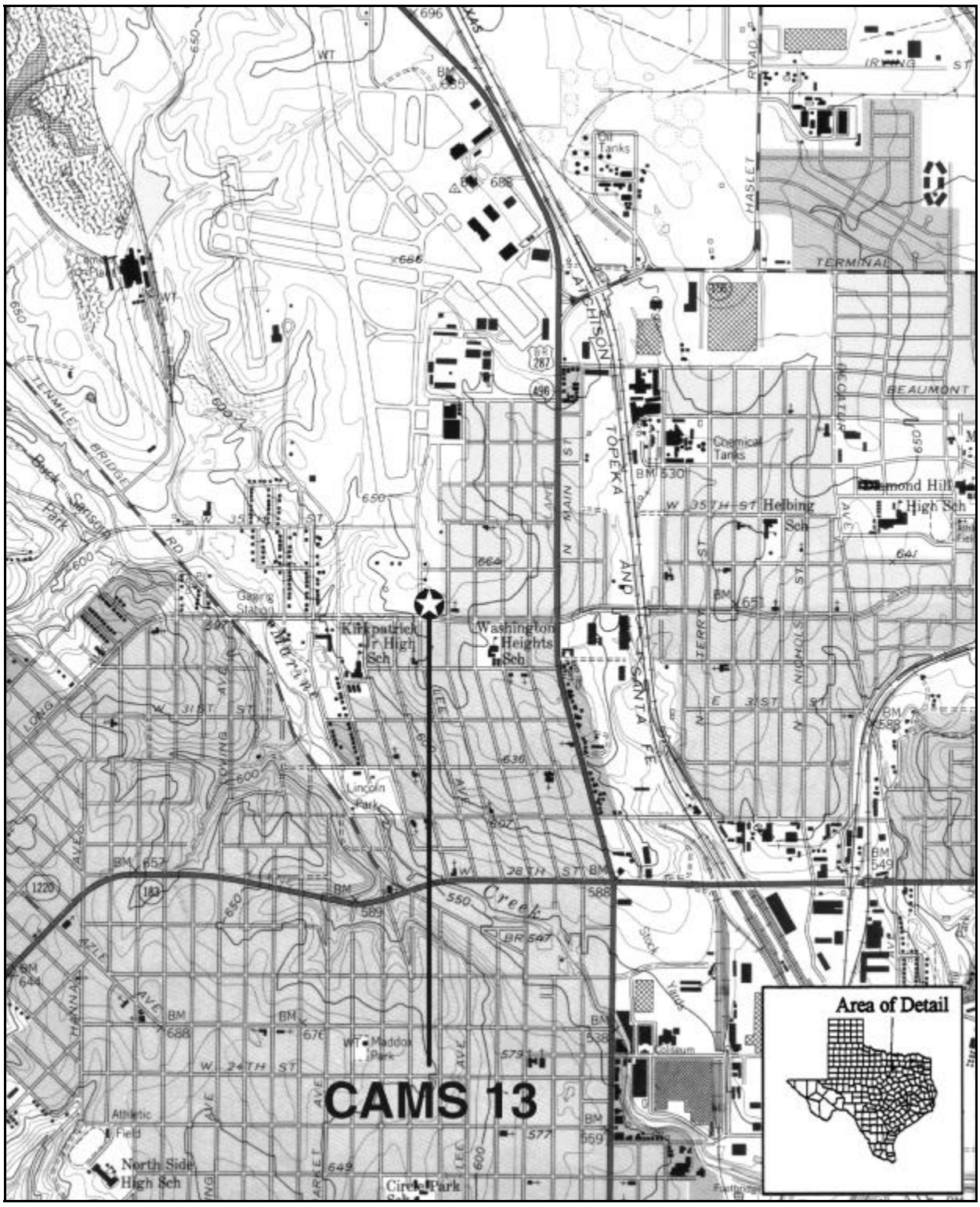
As emphasized throughout this section, this report provides an extensive and meaningful review of the ambient air monitoring data collected in 1998 at Dallas and Forth Worth, but the analyses in this section are not comprehensive. As a result, researchers are encouraged to further study the total NMOC, SNMOC, and carbonyl monitoring data from CAMS5, CAMS13, and DLTX to identify and characterize subtle trends not considered in this report. Examples of such additional studies include performing multivariate statistical analyses, modeling photochemical reactivity of the air mass, and comparing the data from this report to concurrent observations of nitrogen oxides and ozone.

Figure 5-1
Dallas, Texas (CAMS5), Monitoring Station



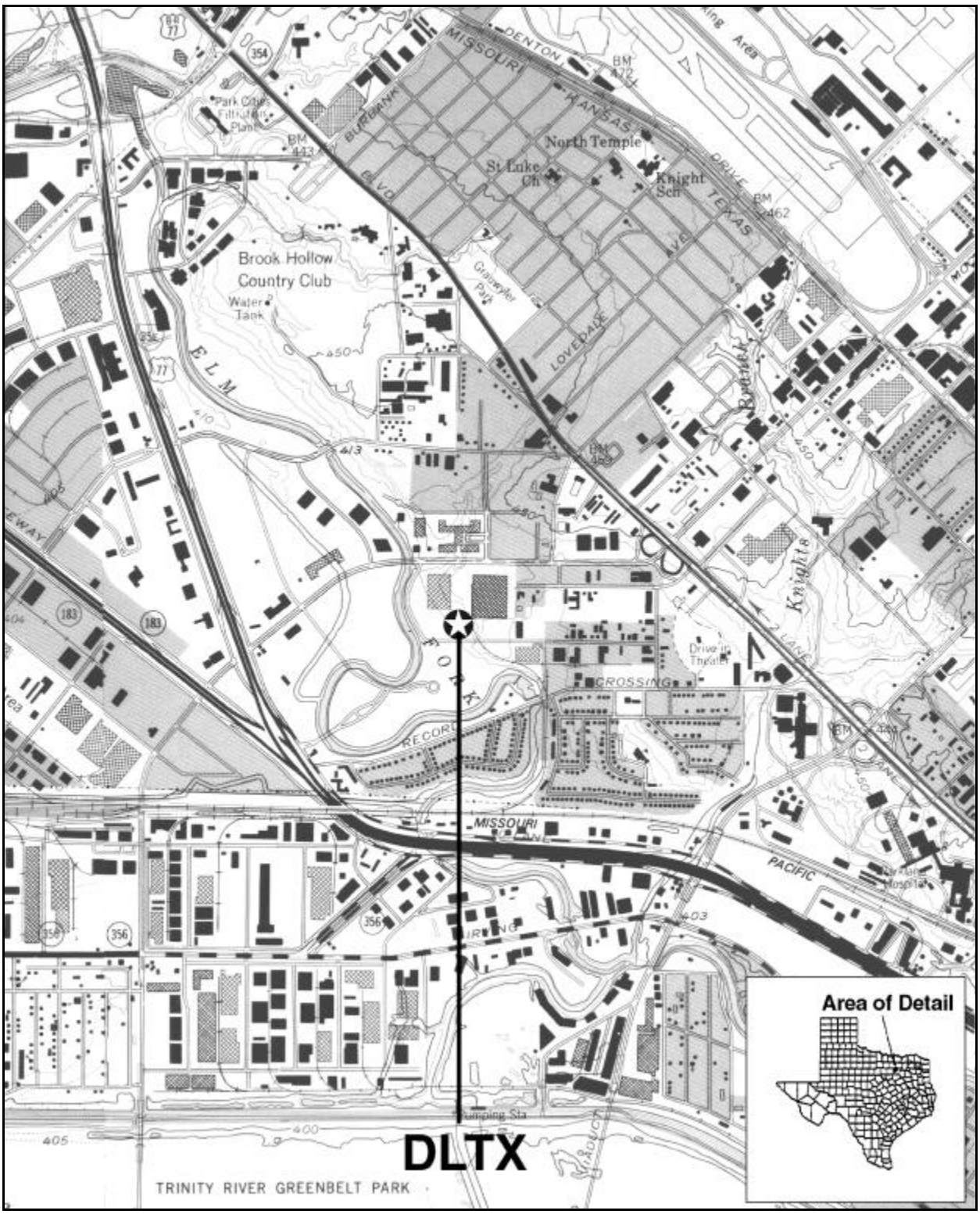
Source: USGS 7.5 Minute Series. Map scale: 1:24,000.

Figure 5-2
Fort Worth, Texas (CAMS13), Monitoring Station



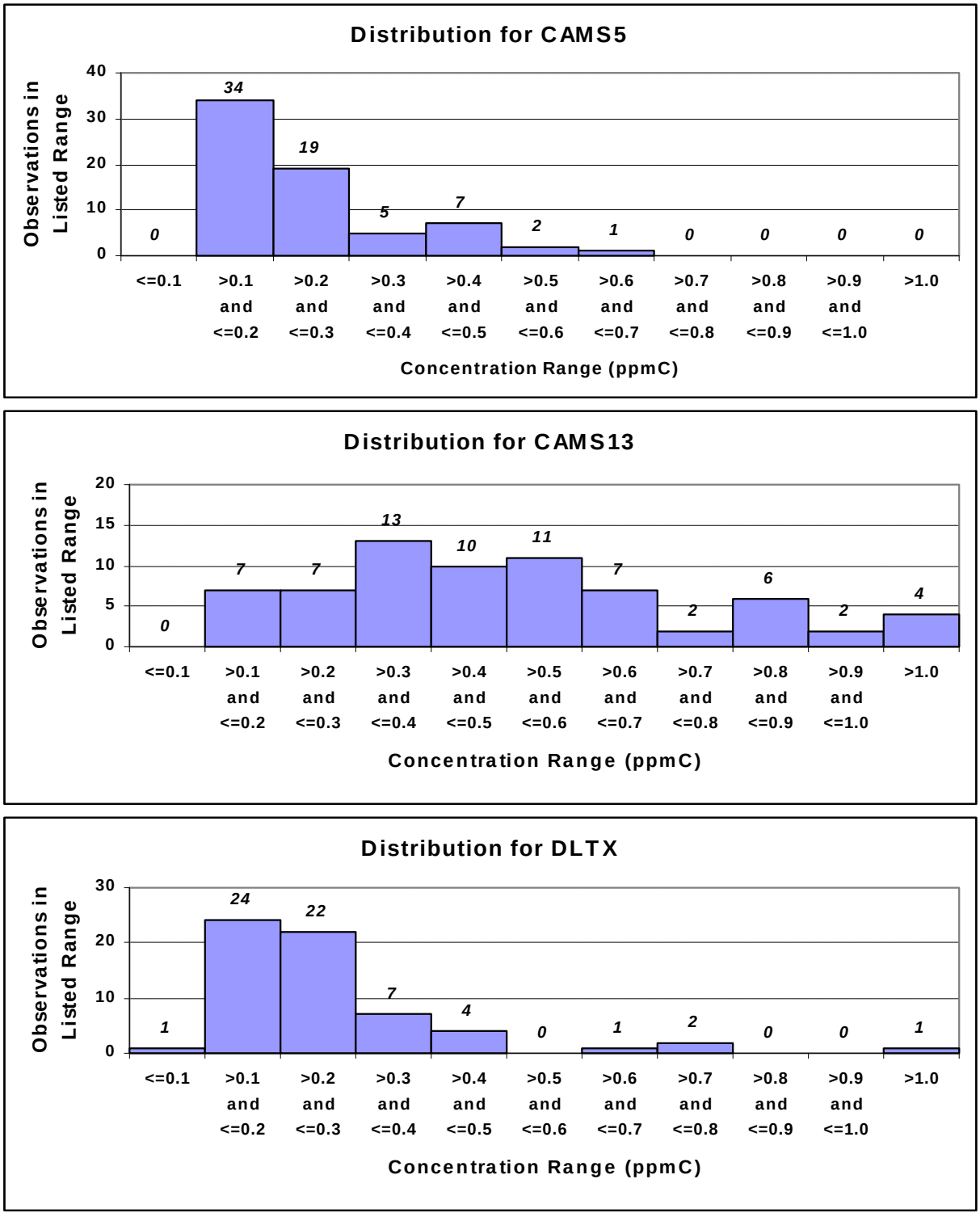
Source: USGS 7.5 Minute Series. Map scale: 1:24,000.

Figure 5-3
Dallas, Texas (DLTX), Monitoring Station



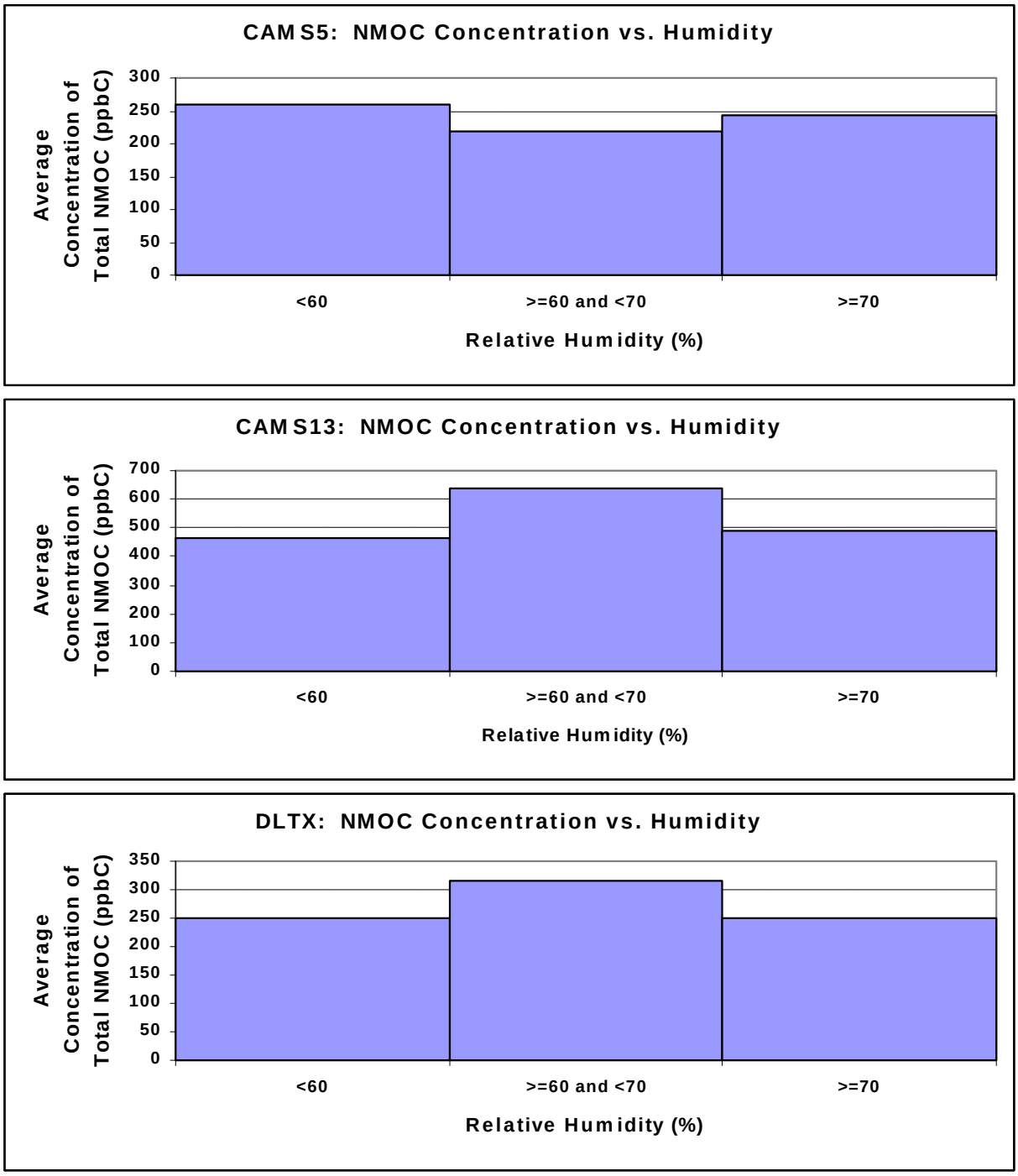
Source: USGS 7.5 Minute Series. Map scale: 1:24,000.

Figure 5-4
Distributions of Total NMOC in Dallas and Fort Worth



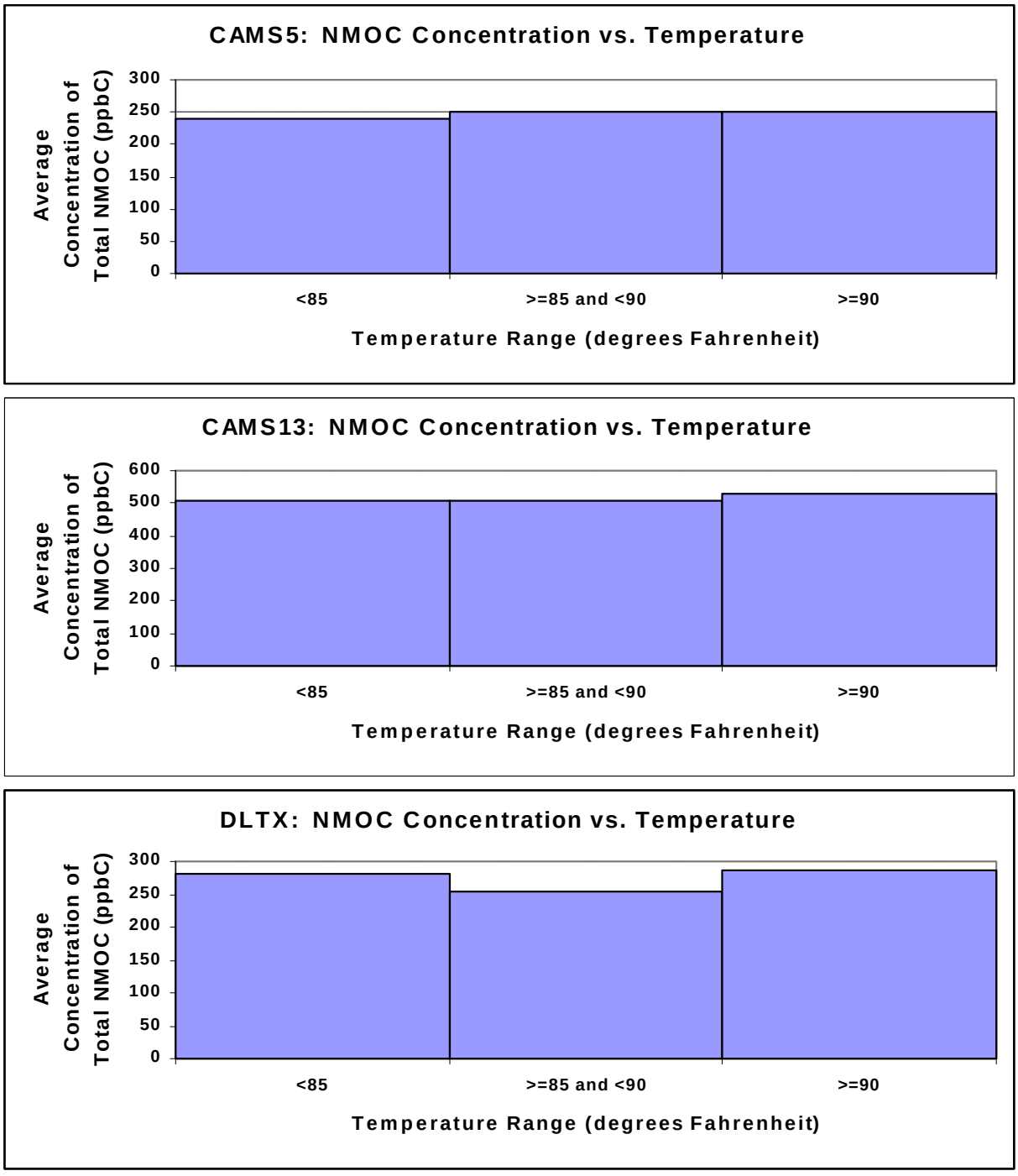
Note: The scale for the "Observations in Listed Range" is different in each graph, but the scale for the "Concentration Range" is the same for the three graphs.

Figure 5-5 (Page 1 of 3)
Comparison of Total NMOC Concentrations at CAMS5, CAMS13, and DLTX to Selected Meteorological Parameters



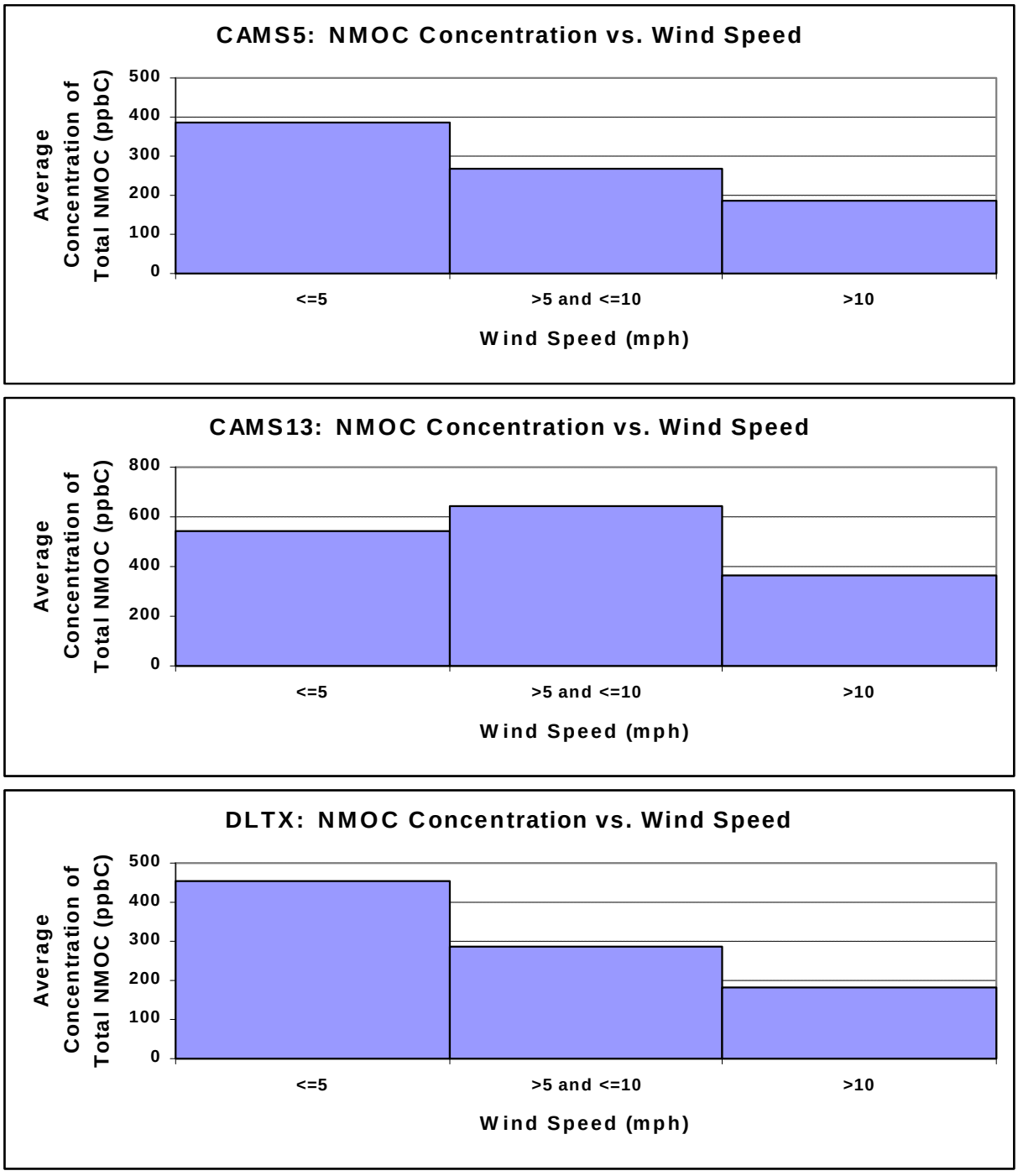
Note: Every graph has a different scale for average concentrations of total NMOC.

Figure 5-5 (Page 2 of 3)
Comparison of Total NMOC Concentrations at CAMS5, CAMS13, and DLTX to Selected Meteorological Parameters



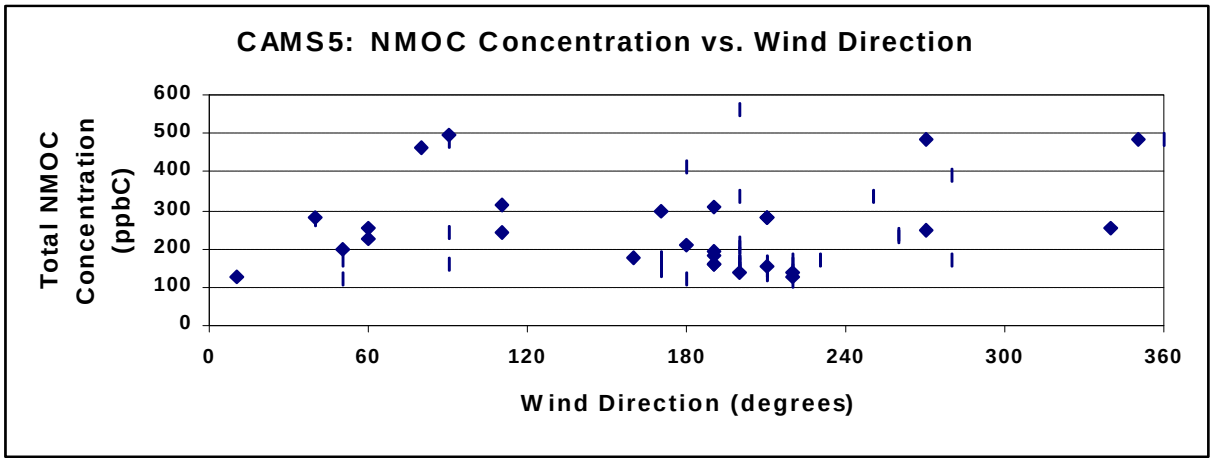
Note: Some of the graphs have a different scale for average concentrations of total NMOC.

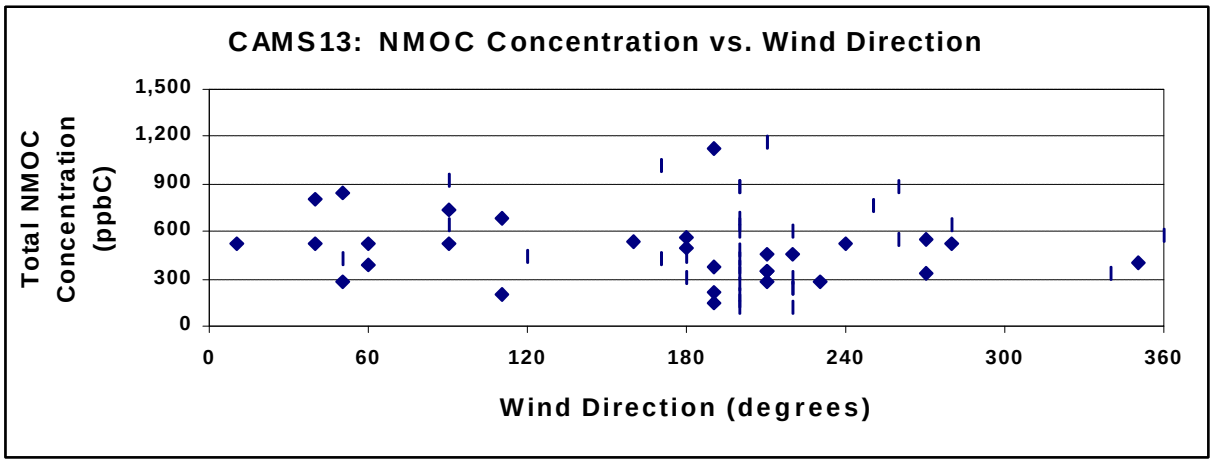
Figure 5-5 (Page 3 of 3)
Comparison of Total NMOC Concentrations at CAMS5, CAMS13, and DLTX to Selected Meteorological Parameters

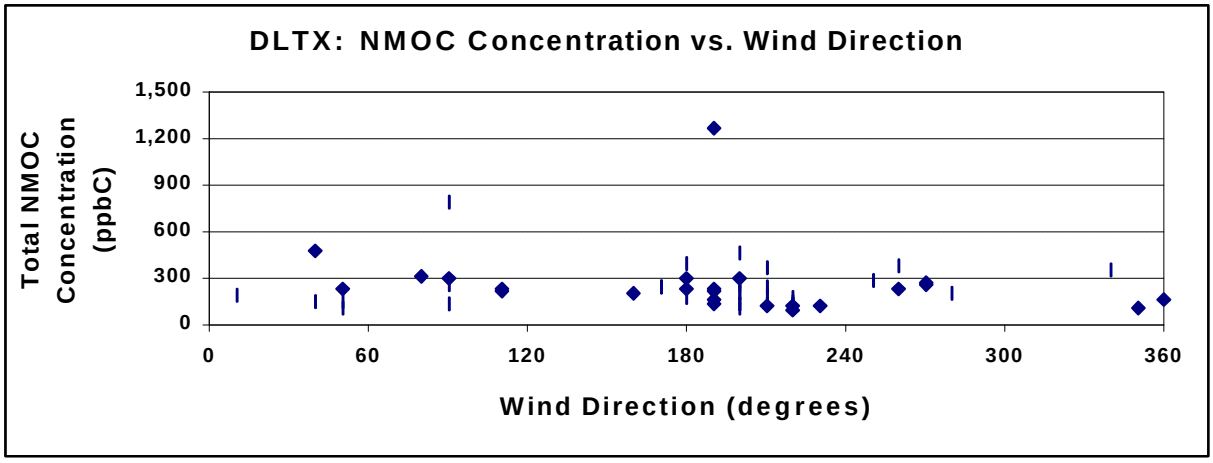


Note: Some of the graphs have a different scale for average concentrations of total NMOC.

Figure 5-6
Comparison of Total NMOC Concentrations at CAMS5, CAMS13, and DLTX to Wind Direction

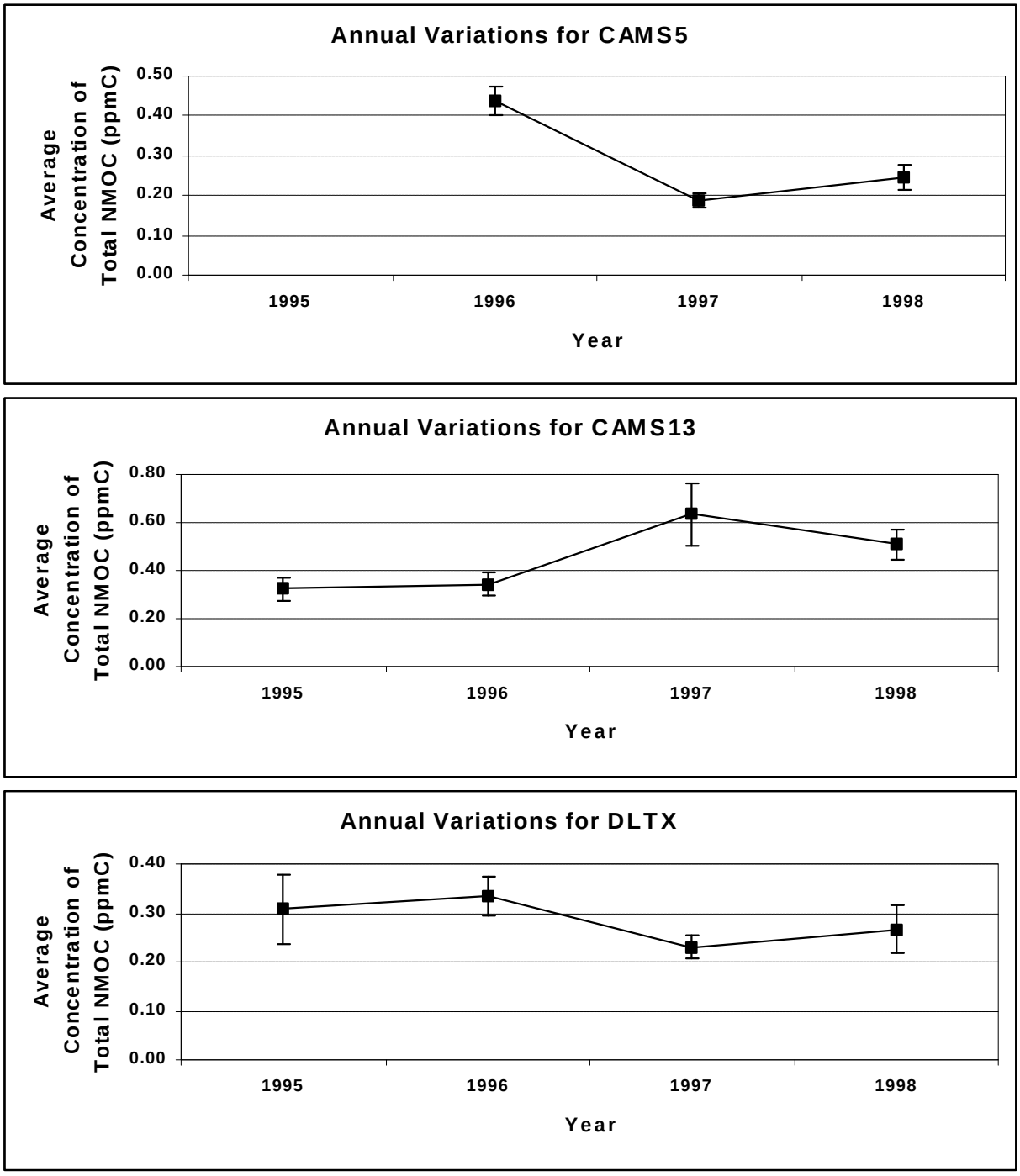






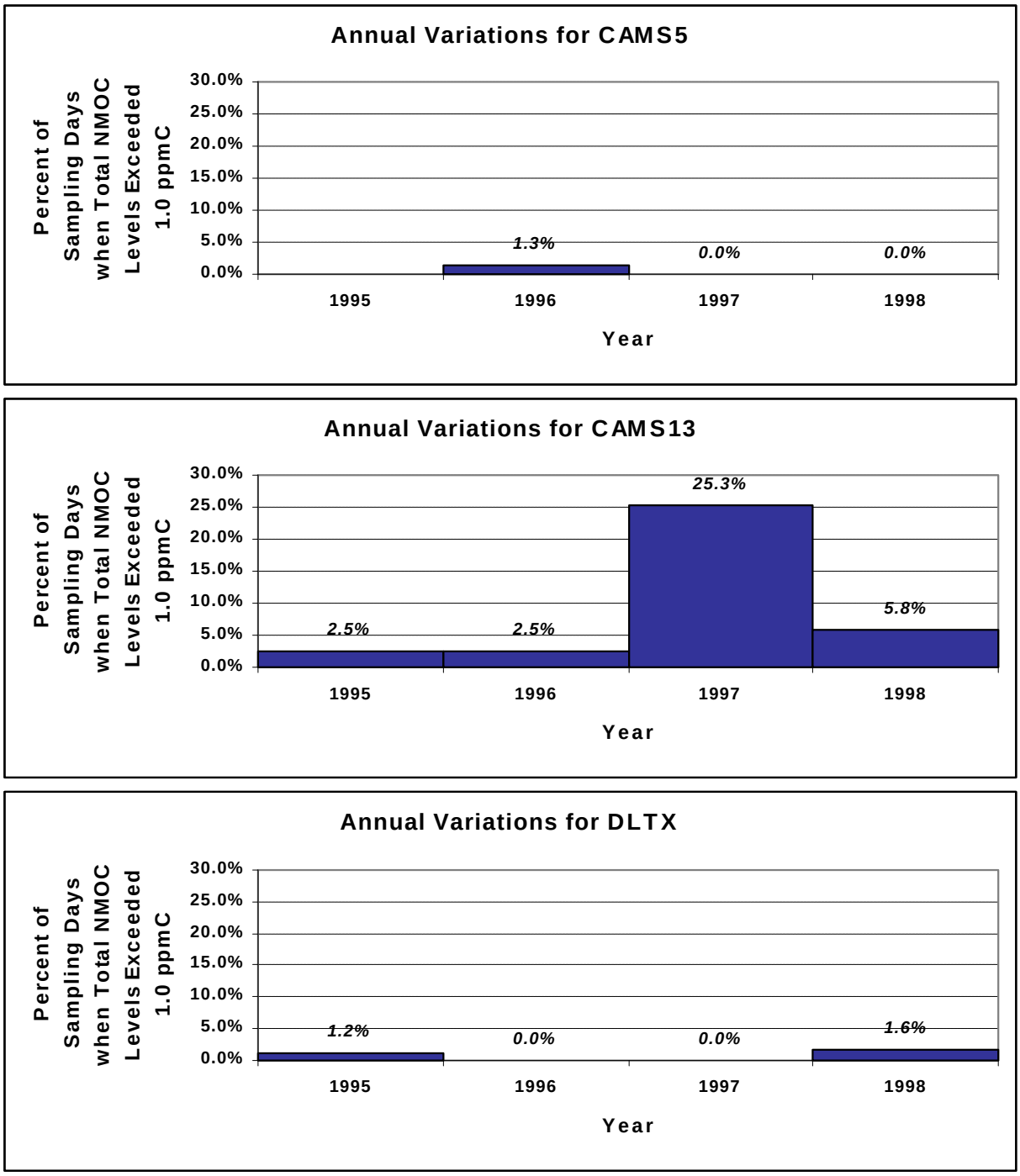
Notes: Every plot has a different scale for average concentrations of total NMOC.
Wind direction in the graphs is the direction *from which* wind blows.
Total NMOC data are not shown for the six mornings when winds were calm or variable.

Figure 5-7
Annual Variations in Average Concentrations of Total NMOC in Dallas and Fort Worth



Note: Every plot has a different scale for average concentrations of total NMOC.
The "error bars" in the graph indicate the 95-percent confidence intervals of the average concentrations.
The CAMS5 station did not participate in the 1995 NMOC/SNMOC Monitoring Program.

Figure 5-8
Annual Variations in the Frequency of Peak Concentrations of Total NMOC in the Dallas–Fort Worth Area



Notes: The three figures are shown on the same scale.
The CAMS5 station did not participate in the 1995 NMOC/SNMOC Monitoring Program.

Figure 5-9
Relative Amounts of Alkanes, Olefins, and Aromatic Compounds (on a ppbv basis) at the Dallas–Fort Worth Monitoring Stations

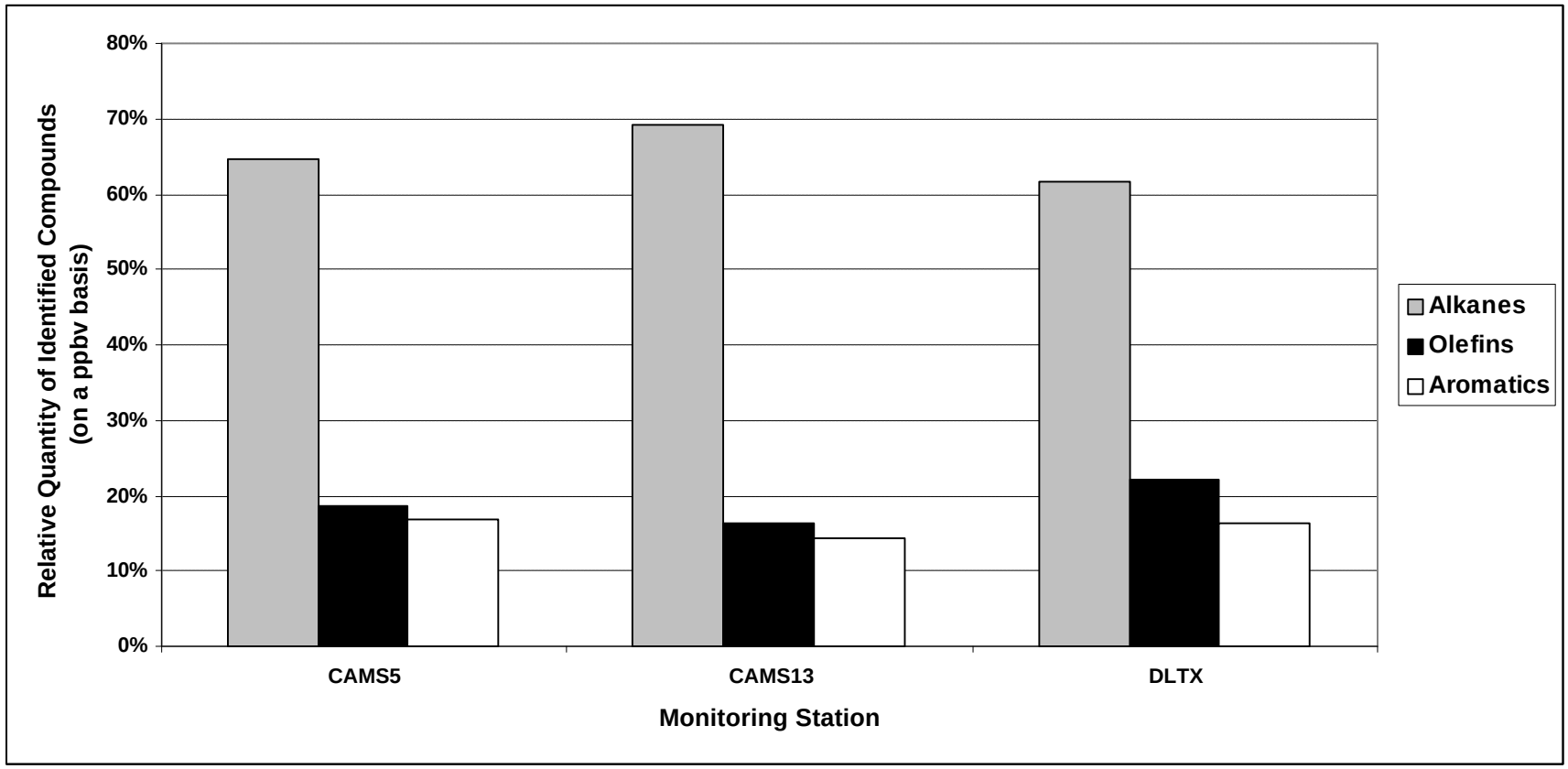
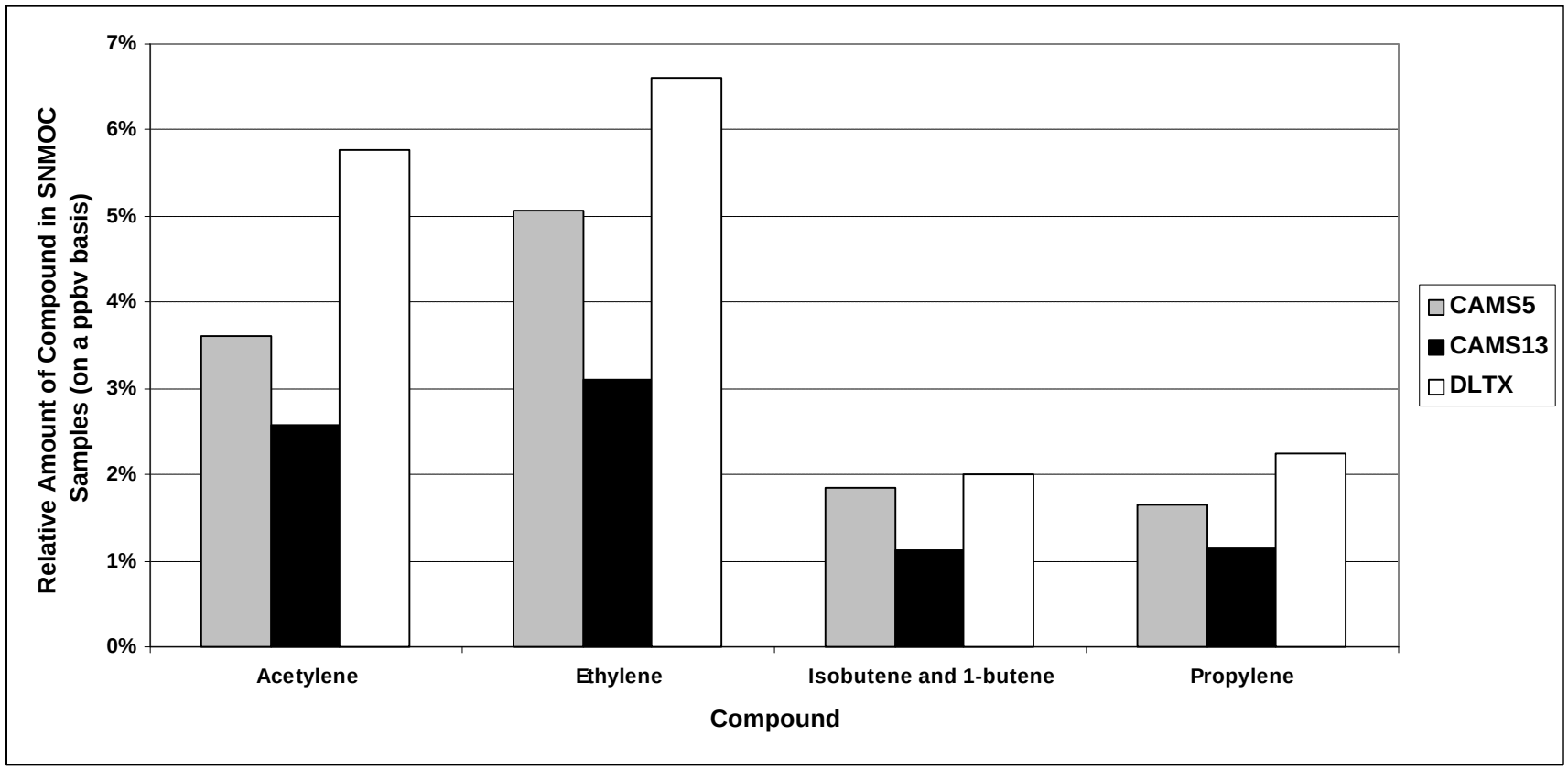


Figure 5-10
Composition Data for the Most Abundant Olefins at CAMS5, CAMS13, and DLTX



Note: As Section 5.2.2.2 explains, acetylene is an alkyne, but is included among the olefins for the composition calculations.

Figure 5-11
Composition Data for the Most Abundant Alkanes at CAMS5, CAMS13, and DLTX

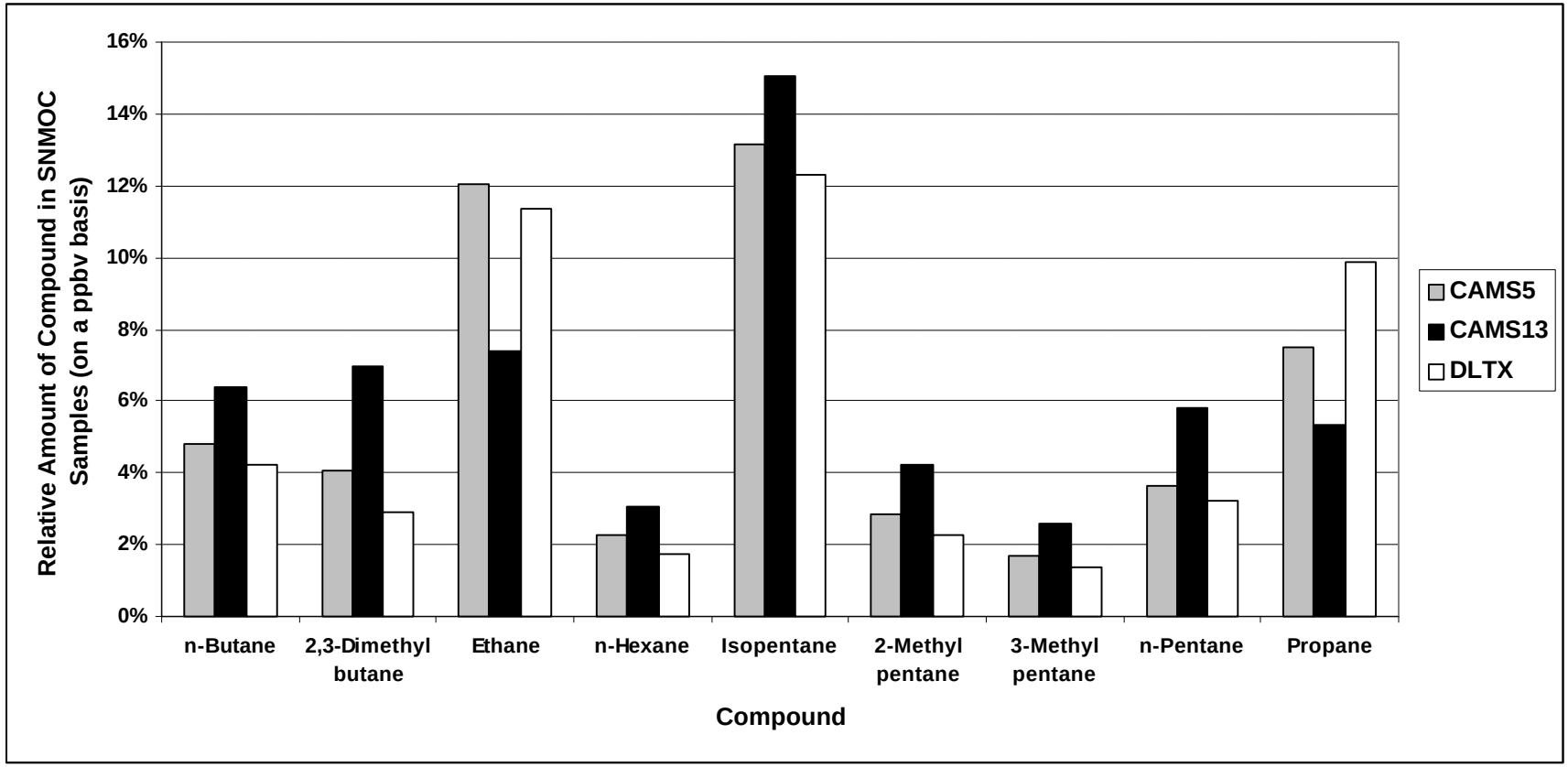


Figure 5-12
BTEX Concentration Ratios Calculated from the SNMOC Monitoring Data

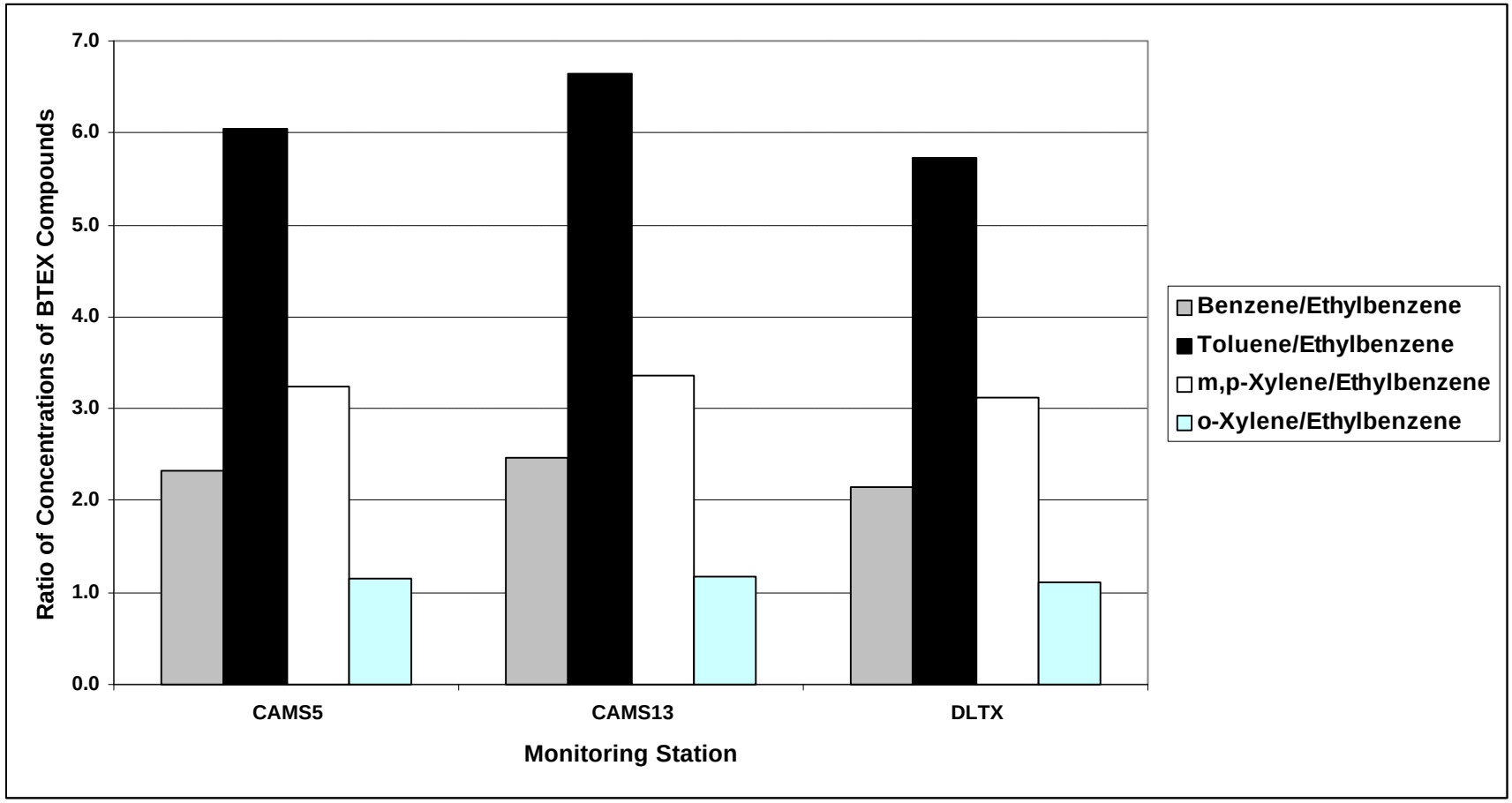
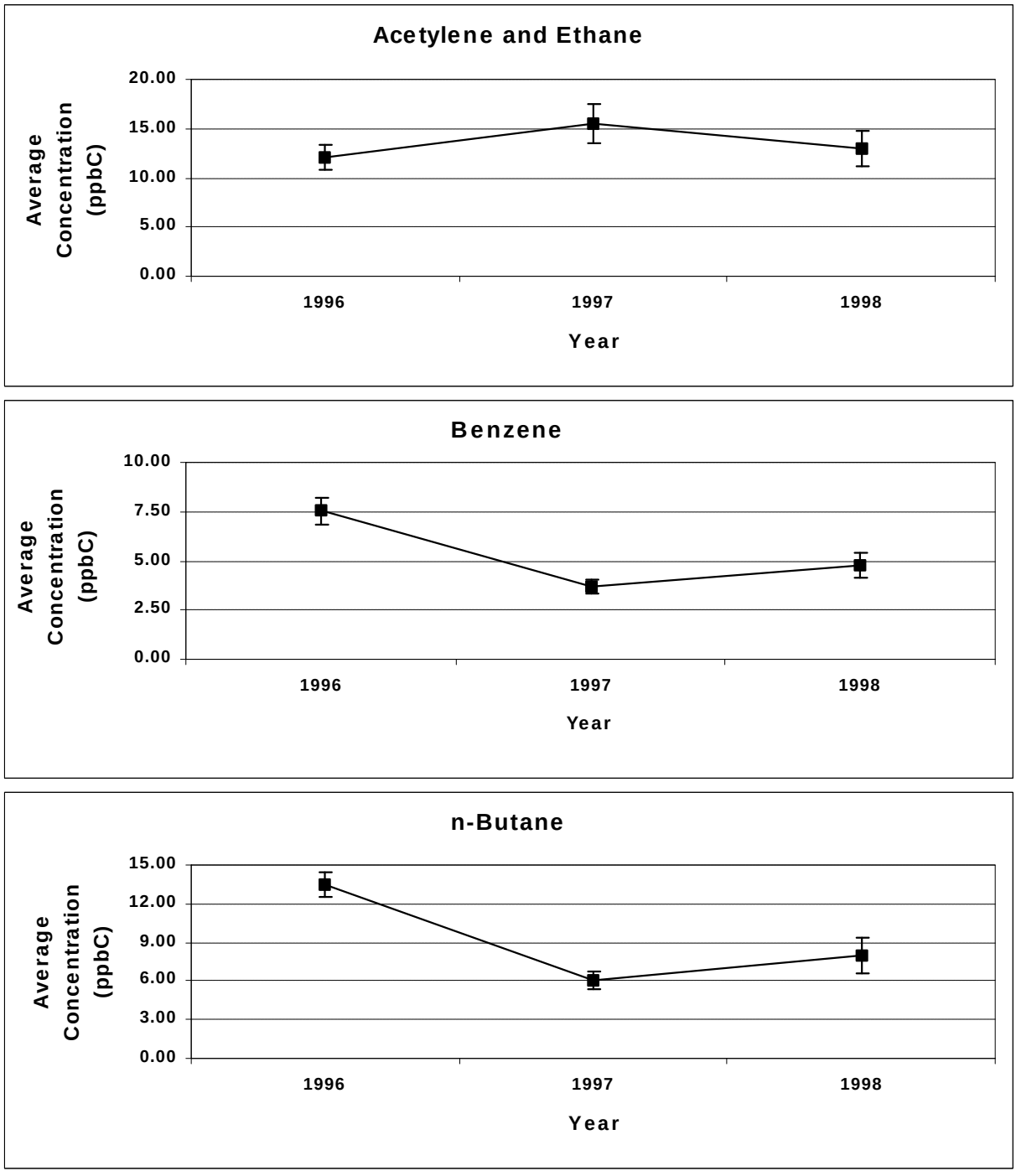
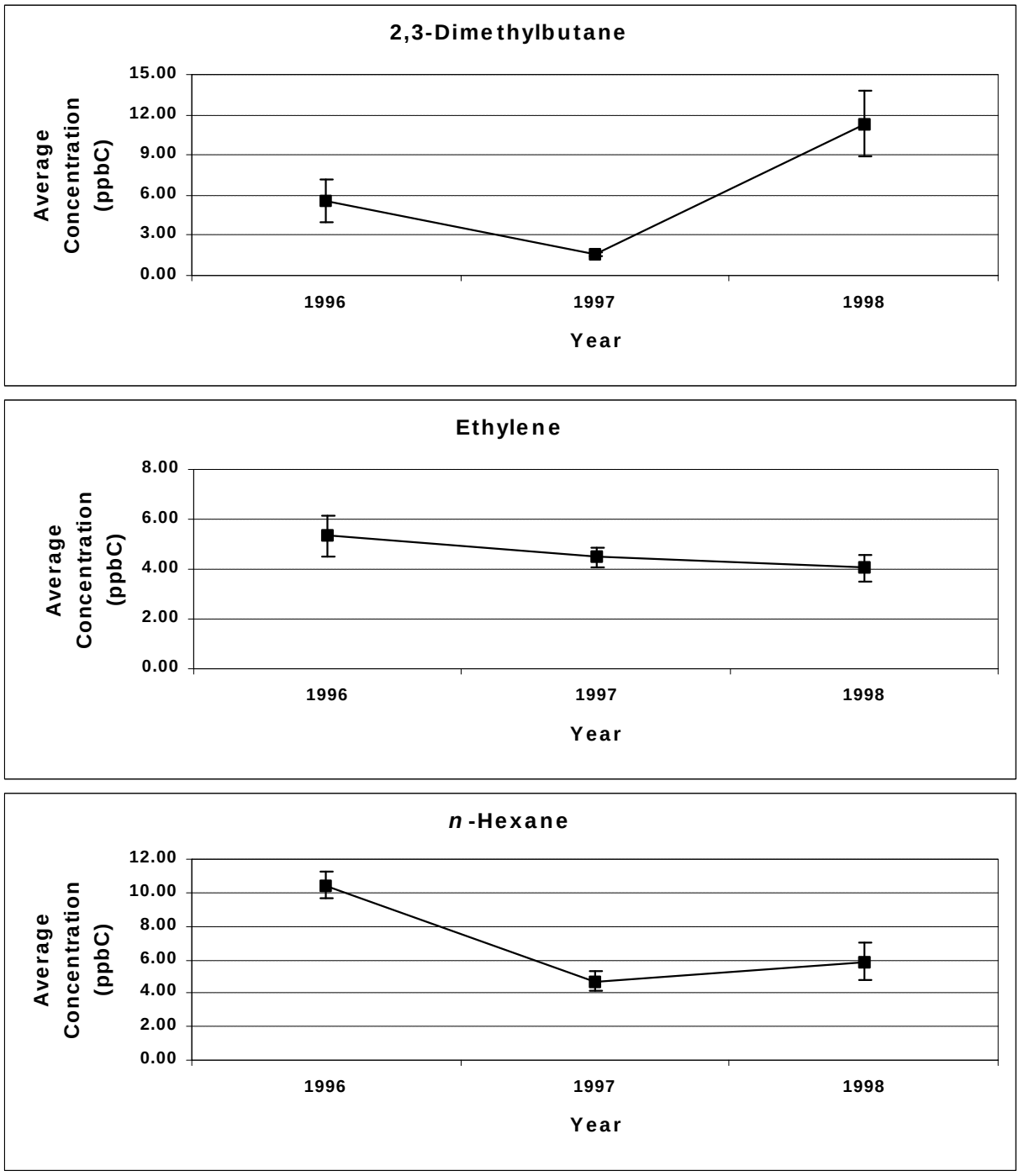


Figure 5-13 (Page 1 of 4)
Annual Variations for the Most Abundant SNMOC at CAMS5



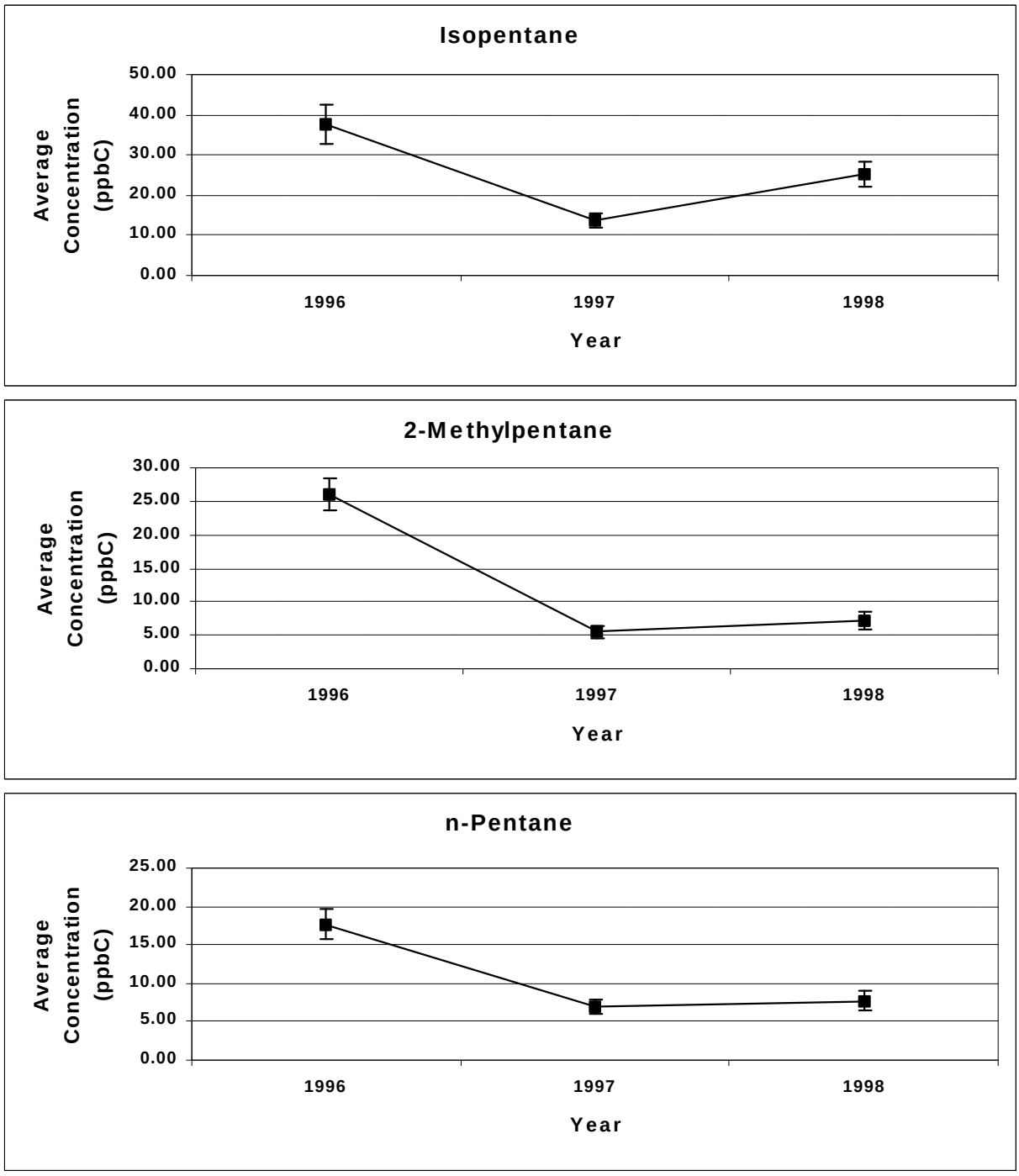
Notes: Acetylene and ethane are presented in the same graph because the sampling and analytical method used during the 1996 program could not differentiate these compounds.
Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-13 (Page 2 of 4)
Annual Variations for the Most Abundant SNMOC at CAMS5



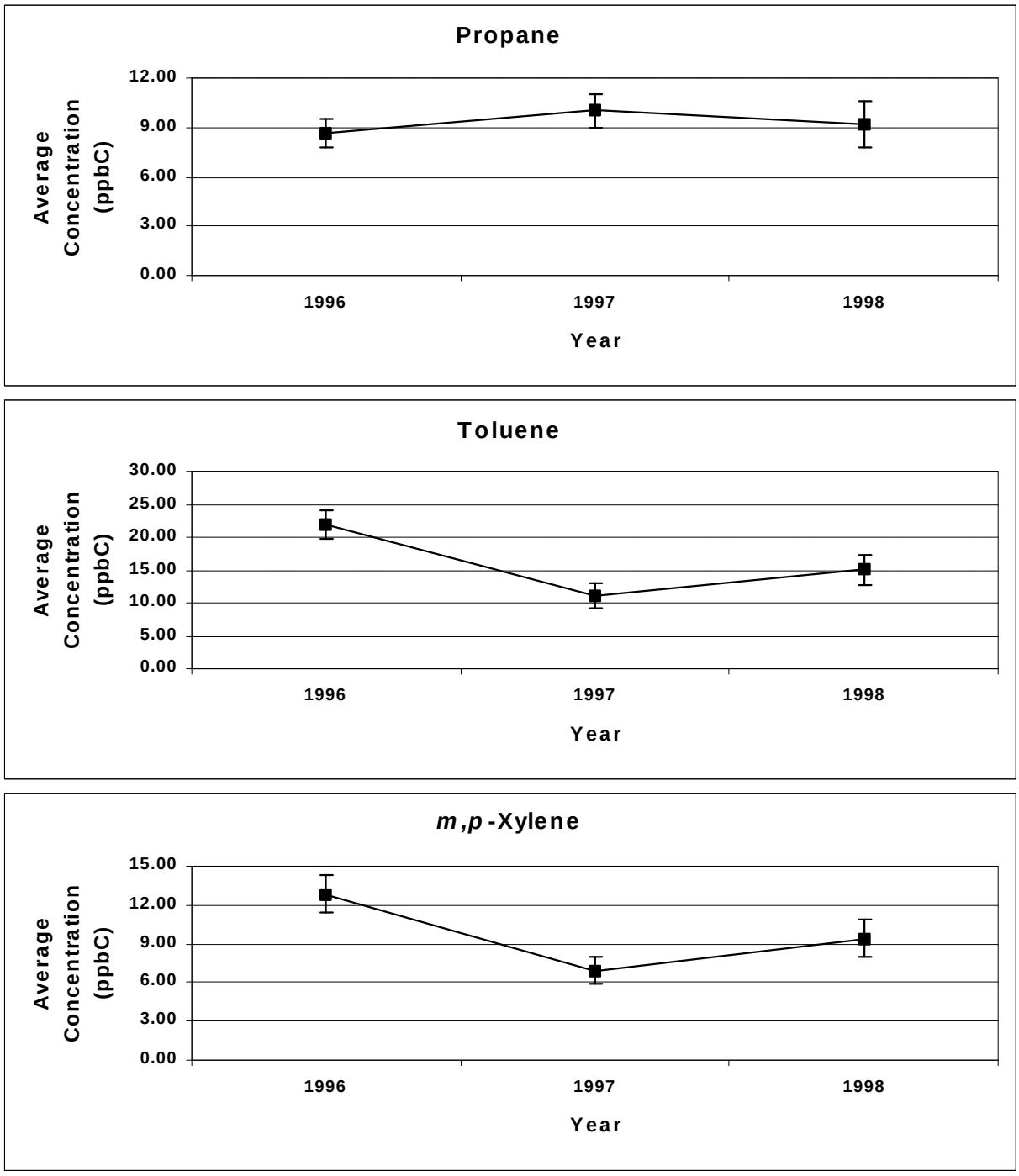
Notes: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-13 (Page 3 of 4)
Annual Variations for the Most Abundant SNMOC at CAMS5



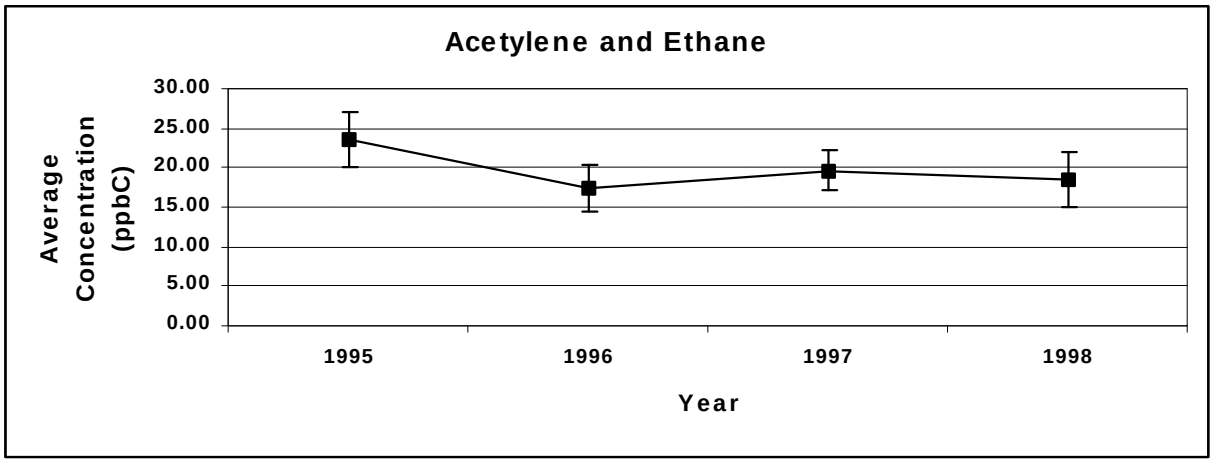
Notes: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

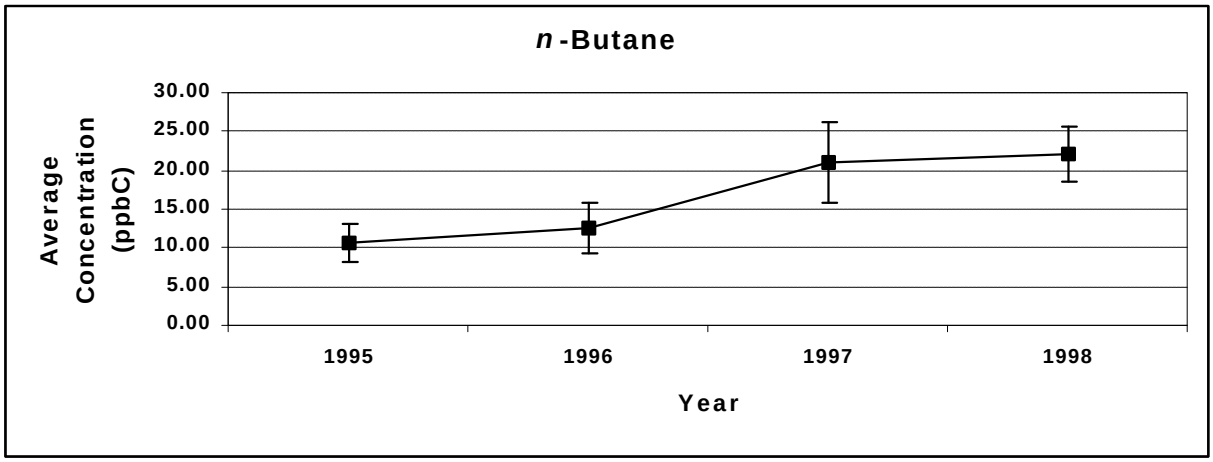
Figure 5-13 (Page 4 of 4)
Annual Variations for the Most Abundant SNMOC at CAMS5

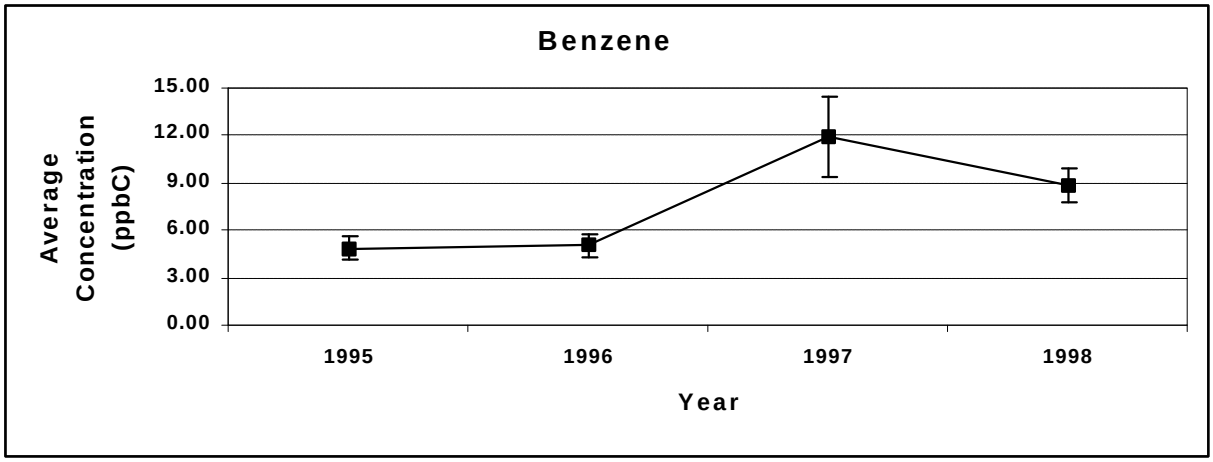


Notes: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-14 (Page 1 of 4)
Annual Variations for the Most Abundant SNMOC at CAMS13

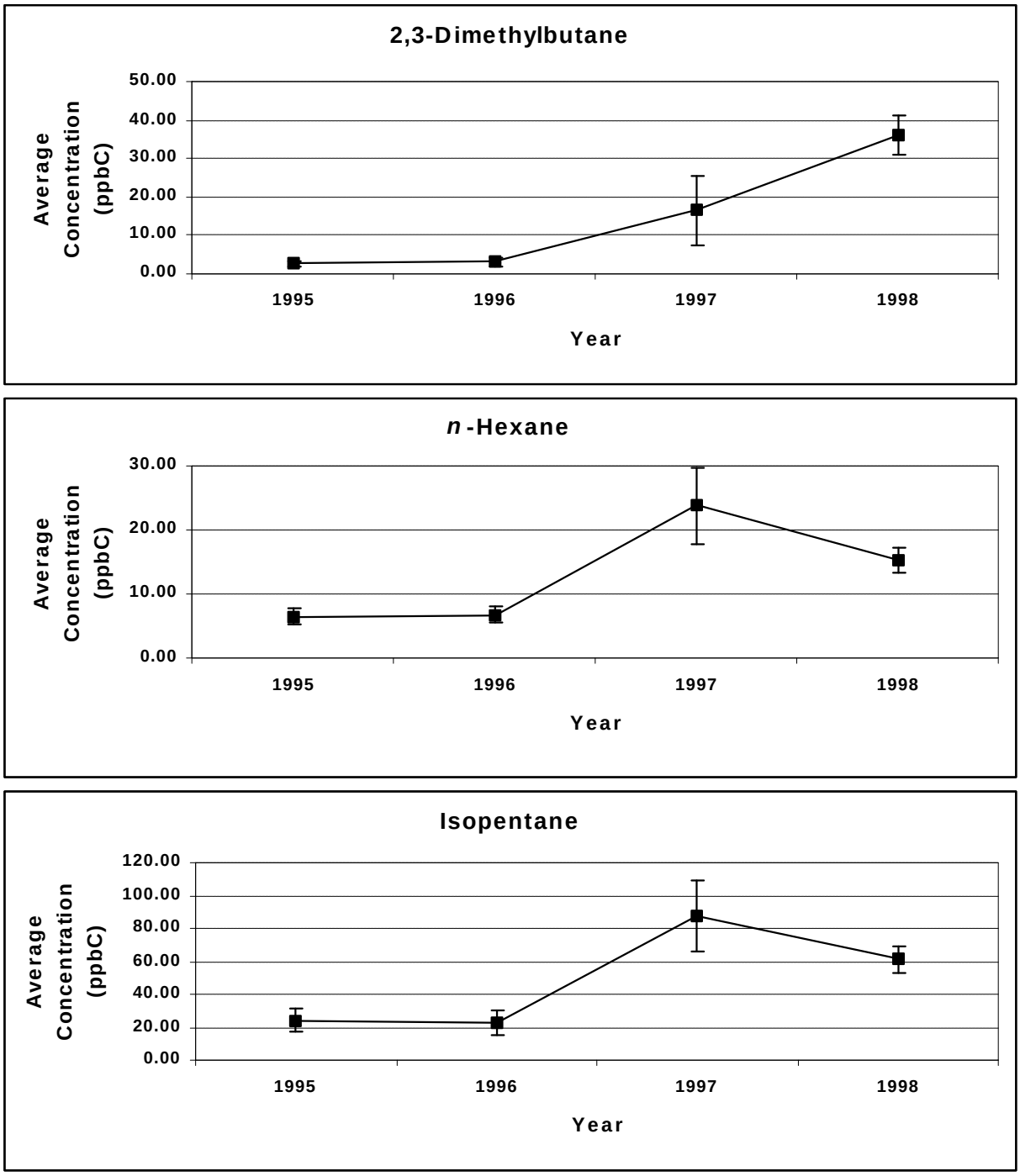






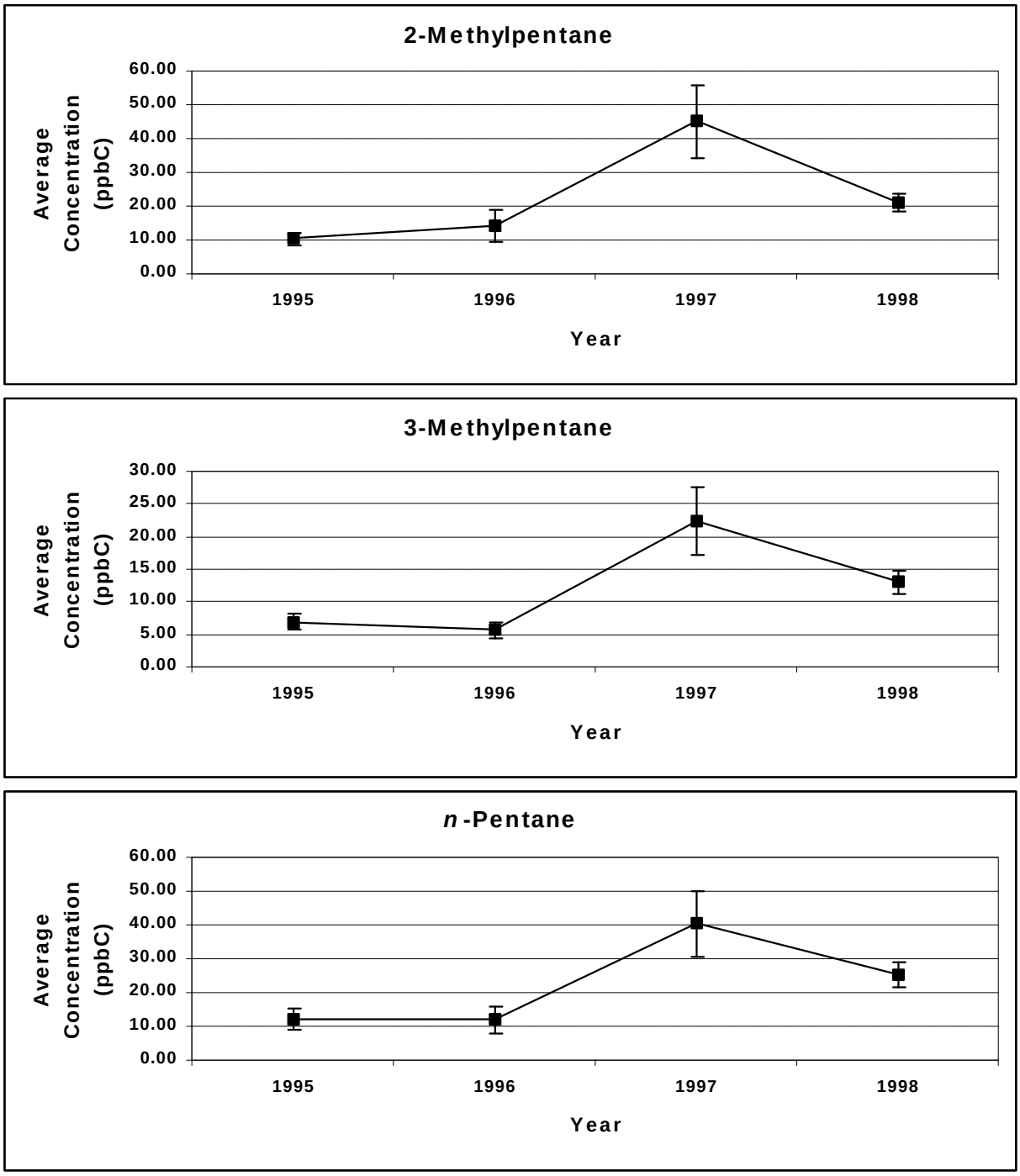
Notes: Acetylene and ethane are presented in the same graph because the sampling and analytical method used during the 1996 program could not differentiate these compounds.
Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-14 (Page 2 of 4)
Annual Variations for the Most Abundant SNMOC at CAMS13



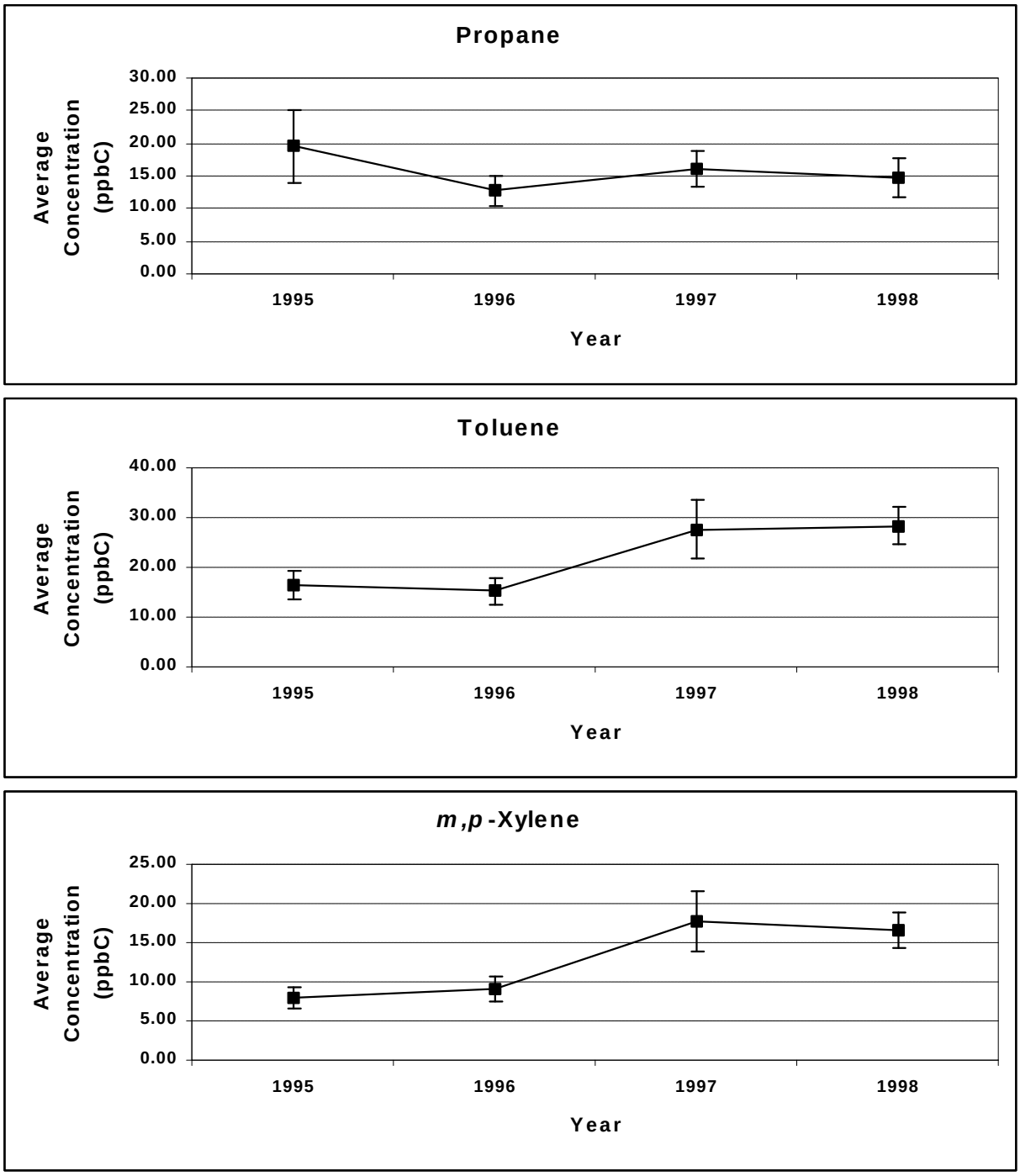
Notes: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-14 (Page 3 of 4)
Annual Variations for the Most Abundant SNMOC at CAMS13



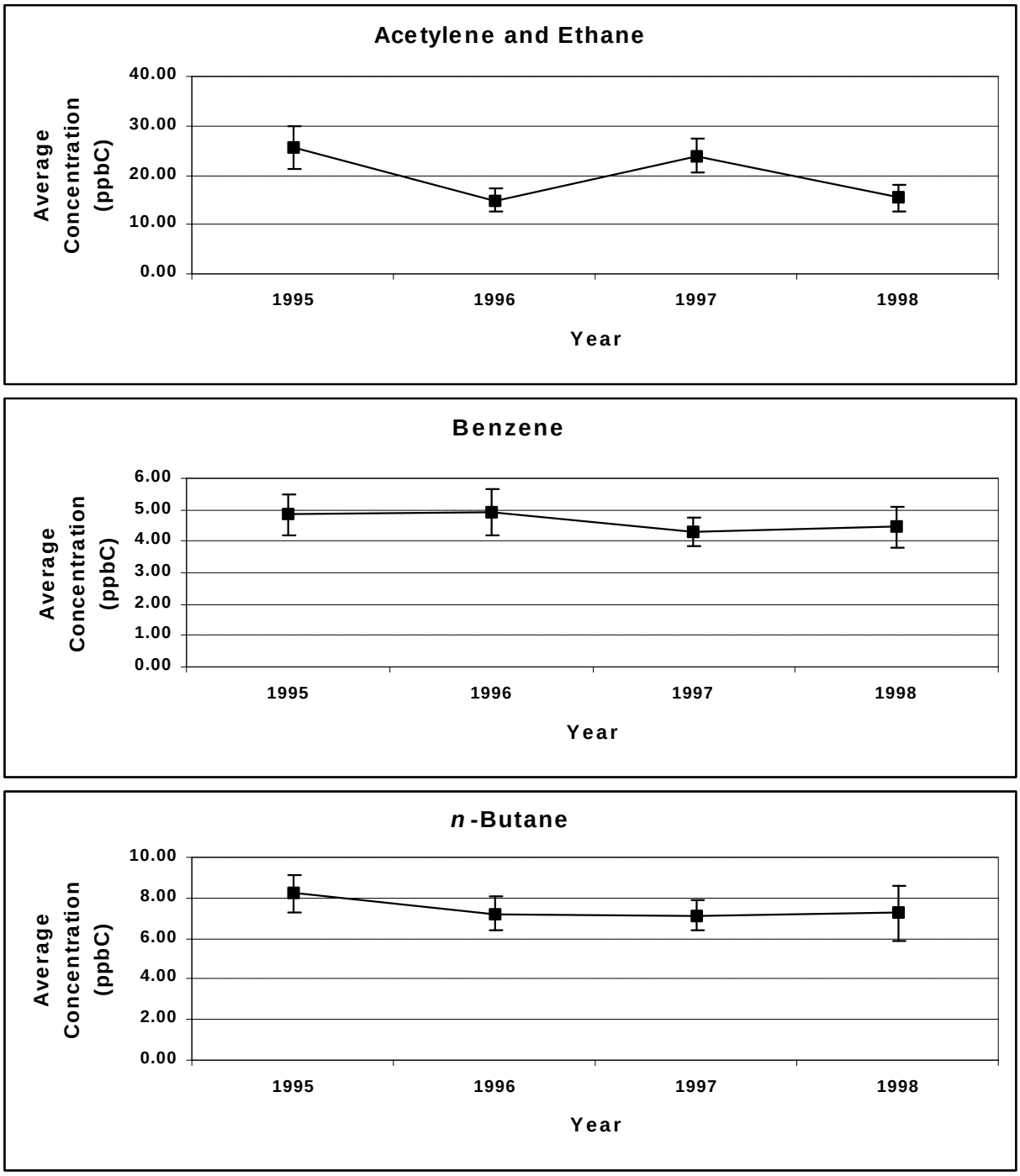
Notes: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-14 (Page 4 of 4)
Annual Variations for the Most Abundant SNMOC at CAMS13



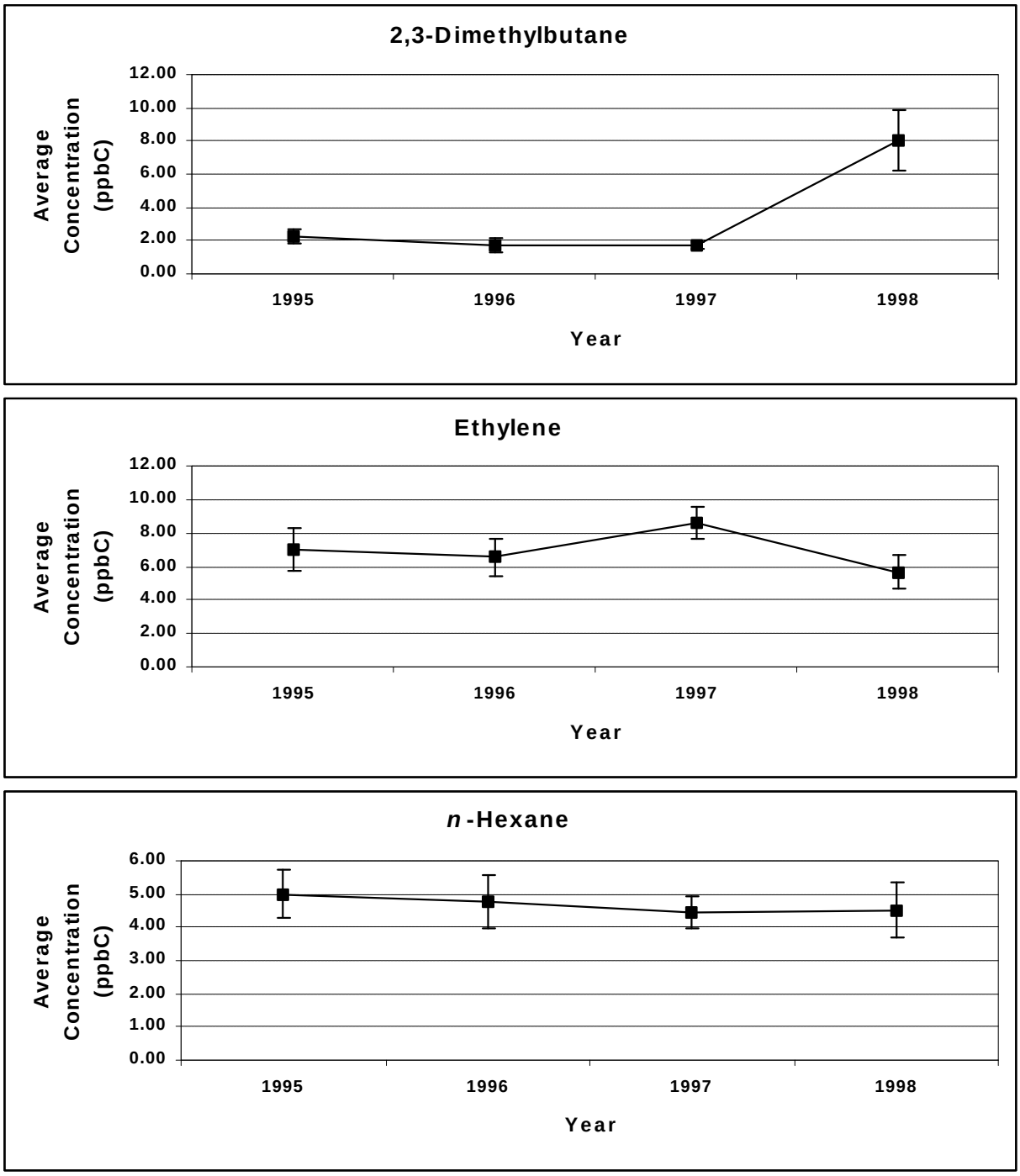
Notes: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-15 (Page 1 of 4)
Annual Variations for the Most Abundant SNMOC at DLTX



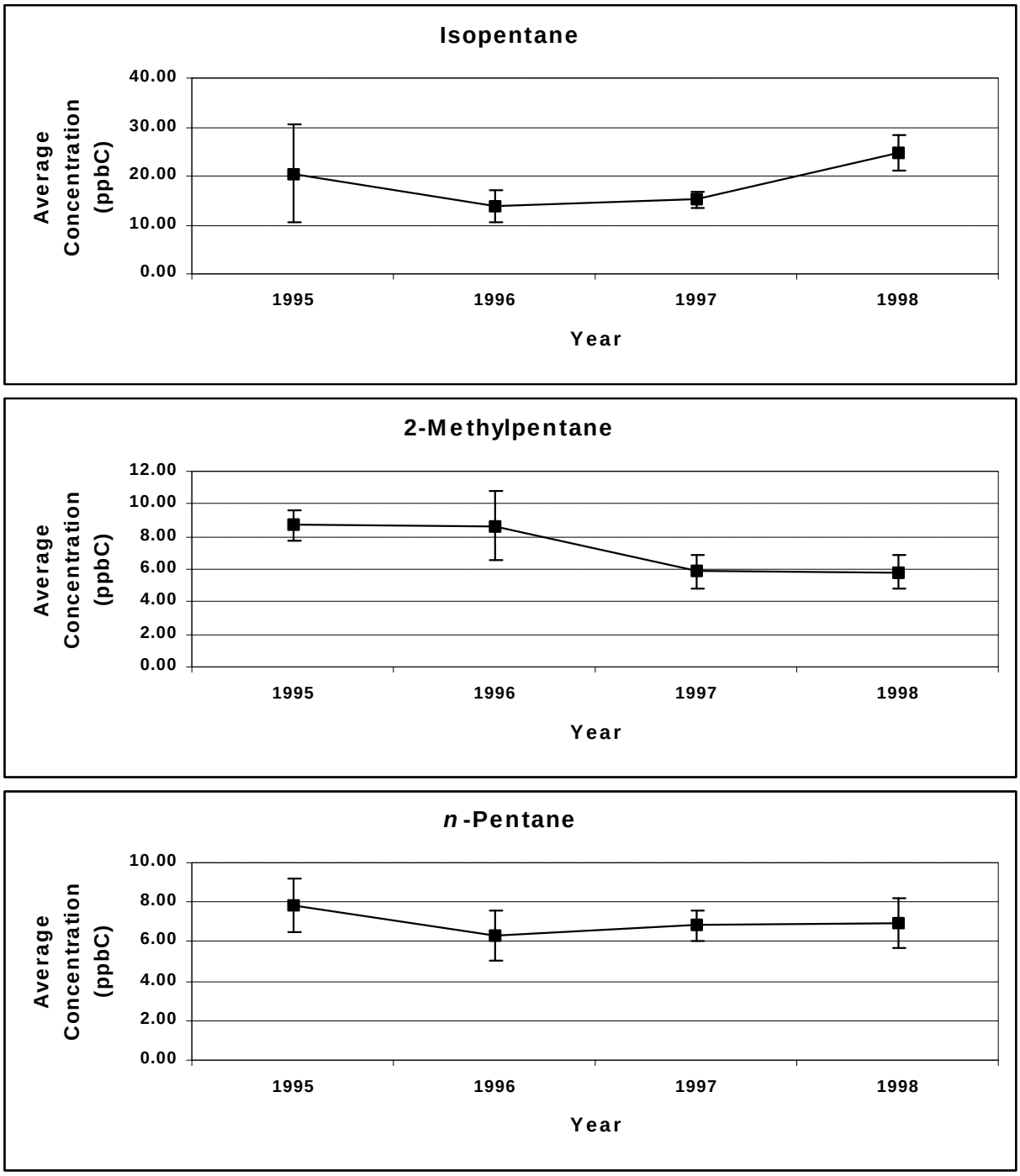
Notes: Acetylene and ethane are presented in the same graph because the sampling and analytical method used during the 1996 program could not differentiate these compounds.
Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-15 (Page 2 of 4)
Annual Variations for the Most Abundant SNMOC at DLTX



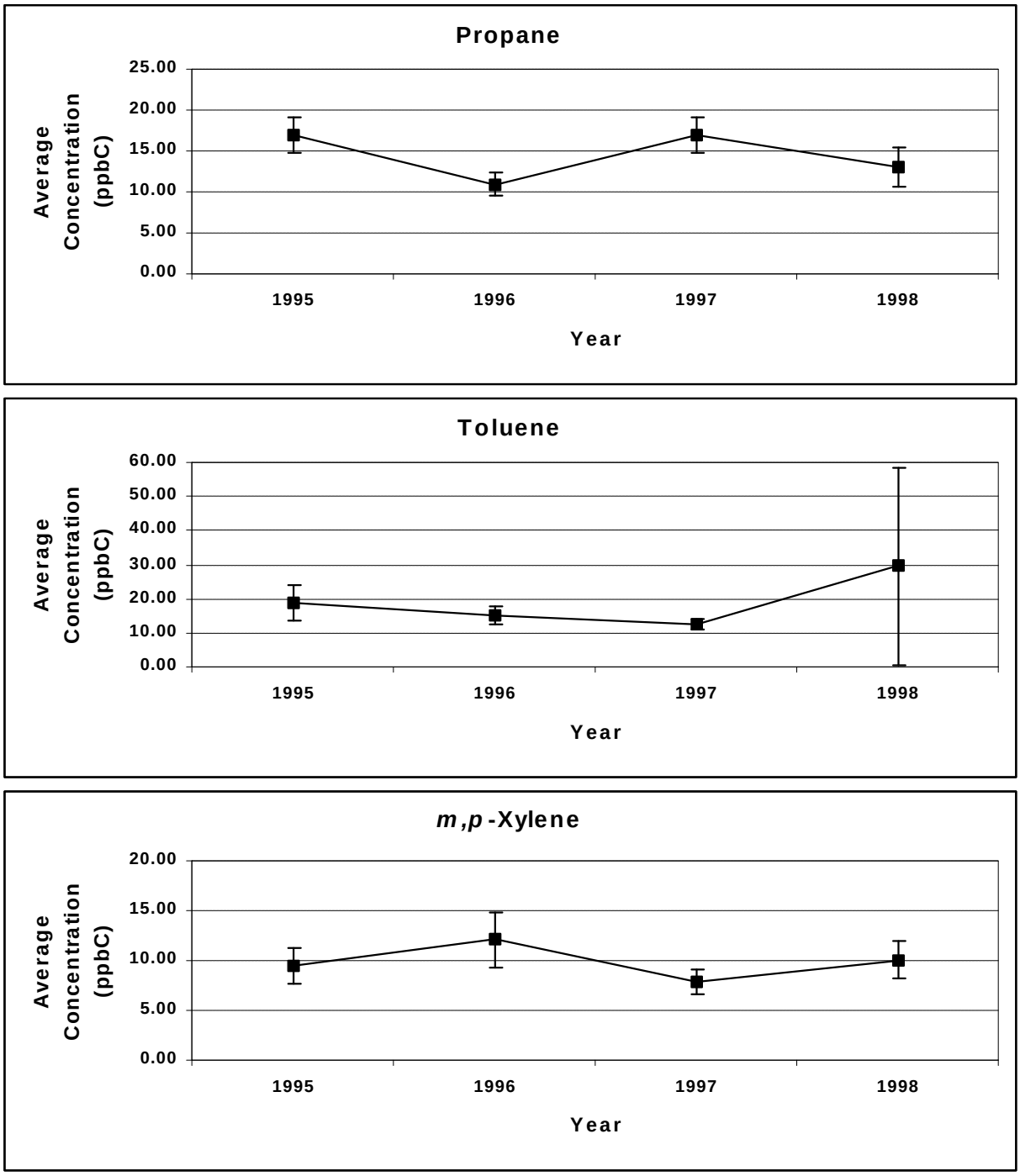
Notes: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-15 (Page 3 of 4)
Annual Variations for the Most Abundant SNMOC at DLTX



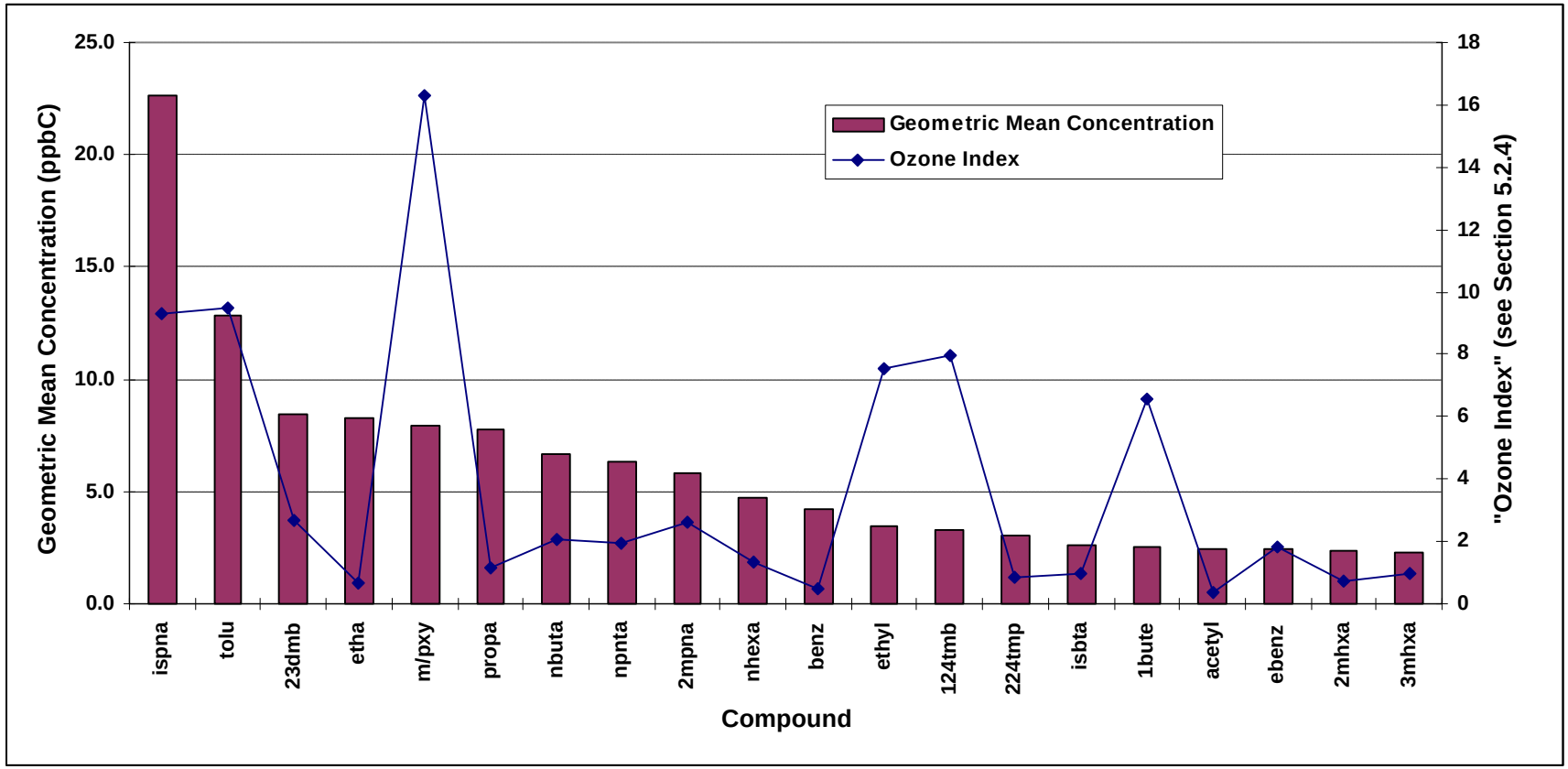
Notes: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-15 (Page 4 of 4)
Annual Variations for the Most Abundant SNMOC at DLTX



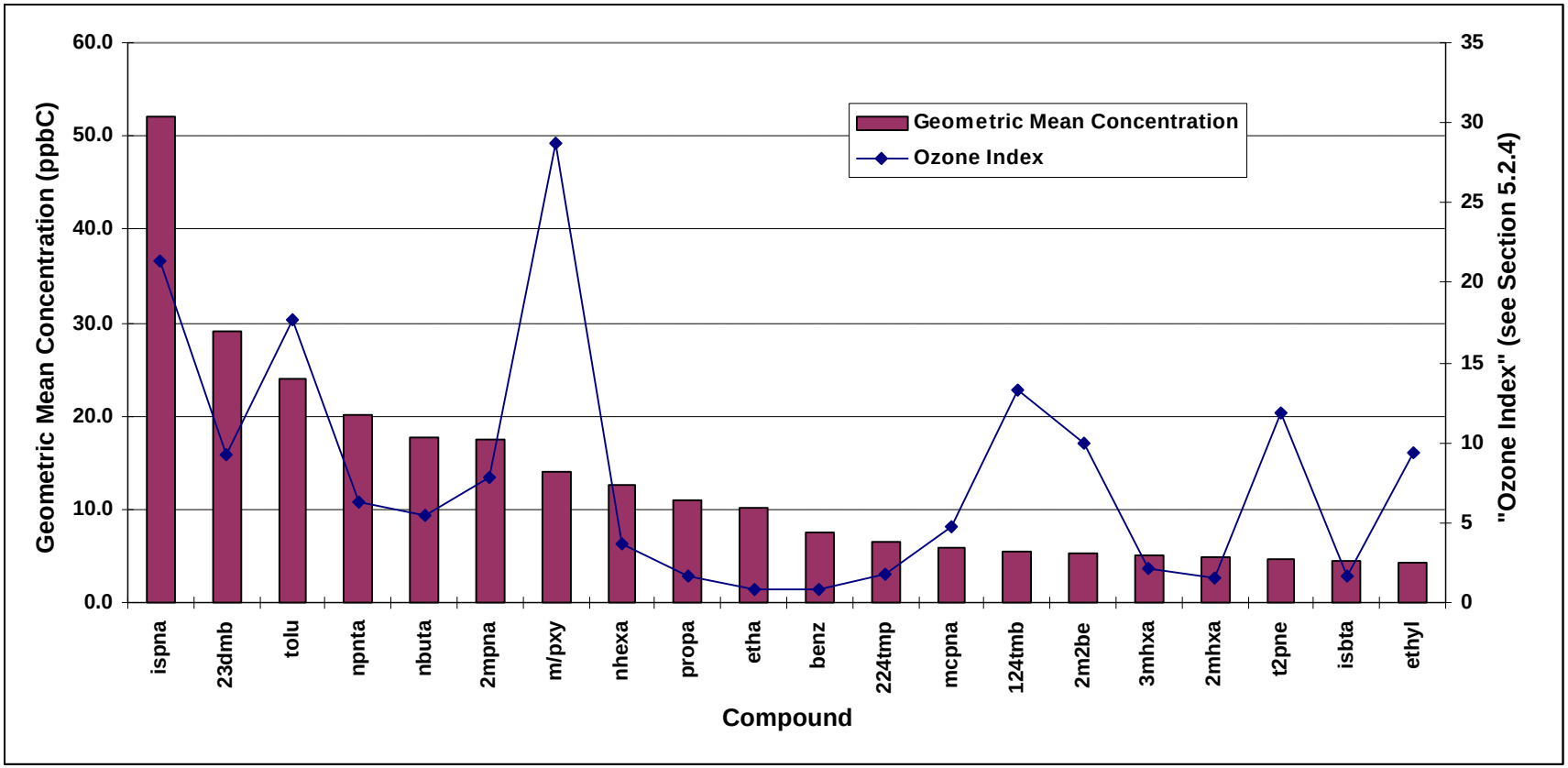
Notes: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 5-16
Ozone Indices for the 20 SNMOC with the Highest Geometric Mean Concentrations at CAMS5



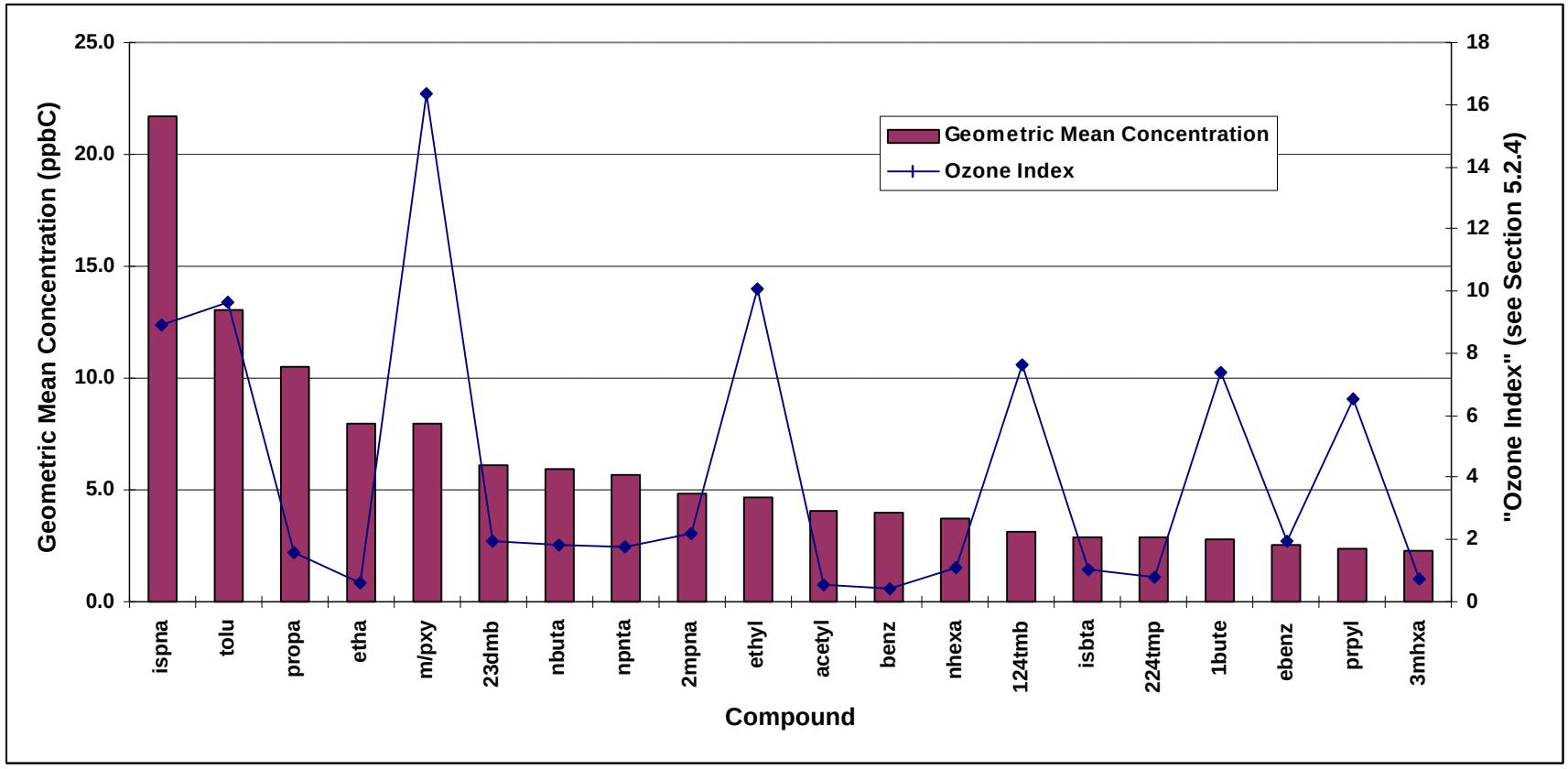
Notes: Only those compounds with MIR values listed in Table 3-1 were considered.
Table 5-7 lists the abbreviations used for the compounds.

Figure 5-17
Ozone Indices for the 20 SNMOC with the Highest Geometric Mean Concentrations at CAMS13



Notes: Only those compounds with MIR values listed in Table 3-1 were considered.
Table 5-7 lists the abbreviations used for the compounds.

Figure 5-18
Ozone Indices for the 20 SNMOC with Highest Geometric Mean Concentration at DLTX



Notes: Only those compounds with MIR values listed in Table 3-1 were considered.
Table 5-7 lists the abbreviations used for the compounds.

Table 5-1
Summary Statistics for Concentrations of Total NMOC in Dallas and Fort Worth

Category	Parameter	Monitoring Station		
		CAMS5	CAMS13	DLTX
Prevalence	Number of valid sampling days	68	69	62
	Number of nondetects	0	0	0
	Frequency of detection	100%	100%	100%
Concentration Range	Lowest concentration (ppmC)	0.115	0.114	0.089
	25th percentile concentration (ppmC)	0.159	0.312	0.144
	50th percentile concentration (ppmC)	0.200	0.455	0.222
	75th percentile concentration (ppmC)	0.286	0.637	0.293
	Highest concentration (ppmC)	0.645	1.165	1.267
Central Tendency	Median concentration (ppmC)	0.200	0.455	0.222
	Arithmetic mean concentration (ppmC)	0.247	0.509	0.266
	Geometric mean concentration (ppmC)	0.222	0.446	0.227
Variability	Standard deviation (ppmC)	0.125	0.255	0.191
	Coefficient of variation	0.51	0.50	0.72

Table 5-2
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (CAMS5)
(Based on 68 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Acetylene	0	100%	0.80	18.45	2.30	3.05	2.48	2.57	0.84
Benzene	0	100%	1.77	11.66	4.14	4.76	4.19	2.54	0.53
1,3-Butadiene	1	99%	ND	1.32	0.27	0.33	0.28	0.23	0.68
n-Butane	0	100%	2.71	30.74	6.19	8.01	6.64	5.85	0.73
cis-2-Butene	0	100%	0.09	2.17	0.58	0.68	0.54	0.46	0.67
trans-2-Butene	0	100%	0.06	2.23	0.45	0.61	0.46	0.47	0.77
Cyclohexane	0	100%	0.33	25.20	1.32	2.91	1.64	4.66	1.60
Cyclopentane	0	100%	0.20	3.57	0.76	1.05	0.83	0.79	0.76
Cyclopentene	0	100%	0.32	3.71	0.89	1.08	0.93	0.65	0.60
n-Decane	0	100%	0.26	3.65	0.82	0.98	0.86	0.57	0.58
1-Decene	68	0%	ND	ND	0.14	0.14	0.14	0.00	0.00
m-Diethylbenzene	0	100%	0.07	1.98	0.50	0.51	0.43	0.29	0.56
p-Diethylbenzene	0	100%	0.11	1.80	0.44	0.47	0.40	0.27	0.58
2,2-Dimethylbutane	0	100%	0.23	3.08	0.94	1.09	0.92	0.65	0.59
2,3-Dimethylbutane	0	100%	3.03	44.66	6.60	11.29	8.45	10.18	0.90
2,3-Dimethylpentane	0	100%	0.31	3.02	1.12	1.26	1.14	0.57	0.45
2,4-Dimethylpentane	0	100%	0.34	2.67	0.93	1.12	0.97	0.61	0.55
n-Dodecane	5	93%	ND	7.17	0.37	0.61	0.41	0.93	1.53

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (CAMS5)
(Based on 68 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
1-Dodecene	23	66%	ND	1.38	0.14	0.24	0.19	0.23	0.95
Ethane	0	100%	2.63	33.98	8.82	9.90	8.29	6.18	0.62
Ethylbenzene	0	100%	1.08	8.77	2.22	2.85	2.47	1.68	0.59
2-Ethyl-1-Butene	68	0%	ND	ND	0.12	0.12	0.12	0.00	0.00
Ethylene	0	100%	1.23	13.06	3.40	4.04	3.49	2.32	0.58
m-Ethyltoluene	0	100%	1.09	8.45	1.98	2.61	2.28	1.52	0.58
o-Ethyltoluene	0	100%	0.42	3.42	0.94	1.16	1.03	0.60	0.52
p-Ethyltoluene	0	100%	0.53	5.32	1.22	1.55	1.36	0.86	0.56
n-Heptane	0	100%	1.01	7.79	1.85	2.42	2.05	1.60	0.66
1-Heptene	41	40%	ND	0.94	0.26	0.25	0.23	0.12	0.46
n-Hexane	0	100%	1.86	18.78	4.06	5.85	4.69	4.60	0.79
1-Hexene	0	100%	0.12	1.03	0.24	0.32	0.27	0.21	0.66
cis-2-Hexene	4	94%	ND	0.97	0.14	0.23	0.17	0.21	0.94
trans-2-Hexene	0	100%	0.07	1.59	0.22	0.38	0.28	0.36	0.94
Isobutane	0	100%	0.83	9.53	2.94	3.12	2.65	1.87	0.60
Isobutene/1-Butene	0	100%	1.39	6.77	2.39	2.69	2.54	1.00	0.37
Isopentane	0	100%	9.84	69.60	21.25	25.28	22.67	13.14	0.52
Isoprene	0	100%	0.58	7.15	1.60	1.67	1.46	0.99	0.59

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (CAMS5)
(Based on 68 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Isopropylbenzene	0	100%	0.05	1.55	0.47	0.45	0.36	0.24	0.53
2-Methyl-1-Butene	0	100%	0.13	4.84	0.68	1.15	0.84	1.10	0.95
2-Methyl-2-Butene	0	100%	0.20	8.31	0.95	1.88	1.25	2.03	1.08
3-Methyl-1-Butene	6	91%	ND	1.70	0.27	0.47	0.30	0.44	0.93
Methylcyclohexane	0	100%	0.57	4.03	1.19	1.38	1.26	0.69	0.50
Methylcyclopentane	0	100%	0.97	7.20	1.91	2.63	2.21	1.76	0.67
2-Methylheptane	0	100%	0.34	2.90	0.78	0.97	0.85	0.56	0.57
3-Methylheptane	0	100%	0.28	2.59	0.76	0.92	0.80	0.51	0.56
2-Methylhexane	0	100%	0.76	7.24	2.09	2.64	2.35	1.42	0.54
3-Methylhexane	0	100%	1.02	7.34	2.04	2.67	2.31	1.62	0.61
2-Methylpentane	0	100%	2.93	23.16	5.21	7.11	5.84	5.24	0.74
3-Methylpentane	0	100%	1.35	14.95	3.05	4.37	3.48	3.44	0.79
2-Methyl-1-Pentene	0	100%	0.07	1.45	0.26	0.40	0.30	0.35	0.89
4-Methyl-1-Pentene	27	60%	ND	0.40	0.12	0.12	0.10	0.08	0.68
n-Nonane	0	100%	0.30	3.57	0.83	0.95	0.85	0.52	0.55
1-Nonene	8	88%	ND	0.43	0.14	0.16	0.15	0.08	0.46
n-Octane	0	100%	0.50	4.34	1.09	1.33	1.17	0.74	0.55
1-Octene	6	91%	ND	0.86	0.10	0.12	0.10	0.10	0.85

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (CAMS5)
(Based on 68 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
n-Pentane	0	100%	2.18	24.01	5.63	7.75	6.30	5.60	0.72
1-Pentene	0	100%	0.07	3.68	0.70	0.98	0.74	0.79	0.81
cis-2-Pentene	0	100%	0.12	3.47	0.70	0.99	0.74	0.80	0.81
trans-2-Pentene	0	100%	0.27	6.46	1.03	1.69	1.25	1.53	0.91
"-Pinene	2	97%	ND	2.29	0.32	0.42	0.32	0.38	0.91
$-Pinene	0	100%	0.29	2.54	0.82	0.96	0.84	0.52	0.54
Propane	0	100%	2.46	38.32	8.25	9.18	7.76	5.86	0.64
n-Propylbenzene	0	100%	0.29	3.11	0.79	0.92	0.82	0.48	0.52
Propylene	0	100%	0.89	6.12	1.53	1.90	1.70	1.02	0.54
Propyne	8	88%	ND	0.64	0.14	0.16	0.13	0.10	0.63
Styrene	0	100%	0.65	3.19	1.21	1.39	1.30	0.55	0.40
Toluene	0	100%	5.51	44.78	11.76	15.06	12.86	9.20	0.61
n-Tridecane	3	96%	ND	61.56	0.13	1.09	0.14	7.45	6.85
1-Tridecene	46	32%	ND	0.17	0.14	0.12	0.11	0.04	0.35
1,2,3-Trimethylbenzene	0	100%	0.25	3.02	0.70	0.89	0.75	0.56	0.63
1,2,4-Trimethylbenzene	0	100%	1.39	12.67	2.75	3.76	3.26	2.27	0.60
1,3,5-Trimethylbenzene	0	100%	0.36	4.76	1.06	1.40	1.20	0.85	0.61
2,2,3-Trimethylpentane	0	100%	0.13	2.80	0.68	0.91	0.76	0.58	0.64

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (CAMS5)
(Based on 68 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
2,2,4-Trimethylpentane	0	100%	1.41	10.66	2.62	3.55	3.04	2.18	0.62
2,3,4-Trimethylpentane	0	100%	0.58	4.22	1.08	1.40	1.22	0.82	0.59
n-Undecane	0	100%	0.19	3.46	0.85	0.97	0.83	0.58	0.60
1-Undecene	21	69%	ND	0.25	0.10	0.11	0.10	0.05	0.43
m,p-Xylene	0	100%	3.38	30.43	6.91	9.38	7.96	6.00	0.64
o-Xylene	0	100%	1.38	10.42	2.53	3.32	2.86	2.00	0.60
TNMOC (w/ unknowns)	0	100%	115.25	645.14	200.37	246.52	222.04	124.86	0.51
TNMOC (speciated)	0	100%	74.38	539.96	161.84	201.40	177.86	110.23	0.55

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-3
Summary Statistics for SNMOC Concentrations Measured at Fort Worth, TX (CAMS13)
(Based on 69 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Acetylene	0	100%	0.89	15.24	3.63	4.52	3.57	3.21	0.71
Benzene	0	100%	2.01	23.43	7.97	8.84	7.61	4.69	0.53
1,3-Butadiene	1	99%	ND	2.32	0.36	0.53	0.39	0.46	0.86
n-Butane	0	100%	2.59	85.89	19.29	22.13	17.66	14.93	0.67
cis-2-Butene	0	100%	0.16	5.42	1.43	1.81	1.49	1.11	0.61
trans-2-Butene	1	99%	ND	5.42	1.29	1.67	1.31	1.12	0.67
Cyclohexane	0	100%	0.37	52.49	2.47	4.60	2.57	7.93	1.73
Cyclopentane	0	100%	0.29	7.40	2.98	3.26	2.68	1.77	0.54
Cyclopentene	0	100%	0.33	4.97	1.62	1.78	1.54	0.97	0.54
n-Decane	0	100%	0.21	4.69	1.06	1.39	1.15	0.93	0.67
1-Decene	69	0%	ND	ND	0.14	0.14	0.14	0.00	0.00
m-Diethylbenzene	0	100%	0.07	1.59	0.59	0.65	0.56	0.30	0.46
p-Diethylbenzene	0	100%	0.06	1.62	0.57	0.61	0.54	0.30	0.48
2,2-Dimethylbutane	0	100%	0.29	10.00	2.49	2.83	2.36	1.71	0.61
2,3-Dimethylbutane	0	100%	3.23	97.60	32.64	36.18	29.07	21.64	0.60
2,3-Dimethylpentane	0	100%	0.10	5.59	2.31	2.39	2.06	1.17	0.49
2,4-Dimethylpentane	0	100%	0.31	5.93	2.28	2.41	2.07	1.22	0.51
n-Dodecane	4	94%	ND	5.00	0.49	0.78	0.52	0.93	1.19

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-3 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Fort Worth, TX (CAMS13)
(Based on 69 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
1-Dodecene	19	72%	ND	4.34	0.16	0.26	0.18	0.51	1.96
Ethane	0	100%	2.47	76.21	11.30	13.93	10.23	12.63	0.91
Ethylbenzene	0	100%	1.02	12.33	4.09	4.87	4.16	2.72	0.56
2-Ethyl-1-Butene	69	0%	ND	ND	0.12	0.12	0.12	0.00	0.00
Ethylene	0	100%	1.50	19.51	4.20	5.44	4.32	4.12	0.76
m-Ethyltoluene	0	100%	1.05	11.14	3.90	4.47	3.86	2.47	0.55
o-Ethyltoluene	0	100%	0.39	4.38	1.70	1.86	1.62	0.96	0.51
p-Ethyltoluene	0	100%	0.49	5.73	2.06	2.51	2.20	1.27	0.51
n-Heptane	0	100%	0.93	12.99	4.60	5.00	4.22	2.73	0.55
1-Heptene	60	13%	ND	1.13	0.26	0.29	0.28	0.15	0.51
n-Hexane	0	100%	1.98	41.99	13.84	15.27	12.62	8.59	0.56
1-Hexene	0	100%	0.13	2.01	0.64	0.73	0.61	0.41	0.57
cis-2-Hexene	1	99%	ND	1.87	0.69	0.72	0.56	0.42	0.58
trans-2-Hexene	0	100%	0.07	3.45	1.19	1.28	0.99	0.76	0.60
Isobutane	0	100%	1.04	20.71	4.55	5.71	4.51	4.21	0.74
Isobutene/1-Butene	0	100%	1.27	20.42	2.76	3.83	3.13	3.08	0.80
Isopentane	0	100%	11.53	160.84	52.10	61.12	52.06	33.94	0.56
Isoprene	0	100%	0.38	2.99	0.96	1.08	1.00	0.46	0.43

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-3 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Fort Worth, TX (CAMS13)
(Based on 69 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Isopropylbenzene	0	100%	0.04	1.37	0.56	0.60	0.51	0.27	0.45
2-Methyl-1-Butene	0	100%	0.28	10.28	3.17	3.81	2.99	2.48	0.65
2-Methyl-2-Butene	0	100%	0.34	17.48	6.08	6.93	5.36	4.25	0.61
3-Methyl-1-Butene	3	96%	ND	4.05	0.84	1.15	0.83	0.91	0.79
Methylcyclohexane	0	100%	0.54	7.38	2.37	2.41	2.10	1.26	0.52
Methylcyclopentane	0	100%	1.01	17.09	6.66	6.99	5.84	3.77	0.54
2-Methylheptane	0	100%	0.28	4.21	1.49	1.69	1.47	0.88	0.52
3-Methylheptane	0	100%	0.24	3.91	1.47	1.65	1.41	0.87	0.53
2-Methylhexane	0	100%	1.42	13.99	5.01	5.59	4.84	2.91	0.52
3-Methylhexane	0	100%	1.09	15.51	5.50	5.99	5.07	3.29	0.55
2-Methylpentane	0	100%	2.90	52.49	19.40	20.94	17.48	11.49	0.55
3-Methylpentane	0	100%	1.42	34.60	12.32	13.04	10.75	7.27	0.56
2-Methyl-1-Pentene	0	100%	0.09	3.27	1.17	1.29	1.03	0.73	0.57
4-Methyl-1-Pentene	4	94%	ND	0.86	0.32	0.35	0.28	0.20	0.58
n-Nonane	0	100%	0.29	3.56	1.28	1.49	1.30	0.77	0.52
1-Nonene	4	94%	ND	0.71	0.20	0.24	0.21	0.14	0.59
n-Octane	0	100%	0.44	5.29	1.92	2.13	1.87	1.06	0.50
1-Octene	4	94%	ND	0.36	0.13	0.14	0.13	0.06	0.45

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-3 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Fort Worth, TX (CAMS13)
(Based on 69 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
n-Pentane	0	100%	2.89	72.32	20.94	25.23	20.12	15.90	0.63
1-Pentene	0	100%	0.24	8.35	2.20	2.73	2.22	1.73	0.64
cis-2-Pentene	0	100%	0.19	7.13	2.64	3.03	2.46	1.69	0.56
trans-2-Pentene	0	100%	0.42	13.89	5.06	5.76	4.63	3.31	0.57
"-Pinene	2	97%	ND	2.34	0.40	0.58	0.43	0.50	0.86
$-Pinene	0	100%	0.29	2.76	0.87	0.96	0.85	0.49	0.51
Propane	0	100%	2.27	74.41	11.74	14.83	11.06	12.47	0.84
n-Propylbenzene	0	100%	0.28	3.39	1.23	1.46	1.29	0.72	0.49
Propylene	0	100%	0.74	10.33	2.27	2.94	2.36	2.19	0.74
Propyne	8	88%	ND	0.95	0.19	0.27	0.21	0.20	0.77
Styrene	0	100%	0.62	4.50	1.30	1.50	1.39	0.67	0.45
Toluene	0	100%	6.12	75.99	25.90	28.23	23.94	15.66	0.55
n-Tridecane	6	91%	ND	4.86	0.14	0.26	0.15	0.59	2.30
1-Tridecene	44	36%	ND	5.30	0.14	0.21	0.12	0.63	3.03
1,2,3-Trimethylbenzene	0	100%	0.27	3.86	1.27	1.49	1.27	0.83	0.56
1,2,4-Trimethylbenzene	0	100%	1.41	16.14	5.33	6.28	5.41	3.45	0.55
1,3,5-Trimethylbenzene	0	100%	0.44	5.79	1.88	2.31	1.98	1.28	0.55
2,2,3-Trimethylpentane	0	100%	0.24	5.02	1.66	1.86	1.55	1.08	0.58

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-3 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Fort Worth, TX (CAMS13)
(Based on 69 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
2,2,4-Trimethylpentane	0	100%	1.40	18.47	6.53	7.66	6.53	4.23	0.55
2,3,4-Trimethylpentane	0	100%	0.50	7.33	2.37	2.75	2.33	1.57	0.57
n-Undecane	0	100%	0.15	24.37	0.87	1.47	0.97	2.90	1.97
1-Undecene	17	75%	ND	1.74	0.13	0.18	0.13	0.25	1.44
m,p-Xylene	0	100%	3.29	41.63	14.79	16.53	14.00	9.37	0.57
o-Xylene	0	100%	1.27	13.85	4.81	5.69	4.87	3.15	0.55
TNMOC (w/ unknowns)	0	100%	113.97	1,164.63	454.51	509.22	446.05	255.09	0.50
TNMOC (speciated)	0	100%	89.77	1,010.04	390.07	434.69	375.62	225.29	0.52

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-4
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (DLTX)
(Based on 62 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Acetylene	0	100%	0.96	21.87	3.92	5.50	4.06	4.71	0.86
Benzene	0	100%	1.44	14.75	3.96	4.46	3.94	2.57	0.58
1,3-Butadiene	0	100%	0.13	2.04	0.39	0.50	0.41	0.38	0.77
n-Butane	0	100%	1.92	29.48	5.75	7.26	5.93	5.38	0.74
cis-2-Butene	0	100%	0.12	2.05	0.56	0.62	0.54	0.37	0.59
trans-2-Butene	0	100%	0.09	1.76	0.44	0.54	0.46	0.34	0.63
Cyclohexane	0	100%	0.25	84.57	1.17	4.27	1.51	13.36	3.13
Cyclopentane	0	100%	0.16	2.39	0.68	0.83	0.71	0.53	0.64
Cyclopentene	0	100%	0.16	3.00	0.89	1.14	0.93	0.73	0.64
n-Decane	0	100%	0.21	5.33	1.06	1.45	1.13	1.09	0.75
1-Decene	62	0%	ND	ND	0.14	0.14	0.14	0.00	0.00
m-Diethylbenzene	0	100%	0.05	1.35	0.48	0.50	0.42	0.27	0.54
p-Diethylbenzene	0	100%	0.06	1.09	0.41	0.42	0.36	0.22	0.53
2,2-Dimethylbutane	0	100%	0.17	2.71	0.92	1.03	0.91	0.54	0.53
2,3-Dimethylbutane	0	100%	0.74	34.90	6.01	8.03	6.14	7.14	0.89
2,3-Dimethylpentane	0	100%	0.17	4.23	1.16	1.29	1.17	0.63	0.49
2,4-Dimethylpentane	0	100%	0.18	2.83	0.86	0.97	0.86	0.52	0.54
n-Dodecane	6	90%	ND	9.49	0.42	0.84	0.46	1.53	1.84

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-4 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (DLTX)
(Based on 62 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
1-Dodecene	22	65%	ND	2.31	0.14	0.21	0.15	0.30	1.41
Ethane	0	100%	2.58	42.52	8.30	9.92	8.01	7.45	0.75
Ethylbenzene	0	100%	0.63	10.08	2.49	3.12	2.56	2.09	0.67
2-Ethyl-1-Butene	62	0%	ND	ND	0.12	0.12	0.12	0.00	0.00
Ethylene	0	100%	0.45	20.51	4.62	5.67	4.66	4.07	0.72
m-Ethyltoluene	0	100%	0.90	9.38	2.10	2.49	2.14	1.72	0.69
o-Ethyltoluene	0	100%	0.22	3.64	0.99	1.14	1.00	0.70	0.61
p-Ethyltoluene	0	100%	0.39	4.80	1.27	1.46	1.28	0.90	0.61
n-Heptane	0	100%	0.60	9.91	2.03	2.55	2.14	1.72	0.68
1-Heptene	53	15%	ND	0.70	0.26	0.25	0.24	0.08	0.34
n-Hexane	0	100%	1.06	15.40	3.49	4.52	3.69	3.18	0.70
1-Hexene	1	98%	ND	0.78	0.19	0.23	0.19	0.17	0.71
cis-2-Hexene	12	81%	ND	0.60	0.12	0.15	0.12	0.14	0.89
trans-2-Hexene	4	94%	ND	1.08	0.16	0.24	0.18	0.24	0.98
Isobutane	0	100%	0.95	10.52	2.90	3.46	2.88	2.22	0.64
Isobutene/1-Butene	0	100%	1.24	15.72	2.69	3.27	2.83	2.35	0.72
Isopentane	0	100%	7.51	82.67	22.25	24.65	21.67	14.45	0.59
Isoprene	0	100%	0.39	3.17	1.23	1.25	1.14	0.52	0.42

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-4 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (DLTX)
(Based on 62 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Isopropylbenzene	3	95%	ND	1.07	0.47	0.47	0.40	0.22	0.47
2-Methyl-1-Butene	0	100%	0.22	4.16	0.62	0.87	0.68	0.81	0.92
2-Methyl-2-Butene	0	100%	0.28	6.57	0.85	1.32	0.96	1.43	1.08
3-Methyl-1-Butene	7	89%	ND	2.67	0.18	0.43	0.25	0.55	1.27
Methylcyclohexane	0	100%	0.45	5.99	1.50	1.75	1.51	1.04	0.60
Methylcyclopentane	0	100%	0.55	7.53	1.94	2.22	1.88	1.46	0.66
2-Methylheptane	0	100%	0.17	3.20	0.89	1.01	0.89	0.57	0.57
3-Methylheptane	0	100%	0.15	3.19	0.77	0.94	0.81	0.57	0.61
2-Methylhexane	0	100%	0.87	10.65	2.17	2.61	2.29	1.60	0.61
3-Methylhexane	0	100%	0.71	11.17	2.29	2.70	2.31	1.78	0.66
2-Methylpentane	0	100%	1.52	17.44	4.66	5.82	4.85	3.98	0.68
3-Methylpentane	0	100%	0.77	11.69	2.80	3.57	2.95	2.57	0.72
2-Methyl-1-Pentene	1	98%	ND	0.99	0.19	0.27	0.22	0.22	0.83
4-Methyl-1-Pentene	28	55%	ND	0.31	0.12	0.11	0.09	0.06	0.57
n-Nonane	0	100%	0.23	3.23	0.88	1.09	0.94	0.65	0.60
1-Nonene	7	89%	ND	0.69	0.15	0.19	0.16	0.12	0.64
n-Octane	0	100%	0.34	4.45	1.15	1.36	1.20	0.81	0.60
1-Octene	13	79%	ND	0.28	0.11	0.12	0.11	0.05	0.45

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-4 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (DLTX)
(Based on 62 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
n-Pentane	0	100%	1.90	23.60	5.60	6.92	5.71	4.90	0.71
1-Pentene	0	100%	0.14	2.51	0.58	0.74	0.63	0.53	0.71
cis-2-Pentene	0	100%	0.11	4.89	0.60	0.80	0.63	0.74	0.93
trans-2-Pentene	0	100%	0.30	5.64	0.87	1.26	1.01	1.10	0.87
"-Pinene	3	95%	ND	3.37	0.41	0.58	0.41	0.62	1.08
$-Pinene	1	98%	ND	2.94	0.72	0.84	0.71	0.50	0.59
Propane	0	100%	3.26	49.47	10.55	13.04	10.48	9.75	0.75
n-Propylbenzene	0	100%	0.20	2.73	0.77	0.87	0.77	0.50	0.57
Propylene	0	100%	0.82	9.43	2.29	2.77	2.37	1.81	0.65
Propyne	12	81%	ND	0.83	0.17	0.25	0.21	0.17	0.67
Styrene	0	100%	0.30	4.94	1.23	1.60	1.36	1.02	0.64
Toluene	0	100%	3.49	940.16	12.28	29.63	13.04	117.99	3.98
n-Tridecane	11	82%	ND	2.67	0.14	0.22	0.16	0.34	1.54
1-Tridecene	45	27%	ND	0.14	0.14	0.12	0.11	0.03	0.28
1,2,3-Trimethylbenzene	0	100%	0.16	3.61	0.77	0.95	0.79	0.69	0.73
1,2,4-Trimethylbenzene	0	100%	0.89	13.68	3.14	3.66	3.11	2.64	0.72
1,3,5-Trimethylbenzene	0	100%	0.23	5.46	1.31	1.47	1.24	1.04	0.71
2,2,3-Trimethylpentane	0	100%	0.26	3.10	0.71	0.88	0.74	0.61	0.69

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-4 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Dallas, TX (DLTX)
(Based on 62 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
2,2,4-Trimethylpentane	0	100%	1.01	11.72	2.82	3.38	2.86	2.32	0.69
2,3,4-Trimethylpentane	0	100%	0.44	4.58	1.12	1.31	1.14	0.85	0.65
n-Undecane	2	97%	ND	17.14	0.91	1.53	0.95	2.33	1.53
1-Undecene	23	63%	ND	0.69	0.14	0.13	0.11	0.11	0.83
m,p-Xylene	0	100%	1.95	33.71	7.71	10.09	7.97	7.38	0.73
o-Xylene	0	100%	0.77	11.84	2.79	3.46	2.85	2.36	0.68
TNMOC (w/ unknowns)	0	100%	89.20	1,267.42	221.66	266.14	226.71	191.18	0.72
TNMOC (speciated)	0	100%	71.82	1,394.53	181.21	218.09	179.43	191.20	0.88

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-5
SNMOC with the Highest Geometric Mean Concentrations

CAMS5		CAMS13		DLTX	
Compound	Geometric Mean Concentration (ppbC)	Compound	Geometric Mean Concentration (ppbC)	Compound	Geometric Mean Concentration (ppbC)
Isopentane	22.67	Isopentane	52.06	Isopentane	21.67
Toluene	12.86	2,3-Dimethylbutane	29.07	Toluene	13.04
2,3-Dimethylbutane	8.45	Toluene	23.94	Propane	10.48
Ethane	8.29	*n*-Pentane	20.12	Ethane	8.01
m,p-Xylene	7.96	*n*-Butane	17.66	*m,p*-Xylene	7.97
Propane	7.76	2-Methylpentane	17.48	2,3-Dimethylbutane	6.14
n-Butane	6.64	*m,p*-Xylene	14.00	*n*-Butane	5.93
n-Pentane	6.30	*n*-Hexane	12.62	*n*-Pentane	5.71
2-Methylpentane	5.84	Propane	11.06	2-Methylpentane	4.85
n-Hexane	4.69	3-Methylpentane	10.75	Ethylene	4.66

Table 5-6
Emissions Source Profiles for Selected SNMOC

Compound	Relative Amount of Compound Emitted (%), by Source Type		
	Mobile Source Emissions	Emissions from Gasoline Vapor	Emissions from Petroleum Refineries
Source profiles for the alkanes shown in Figure 5-11			
n-Butane	9.0	30.2	17.6
2,3-Dimethylbutane	NA	NA	NA
Ethane	3.1	0.0	4.8
n-Hexane	1.4	2.0	3.6
Isopentane	7.2	31.4	16.8
2-Methylpentane	2.9	4.9	7.2
3-Methylpentane	1.9	2.5	4.3
n-Pentane	3.2	13.2	7.3
Propane	6.7	0.39	21.3
Source profiles for the olefins shown in Figure 5-10			
Acetylene	7.8	0.0	0.1
Ethylene	18.2	0.0	0.7
Isobutene/1-Butene	NA	NA	NA
Propylene	3.2	0.0	0.80

Notes: Source profile data were copied from Scheff and Wadden 1993.
NA = Source profile data were not listed for this compound in Scheff and Wadden 1993.
As Section 5.2.2.2 explains, acetylene is an alkyne, but is included among the olefins for the composition calculations.
The source profiles reported in Scheff and Wadden 1993 were normalized to a list of 23 organic compounds. Therefore, the data in this table are useful for understanding the relative quantities of only selected compounds in emissions from specific groups of sources. Since emissions sources emit many compounds in addition to the 23 considered in Scheff and Wadden 1993, the percentages listed in this table do not characterize each compound's actual percent of emissions from these sources. As an example, according to this table, ethane accounts for 3.1 percent of the emissions of 23 organic compounds from motor vehicles, but ethane accounts for a much smaller proportion of the emissions of *all organic compounds* from motor vehicles.

Table 5-7
Abbreviations Used in Figures 5-16, 5-17, and 5-18

Abbreviation	Compound
124tmb	1,2,4-Trimethylbenzene
1bute	Isobutene/1-Butene
224tmp	2,2,4-Trimethylpentane
23dmb	2,3-Dimethylbutane
2m2be	2-Methyl-2-Butene
2mhxa	2-Methylhexane
2mpna	2-Methylpentane
3mhxa	3-Methylhexane
acetyl	Acetylene
benz	Benzene
ebenz	Ethylbenzene
etha	Ethane
ethyl	Ethylene
isbta	Isobutane
ispna	Isopentane
m/pxy	*m,p*-Xylene
mcpna	Methylcyclopentane
nbuta	*n*-Butane
nhexa	*n*-Hexane
npnta	*n*-Pentane
propa	Propane
prpyl	Propylene
t2pne	*trans*-2-Pentene
tolu	Toluene

Table 5-8
Summary Statistics for Carbonyl Concentrations Measured at Dallas, TX (CAMS5)
(Based on 9 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbv)	Highest (ppbv)	Median (ppbv)	Arithmetic Mean (ppbv)	Geometric Mean (ppbv)	Standard Deviation (ppbv)	Coefficient of Variation
Acetaldehyde	1	89%	ND	13.94	1.76	3.07	1.18	4.17	1.36
Acetone	0	100%	1.24	13.93	4.13	5.11	4.03	3.88	0.76
Acrolein	1	89%	ND	0.22	0.13	0.12	0.08	0.07	0.57
Benzaldehyde	4	56%	ND	0.45	0.12	0.15	0.04	0.18	1.17
Butyr/Isobutyraldehyde	0	100%	0.07	2.73	0.55	0.75	0.47	0.81	1.08
Crotonaldehyde	7	22%	ND	0.33	0.00	0.05	0.01	0.11	2.05
2,5-Dimethylbenzaldehyde	7	22%	ND	0.33	0.00	0.06	0.01	0.12	2.01
Formaldehyde	0	100%	2.95	14.95	4.78	6.01	5.24	3.79	0.63
Hexanaldehyde	1	89%	ND	0.46	0.12	0.16	0.10	0.13	0.84
Isovaleraldehyde	5	44%	ND	0.24	0.00	0.06	0.02	0.09	1.37
Propionaldehyde	2	78%	ND	3.13	0.25	0.51	0.13	0.99	1.92
Tolualdehydes	6	33%	ND	0.39	0.01	0.10	0.03	0.14	1.40
Valeraldehyde	5	44%	ND	0.43	0.01	0.07	0.02	0.14	1.84

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-9
Summary Statistics for Carbonyl Concentrations Measured at Fort Worth, TX (CAMS13)
(Based on 11 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbv)	Highest (ppbv)	Median (ppbv)	Arithmetic Mean (ppbv)	Geometric Mean (ppbv)	Standard Deviation (ppbv)	Coefficient of Variation
Acetaldehyde	0	100%	0.72	2.55	1.16	1.41	1.29	0.64	0.45
Acetone	0	100%	0.56	6.35	2.77	2.81	1.95	2.15	0.77
Acrolein	6	45%	ND	0.34	0.00	0.07	0.02	0.11	1.51
Benzaldehyde	4	64%	ND	0.28	0.10	0.11	0.04	0.10	0.94
Butyr/Isobutyraldehyde	1	91%	ND	2.03	0.44	0.50	0.28	0.53	1.06
Crotonaldehyde	11	0%	ND	ND	0.00	0.00	0.00	0.00	0.00
2,5-Dimethylbenzaldehyde	6	45%	ND	0.30	0.00	0.10	0.02	0.12	1.24
Formaldehyde	0	100%	1.46	4.73	2.68	3.02	2.79	1.22	0.40
Hexanaldehyde	4	64%	ND	0.23	0.09	0.09	0.04	0.08	0.88
Isovaleraldehyde	7	36%	ND	0.14	0.00	0.03	0.01	0.04	1.47
Propionaldehyde	1	91%	ND	0.36	0.18	0.18	0.13	0.10	0.55
Tolualdehydes	11	0%	ND	ND	0.01	0.01	0.01	0.00	0.00
Valeraldehyde	7	36%	ND	0.11	0.01	0.03	0.01	0.04	1.28

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 5-10
Summary Statistics for Carbonyl Concentrations Measured at Dallas, TX (DLTX)
(Based on 9 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbv)	Highest (ppbv)	Median (ppbv)	Arithmetic Mean (ppbv)	Geometric Mean (ppbv)	Standard Deviation (ppbv)	Coefficient of Variation
Acetaldehyde	0	100%	0.65	2.45	1.42	1.39	1.31	0.52	0.37
Acetone	0	100%	2.40	3.55	3.15	3.11	3.08	0.39	0.13
Acrolein	1	89%	ND	0.29	0.12	0.14	0.09	0.09	0.67
Benzaldehyde	1	89%	ND	0.20	0.11	0.11	0.08	0.05	0.47
Butyr/Isobutyraldehyde	1	89%	ND	1.38	0.39	0.46	0.26	0.39	0.86
Crotonaldehyde	8	11%	ND	0.08	0.00	0.01	0.01	0.02	1.92
2,5-Dimethylbenzaldehyde	6	33%	ND	0.19	0.00	0.04	0.01	0.07	1.51
Formaldehyde	0	100%	1.95	5.93	3.29	3.55	3.37	1.24	0.35
Hexanaldehyde	0	100%	0.05	0.25	0.13	0.13	0.12	0.06	0.46
Isovaleraldehyde	4	56%	ND	0.15	0.08	0.06	0.03	0.06	0.94
Propionaldehyde	1	89%	ND	0.29	0.16	0.16	0.11	0.08	0.52
Tolualdehydes	7	22%	ND	0.15	0.01	0.04	0.02	0.06	1.44
Valeraldehyde	8	11%	ND	0.13	0.01	0.02	0.01	0.04	2.13

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

6.0 Monitoring Results for Juarez, Mexico (JUMX)

This section summarizes and interprets the total NMOC, SNMOC, and carbonyl monitoring data collected at the Juarez, Mexico (JUMX), monitoring station during the 1998 NMOC/SNMOC Monitoring Program; total NMOC and SNMOC monitoring data from previous years are also included for the purpose of investigating annual variations.

Figure 6-1 shows the location of the JUMX monitoring station and illustrates land use in its vicinity. Since the monitoring station is approximately 1 mile from the Rio Grande (the river that separates Juarez, Mexico, from El Paso, Texas), emissions from motor vehicles and industrial facilities within both El Paso and Juarez are likely to impact levels of air pollution at JUMX. Though the monitoring station is on the grounds of a university (Instituto Technologico Monterrey), the surrounding land is used for a wide range of commercial, industrial, and agricultural purposes. More specifically, several small industrial facilities are located to the north, west, and southwest of the station; open space and farmland are located to the east and southeast; and a nearby area that was previously open space is being developed into a residential neighborhood.

During the 1998 NMOC/SNMOC Monitoring Program, the JUMX station collected ambient air samples on weekday mornings in August and September, 1998. Overall, SNMOC samples were collected on 21 days and carbonyl samples on 4 days; every attempted sampling event was valid. Thus, the completeness for both the SNMOC and carbonyl sampling, defined as the percentage of attempted samples that are valid, was 100 percent.

The remainder of this section comments on notable trends in the monitoring data collected at JUMX. Section 6.1 provides detailed analyses of the total NMOC monitoring data, including comparisons to selected meteorological conditions and evaluations of long-term trends. Section 6.2 puts the SNMOC monitoring data into perspective by commenting on the composition of air samples, annual variations in air quality, and ozone formation potential. Section 6.3 briefly summarizes the four carbonyl sampling events at JUMX, and Section 6.4

provides an overview of air quality trends observed at JUMX since the 1995 NMOC/SNMOC Monitoring Program.

6.1 Total NMOC Monitoring Data

As Section 2.3.2 noted, the SNMOC sampling and analytical method measures concentrations of total NMOC, in addition to measuring concentrations of 80 organic compounds. This section summarizes the total NMOC measurements that were made at JUMX using the SNMOC sampling and analytical method. More specifically, the following discussion puts the total NMOC monitoring data from JUMX into context by presenting data summary parameters (Section 6.1.1), associations between total NMOC levels and selected meteorological parameters (Section 6.1.2), and a review of annual variations in total NMOC levels (Section 6.1.3).

When reading these sections, it is important to remember that total NMOC consists of a wide range of organic compounds (e.g., alkanes, olefins, aromatics, oxygenates, and halogenated hydrocarbons), thus providing a measure of the total air concentration for many different "ozone precursors." However, total NMOC should not be considered a measure of *total* levels of air pollution, since many common air pollutants (e.g., inorganic acids, particulate matter, and heavier organic compounds) are not a subset of total NMOC.

6.1.1 Data Summary

Using the four data summary parameters that were defined in Section 3.1, Table 6-1 presents a thorough, yet concise, overview of the total NMOC measurements at JUMX during the summer of 1998. Key findings from the data summary follow:

- *Prevalence.* Total NMOC was measured in every sample collected at JUMX during the 1998 program, and each measured concentration was at least an order of magnitude greater than the estimated method detection limit of 0.005 ppmC (or 5 ppbC). Thus, the prevalence of total NMOC at JUMX was 100 percent. With no nondetect observations in the total NMOC data set, the summary statistics presented in Table 6-1 are believed to be highly representative of air quality trends at JUMX.

- *Concentration range.* According to Table 6-1, total NMOC concentrations at JUMX ranged from 0.173 ppmC to 20.317 ppmC during the 1998 program—a range that was notably broader than the range observed at every other monitoring station. In fact, the highest concentration observed at JUMX (20.317 ppmC) is the highest level of total NMOC that has been measured at any station that participated in the 1995, 1996, 1997, and 1998 NMOC/SNMOC Monitoring Programs. On the date the highest concentration occurred (September 18, 1998), a duplicate sample was collected and was later analyzed in replicate. The four concentrations measured from these analyses (19.2 ppmC, 23.2 ppmC, 19.0 ppmC, and 19.8 ppmC) were in excellent agreement, thus ruling out the possibility that the highest concentration at JUMX might have resulted from a sampling or analytical bias.

  Not only was the *magnitude* of the highest concentration at JUMX considerably higher than that observed at the other monitoring stations, but the *frequency* with which elevated concentrations occurred at JUMX was also considerably higher than that observed at the other stations. More specifically, total NMOC concentrations exceeded 1.0 ppmC at JUMX during five sampling events, but they exceeded this level no more than twice at any of the other stations. The significance of this trend is more apparent when expressed as frequencies: Total NMOC concentrations exceeded 1.0 ppmC at JUMX in 24 percent of the sampling events, but exceeded this level at the other stations in no more than 3 percent of the sampling events. Thus, elevated concentrations of total NMOC were much more common at JUMX than at the other stations that participated in the 1998 NMOC/SNMOC Monitoring Program. Section 6.2.2 provides information on the composition of air samples at JUMX on days when total NMOC concentrations exceeded 1.0 ppmC.

  For greater insight into the concentration range at JUMX, Figure 6-2 presents a histogram of the total NMOC monitoring data for this station during the 1998 program. The figure indicates that roughly one third of the samples had concentrations in the range 0.1–0.4 ppmC, roughly one third in the range 0.5–0.7 ppmC, and roughly one third greater than 0.9 ppmC. This distribution suggests that ambient air concentrations of total NMOC at JUMX during the morning hours on summer days tended to span a wide range of concentrations, as opposed to being limited to a fairly narrow range, as was observed at the other monitoring stations (see Sections 5.1.1, 7.1, and 8.1.1).

- *Central tendency*. During the 1998 program, the geometric mean concentration of total NMOC at JUMX was 0.84 ppmC. Not only was this the highest geometric mean concentration observed among the six stations that participated in the 1998 program, but this was the highest geometric mean concentration observed at JUMX since the station first participated in the NMOC/SNMOC Monitoring Program in 1995.

  Not surprisingly, the geometric mean concentration at JUMX was influenced by the outlier measurement of 20.317 ppmC, as well as by the four other measurements where

total NMOC concentrations exceeded 1.0 ppmC. However, even when the five highest measurements are excluded from the central tendency calculation, the geometric mean concentration of total NMOC at JUMX still exceeds the geometric mean levels observed during the 1995, 1996, and 1997 programs. Therefore, levels of total NMOC in Juarez during the summer of 1998, on average, appear to have been higher than they were in 1995, 1996, and 1997. Section 6.1.3 revisits this issue.

- *Variability.* According to Table 6-1, the standard deviation of the total NMOC levels measured at JUMX was 4.414 ppmC, and the coefficient of variation was 2.14. This data variability is considerably greater than the variability that was observed at JUMX in previous monitoring programs. For comparison, the coefficients of variation for total NMOC measurements at JUMX during the 1995, 1996, and 1997 programs were all lower than 1.0. The greater variability during the current program largely results from the many elevated concentrations measured at JUMX during the summer of 1998.

6.1.2 Comparison to Selected Meteorological Conditions

To provide greater insight into the trends and patterns among the total NMOC concentrations at Juarez, this section compares the measured levels of total NMOC to selected meteorological conditions. The following analyses consider 3-hour average observations of relative humidity, precipitation, temperature, wind direction, and wind speed, all of which were measured between 5:00 and 8:00 a.m. at the El Paso International Airport. Since this airport is located within 5 miles of the monitoring station, the meteorological data are believed to be reasonably representative of conditions at the JUMX site. The outlier concentration of 20.317 ppmC was not included in the comparisons to meteorological conditions, because this unusually high concentration, which was believed to represent an episodic event, tended to bias the calculations.

To enable readers to compare data trends from the 1998 program to those from earlier programs, the following analyses of associations between local meteorological conditions and total NMOC concentrations are presented in a format almost identical to that used for JUMX in Section 5.2.3.2 of the 1997 NMOC/SNMOC report.

An overview of the comparisons of meteorological conditions to total NMOC levels at JUMX follows:

- *Humidity.* According to Figure 6-3, concentrations of total NMOC at JUMX, on average, tended to be higher on mornings with lower relative humidity; the 1997 NMOC/SNMOC report indicated a similar observation for total NMOC measurements at JUMX. It should be noted, however, that the difference in concentrations for the two categories shown in Figure 6-3 is marginal (less than 25 percent) and not statistically significant. Moreover, no statistically significant trends were observed upon grouping the total NMOC levels into different ranges of relative humidity observations. Therefore, the data collected during the 1998 program are not sufficient for determining the association between relative humidity and levels of total NMOC at JUMX. Analysis of future monitoring data is needed to characterize data trends between these parameters.

- *Precipitation.* Since no measurable rain was recorded at the El Paso International Airport on any of the 21 days that SNMOC samples were collected at JUMX, the monitoring data collected during the 1998 program are not sufficient for evaluating associations between total NMOC concentrations at JUMX and precipitation.

- *Temperature.* Consistent with findings presented in the 1996 and 1997 reports, Figure 6-3 shows that total NMOC concentrations measured on relatively warm mornings at JUMX were, on average, considerably higher than those measured on cooler mornings. In fact, the average concentration of total NMOC on the 13 mornings when the temperature exceeded 75 degrees Fahrenheit was more than twice the average concentration measured on the remaining 7 mornings. However, this concentration difference, as well as the concentration differences for other ranges of temperatures, was not statistically significant. Therefore, although the monitoring data certainly imply that levels of total NMOC at JUMX are higher on warmer mornings, not enough samples were collected to be certain of this association. Further research is needed to determine the nature and extent of correlations between temperature and total NMOC concentrations at JUMX.

- *Wind Speed.* According to Figure 6-3, total NMOC concentrations at JUMX on windy mornings were, on average, notably lower than those on mornings with light or calm winds—a trend that was also observed at JUMX during the 1997 program. During the 1998 program, total NMOC concentrations on mornings with wind speeds less than or equal to 5 miles per hour were more than four times higher than those on windier mornings; this concentration difference was statistically significant. This general trend of decreasing levels of air pollution on windier days was observed at all six monitoring stations that participated in the 1997 NMOC/SNMOC Monitoring Program. A likely explanation for this trend is the fact that air pollutants disperse more efficiently as wind speeds increase (USEPA 1995).

- *Wind Direction.* The scatter plot in Figure 6-4 shows how concentrations of total NMOC at JUMX varied with wind direction during the 1998 program. Readers should note that results from two valid sample dates are not displayed in the figure because winds were either calm or variable while these samples were collected. Moreover, the outlier concentration of 20.317 ppmC is not shown in the figure, since this data point appears to reflect unique or "episodic" air quality conditions. Overall, Figure 6-4 clearly shows that, during the morning hours, the wind at El Paso International Airport most often blew from the north to northeast. However, the figure does not indicate any noteworthy clustering of elevated concentrations about a particular wind direction. A similar finding was observed from the data collected at JUMX during the 1997 program: Wind at El Paso International Airport almost always blew from wind directions 0 degrees to 180 degrees, but total NMOC concentrations did not appear to be notably higher when winds blew from any specific direction. In short, the total NMOC monitoring data from the 1997 and 1998 programs suggest that ambient air concentrations of total NMOC at JUMX are not significantly correlated with the wind direction observed at the El Paso International Airport. This absence of correlations might result, to a certain extent, from surface wind patterns at the El Paso International Airport that differ from those at JUMX.

Though the previous discussion describes apparent associations between total NMOC concentrations at JUMX and selected meteorological conditions, readers should note that the analyses presented in this section are only a small subset of the numerous types of graphical, numerical, and statistical analyses that could be performed on this data set. For greater insight into subtle trends among the total NMOC monitoring data and meteorological data, researchers are encouraged to examine these data sets further using more sophisticated analyses, such as multivariate statistical analyses. Such analyses are not included in the scope of this report.

6.1.3 Annual Variations

The JUMX monitoring station has participated in the NMOC/SNMOC Monitoring Program every year since 1995, thus providing 4 years of monitoring data that characterize levels of air pollution during the summertime morning hours. To put annual variations in air quality into perspective, this section describes how average levels of total NMOC and peak levels of total NMOC have changed at JUMX from year to year. Though the monitoring

schedules at JUMX varied slightly between the 1995 and 1998 programs[1], these differing schedules are not expected to bias the analysis of annual variations.

An overview of the key findings regarding annual variations in air quality at JUMX follows:

- *Changes in average concentrations of total NMOC.* Figure 6-5 illustrates how average levels of total NMOC at JUMX have changed from the summer of 1995 through the summer of 1998. According to the figure, the average concentrations of total NMOC at JUMX increased between the 1995 and 1997 programs, but the increases between 1995 and 1996 and between 1996 and 1997 were marginal and not statistically significant. On the other hand, the total NMOC levels during the 1998 program were, on average, more than three times higher than the levels observed during the 1995–1997 programs. This considerable increase, which was statistically significant, largely resulted from an outlier concentration measured during the 1998 program (20.317 ppmC). However, even when the outlier concentration is omitted from the analysis, the average concentration of total NMOC during the 1998 program is still more than twice as high as the average concentrations measured during the 1995, 1996, and 1997 programs; this concentration difference is also statistically significant. Overall, the annual variations indicate that concentrations of total NMOC at JUMX, on average, were virtually unchanged between the summers of 1995, 1996, and 1997, but increased considerably in the summer of 1998.

- *Changes in peak concentrations of total NMOC.* As another indicator of annual variations in air quality, Figure 6-6 indicates how often total NMOC concentrations at JUMX exceeded 1.0 ppmC during the 1995, 1996, 1997, and 1998 programs. The figure clearly illustrates that the frequency of elevated concentrations of total NMOC (arbitrarily defined here as exceeding 1.0 ppmC) has increased dramatically at JUMX over the last four summers. More specifically, during the 1995 and 1996 programs, concentrations of total NMOC were higher than 1.0 ppmC in roughly 1 out of every 20 samples; during the 1997 and 1998 programs, however, concentrations of total NMOC were higher than 1.0 ppmC in roughly 1 out of every 5 samples. The reason for this considerable increase in the frequency of elevated concentrations is not known, but Section 6.2.2 provides evidence that the increase is probably a result of episodic releases from emissions sources other than motor vehicles.

[1] More specifically, air samples were collected at JUMX from July 13 to September 28 during the 1995 program, from June 6 to September 26 during the 1996 program, from July 15 to September 30 during the 1997 program, and from August 25 to September 29 during the 1998 program.

Overall, the trends shown in Figure 6-5 and 6-6 indicate that not only have average levels of total NMOC at JUMX increased in recent years, but the frequency of elevated concentrations of total NMOC has also increased at JUMX over the same time frame. Though the reasons for the increasing concentrations are not known and warrant further investigation, the analyses in the remainder of this section provide additional insight into the factors that seem to contribute to the elevated concentrations of total NMOC measured at JUMX.

6.2 SNMOC Monitoring Data

During the 1998 program, valid SNMOC samples were collected at JUMX on 21 days. Laboratory analysis of these samples measured ambient air concentrations of 80 different organic compounds (all hydrocarbons) as well as the concentration of total NMOC. The remainder of this section uses the data analysis methodology that was described in Section 3 to put the SNMOC monitoring data from JUMX into perspective: Section 6.2.1 presents a concise overview of the data; Section 6.2.2 characterizes the composition of the SNMOC samples; Section 6.2.3 reviews the annual variations in ambient air concentrations for selected SNMOC; and Section 6.2.4 qualitatively assesses the reactivity of the air mass at JUMX.

6.2.1 Data Summary

Using the four data summary parameters that were defined in Section 3.1, Table 6-2 summarizes the SNMOC measurements made at JUMX during the summer of 1998. A review of this data summary follows:

- *Prevalence.* According to Table 6-2, 76 of the 80 hydrocarbons identified by the SNMOC sampling and analytical method were detected in more than half of the samples collected at JUMX during the 1998 program. In other words, the prevalence for these 76 compounds was higher than 50 percent. Summary statistics for these 76 compounds are believed to be highly representative of actual air quality trends during the morning hours of the summer months, since the majority of samples had quantified concentrations instead of nondetect observations. For the remaining four compounds (1-decene, 2-ethyl-1-butene, 1-heptene, and 1-tridecene), however, the summary statistics might not be representative of actual air quality trends due to potential biases introduced by the frequent nondetect observations, which were replaced in the air monitoring database

with an estimated concentration of one-half the detection limit. The summary statistics for these four compounds should be interpreted with caution. Overall, the prevalence data confirm that a wide range of organic compounds is consistently found at detectable levels in the ambient air at JUMX.

- *Concentration range*. Table 6-2 indicates that the concentration ranges for SNMOC vary considerably from compound to compound. The highest SNMOC concentrations were measured for propane (242.48 ppbC), toluene (188.03 ppbC), 2,3,4-trimethylpentane (113.85 ppbC), cyclohexane (110.41 ppbC), and isopentane (51.10 ppbC). The highest concentrations measured for the 75 other SNMOC were all lower than 50 ppbC.

  Though the concentration range data in Table 6-2 are useful for identifying the compounds that tend to have the highest concentrations at JUMX, readers should note that the ranges listed in Table 6-2 only represent ambient air concentrations measured between 6:00 a.m. and 9:00 a.m. during the summer. During other times of the day, and during other times of year, ambient levels of many SNMOC might have reached higher levels and lower levels than the concentration range data in Table 6-2 indicate.

- *Central tendency*. Like the concentration ranges, the central tendency concentrations in Table 6-2 varied greatly from one SNMOC to the next. Only five compounds had geometric mean concentrations greater than 10 ppbC: toluene (41.63 ppbC), propane (31.51 ppbC), isopentane (21.11 ppbC), 2,3,4-trimethylpentane (18.22 ppbC), and ethane (11.10 ppbC). Combined, the geometric mean concentrations of these five compounds account for 42 percent of the geometric mean concentration of the total identified SNMOC. Therefore, though the ambient air samples collected at JUMX consistently contained more than 70 organic compounds, a small subset of these compounds accounted for a large portion of the total NMOC concentrations.

  As noted above, readers should remember that the central tendency data for JUMX characterize air quality during only the morning hours of summer months. Comparisons of these central tendency data to data based on samples collected during other times of day and other times of year should be made with caution.

- *Variability*. According to Table 6-2, coefficients of variation for most SNMOC measured at JUMX were comparable and lower than 1.0. The compounds with the most variable air monitoring data, as gauged by the coefficient of variation, were 3-methyl-1-butene (2.78), cyclohexane (2.41), *n*-dodecane (1.91), and *n*-tridecane (1.51). The greater variability for *n*-dodecane and *n*-tridecane likely results from the fact that these compounds contain more than 10 carbon atoms, and the calculation of coefficients of variation from concentrations measured in units of ppbC inherently gives greater weight to compounds with more carbon atoms. The greater variability for 3-methyl-1-butene and cyclohexane appears to be linked to outlier concentrations.

6.2.2 Composition of Air Samples

As previous NMOC/SNMOC reports have explained, the composition of air pollution at a given location can provide insight into the probable origins of certain contaminants. As examples of such analyses, this section examines the relative quantities of "identified" and "unknown" SNMOC in the air sampled at JUMX as well as the relative quantities of alkanes, olefins, and aromatic compounds in this air to reveal subtle, yet meaningful, trends among the monitoring data.

6.2.2.1 "Identified" vs. "Unknown" Compounds

As noted earlier, the SNMOC sampling and analytical method measures the ambient air concentration of total NMOC and concentrations of 80 hydrocarbons (i.e., the "identified" compounds). In any given sample, the difference between the total NMOC concentration and the sum of the 80 concentrations of hydrocarbons is the ambient air concentrations of the many different organic compounds that the SNMOC method does not identify (i.e., the "unknown" compounds). These unknown compounds include, but are not limited to, hydrocarbons with functional groups containing halogens, oxygen, and nitrogen. The relative amounts of identified compounds and unknown compounds are a useful indicator of the composition of ambient air.

During the 1998 NMOC/SNMOC Monitoring Program, the sum of the concentrations of the identified compounds at JUMX accounted for, on average, only 16 percent of the total NMOC concentrations—the lowest composition of identified compounds that has been observed at any monitoring station that participated in the 1995, 1996, 1997, and 1998 programs. As Figure 6-7 shows, the composition of ambient air at JUMX on days with elevated total NMOC concentrations differed considerably from the composition on days with lower total NMOC levels. In fact, on days when total NMOC concentrations at JUMX exceeded 1.0 ppmC, identified compounds accounted for only 11 percent of the total NMOC levels. Therefore, the higher frequency of elevated air concentrations of total NMOC at JUMX during the 1998 program (see Figure 6-6) appears to be linked to compounds that the SNMOC sampling and analytical method does not identify, rather than to the 80 hydrocarbons listed in Table 6-2.

Since motor vehicles emit many of the compounds identified by the SNMOC analytical method, the presence of a large portion of unknown compounds on days with elevated total NMOC concentrations suggests that emissions sources other than motor vehicles probably contributed to the highest total NMOC concentrations measured at JUMX. Section 6.3 comments further on the unknown compounds at JUMX.

6.2.2.2 Alkanes, Olefins, and Aromatic Compounds

The relative amounts of alkanes, olefins, and aromatic compounds in ambient air have been used to characterize the reactivity and sources of pollution within airsheds. As Table 3-1 shows, alkanes are generally less reactive in ambient air than olefins, and aromatic compounds exhibit a relatively wide range of reactivities. Based on this information, air samples with relatively high concentrations of reactive compounds (such as olefins) are likely to characterize "newer" air masses (i.e., air masses near the predominant emissions sources), and air samples with relatively low concentrations of reactive compounds are likely to characterize "older" air masses (e.g., those influenced by long-range transport).

During the 1998 NMOC/SNMOC Monitoring Program, alkanes, olefins, and aromatics accounted for 63 percent, 17 percent, and 20 percent, respectively, of the total concentration of identified compounds at JUMX. This composition is virtually identical to that presented in the 1997 report for JUMX: 63 percent alkanes, 24 percent olefins, and 13 percent aromatics. Though the relative amounts of alkanes were virtually unchanged between the 1997 and 1998 programs, the relative amounts of olefins decreased and the relative amounts of aromatics increased. The changing amounts of olefins and aromatics appears to be largely due to decreasing levels of ethylene and increasing levels of toluene—a trend that is illustrated in the following section. The factors that caused the composition of the air mass at JUMX to change slightly between the summer of 1997 and the summer of 1998, however, are not known.

Note: The composition data presented for JUMX in the 1996 NMOC/SNMOC report (40 percent alkanes, 26 percent olefins, and 34 percent aromatics) are considerably

different from the composition data presented above. This difference results almost entirely from differences in computational approaches: the composition presented in the 1996 report is based on concentration data in units of ppbC, and the compositions presented in the 1997 report and in this report are based on concentrations in units of ppbv.

6.2.3 Annual Variations

The JUMX monitoring station has collected SNMOC samples in four consecutive NMOC/SNMOC Monitoring Programs, thus allowing an analysis of long-term trends in air quality. For an overview of these trends, Figure 6-8 depicts annual variations for the 14 SNMOC that had the highest concentrations. Though annual average concentrations for the compounds shown in Figure 6-8 clearly changed, to a certain extent, from year to year, none of the compounds exhibited steady upward or downward trends over the past 4 years of monitoring at JUMX.

The average concentration during the 1998 program for every compound shown in Figure 6-8 (except for isopentane, toluene, and 2,3,4-trimethylpentane) was lower than that measured in the previous year. In fact, for some compounds (benzene, ethylene, isobutane, *n*-pentane, and *m*,*p*-xylene), the average concentration during the 1998 program was the lowest that has been observed at JUMX over the last four summers. However, the exact reasons for observing these lower levels during the summer of 1998 are not known.

For the three compounds—isopentane, toluene, and 2,3,4-trimethylpentane—that had higher concentrations at JUMX during the summer of 1998 compared to those from earlier years, statistical analyses show that, with one exception, the concentration differences between the 1998 and earlier programs are all statistically significant.[2] Thus, the increasing air concentrations for these compounds do not appear to be anomalous. In the case of isopentane,

[2] The difference between the average concentration of toluene during the 1998 program (46.46 ppbC) and during the 1996 program (41.55 ppbC) was not found to be statistically significant.

the magnitude of the increase from the 1997 to 1998 program is 40 percent, which is moderate when compared to the magnitude of the increases over the same time frame for toluene (118 percent) and for 2,3,4-trimethylpentane (1,040 percent). A review of local emissions inventories, if available, is needed to determine the reasons why concentrations increased for these hydrocarbons but decreased for the others. Moreover, additional monitoring at this location might help determine whether the increasing concentrations for these compounds are part of a continuing trend or whether they are merely fluctuations that typically occur over multi-year cycles.

6.2.4 Reactivity of the Air Mass

This section assesses the chemical reactivity of the individual SNMOC measured in the air mass at JUMX. Because photochemical reactions involving hydrocarbons contribute to ozone formation, the relative reactivities of SNMOC are an important consideration for ozone control strategies. As one method for evaluating each compound's reactivity, or ozone formation potential, this report uses an "ozone index," or a reactivity-weighted concentration, defined as the product of a compound's maximum incremental reactivity (MIR) (see Section 3.4) and its geometric mean ambient air concentration.

Figure 6-9 presents the ozone indices for the 20 SNMOC with highest geometric mean concentrations at JUMX, excluding compounds for which MIRs are not readily available. The figure, which lists compounds in order of decreasing concentration, clearly illustrates that compounds with the highest potential for forming ozone at JUMX (e.g., toluene, *m*,*p*-xylene, and ethylene) are not necessarily the compounds with the highest geometric mean concentration. This analysis of chemical reactivity suggests that pollution control strategies aimed at reducing emissions of the compounds with the highest concentration (e.g., toluene, propane, and isopentane) might not be as effective at reducing local ozone concentrations as strategies aimed at reducing emissions of compounds with the highest ozone indices. However, since this analysis is based on one researcher's assessment of chemical reactivity (Carter, 1994), environmental agencies are encouraged to perform additional analyses of chemical reactivity,

possibly through the use of photochemical modeling, to confirm the findings reported in this section.

6.3 Carbonyl Monitoring Data

During the 1998 NMOC/SNMOC Monitoring Program, the JUMX station collected carbonyl samples on four days, all in the month of September. Though these four sampling events clearly do not provide an extensive account of ambient air concentrations at JUMX throughout the summer of 1998, they are useful for providing insight into airborne levels of 16 organic compounds that the SNMOC sampling and analytical method cannot identify. Since three of the carbonyl samples were collected on days with elevated total NMOC concentrations (levels greater than 1.0 ppmC), the carbonyl monitoring data are particularly useful for characterizing the unusually high levels of air pollution measured at JUMX on certain days of the 1998 program. The following discussion first summarizes the 1998 carbonyl monitoring data for JUMX, then comments specifically on carbonyl levels on sampling days with elevated total NMOC concentrations.

Using the four data summary parameters that were defined in Section 3.1, Table 6-4 presents a thorough, yet concise, overview of the four carbonyl sampling results from JUMX during the summer of 1998. Key findings follow:

- *Prevalence.* As Table 6-4 shows, 12 of the 16 compounds identified by the carbonyl sampling and analytical method were detected in at least 75 percent of the samples collected in Juarez during the 1998 program. Summary statistics for these 12 compounds are expected to accurately represent the actual carbonyl levels on the 4 sampling days, since few data points (or no data points) were replaced with concentrations of one-half the detection limit. Only crotonaldehyde and tolualdehydes were detected less frequently. These compounds' summary statistics are essentially meaningless, since both crotonaldehyde and the tolualdehyde isomers were never detected at JUMX during the 1998 program.

- *Concentration range.* Of the 16 compounds identified by the carbonyl sampling and analytical method, acetaldehyde, acetone, and formaldehyde had the broadest ranges of measured concentrations. These compounds also had the highest concentrations of the

16 carbonyls; the other carbonyls never had concentrations greater than 1.0 ppbv at JUMX. Though these general trends were observed at the other NMOC/SNMOC monitoring stations that collected carbonyl samples, readers are encouraged to interpret the carbonyl concentration range data in proper context. For example, with studies reporting that ambient levels of many carbonyls peak during the early afternoon hours (Brimblecombe 1996) and not during the sampling times for this program (between 6:00 a.m. and 9:00 a.m.), the concentration ranges shown in Table 6-4 are likely not to be representative of the ranges observed for other times of day. In addition, since carbonyl sampling was conducted infrequently at JUMX during the 1998 program, ambient levels of carbonyls at JUMX almost certainly rose to higher levels and fell to lower levels during the summer of 1998 than the concentration range data indicate.

- *Central tendency.* Table 6-4 indicates that most carbonyls had central tendency concentrations lower than 0.5 ppbv. As exceptions, the geometric mean concentrations for acetaldehyde (1.46 ppbv), acetone (2.93 ppbv), and formaldehyde (2.51 ppbv) all were greater than this level. Moreover, the geometric mean concentrations of these three compounds, combined, accounted for nearly 85 percent of the total concentration of all 16 carbonyls at JUMX—a trend that has been observed in other extensive ambient air monitoring programs in urban centers (ERG 1999).

- *Variability.* As Table 6-2 indicates, the coefficients of variation for the 16 carbonyls measured at JUMX were less than 0.7 and were generally comparable in magnitude. The relatively low coefficients of variation suggest that carbonyls are consistently found in the Juarez ambient air during the morning hours, regardless of changing wind directions. However, results from more extensive sampling efforts must be evaluated to confirm this hypothesis.

As noted earlier, three of the four carbonyl sampling events occurred on days when total NMOC concentrations at JUMX exceeded 1.0 ppmC. Careful examination of the monitoring data reveals, however, that the 16 compounds identified by the carbonyl sampling and analytical method accounted for only a very small portion of the elevated total NMOC levels at JUMX. For example, for the sampling event on September 9, 1998, the ambient air concentration of total NMOC was 4.857 ppmC, of which 4.355 ppmC were “unknown” compounds. On the same date, carbonyl sampling results indicated that the ambient air concentration of the 16 carbonyls combined was 27.98 ppbC—an amount that is less than 1 percent of the concentration of the unknown compounds. The sampling events on September 22, 1998, and on September 29, 1998, had similar results. Overall, the coincidental carbonyl and SNMOC sampling clearly indicate

that the unusually high levels of total NMOC measured at JUMX during the summer of 1998 were not the result of elevated concentrations of the 16 carbonyls considered in this program.

6.4 Chapter Summary

The 1998 NMOC/SNMOC monitoring data collected at JUMX thoroughly characterize levels of air pollution in one Juarez location during the summertime morning hours. The monitoring data indicate that levels of total NMOC at JUMX were, on average, considerably higher than those observed in previous years, as was the frequency with which total NMOC concentrations exceeded 1.0 ppmC. The SNMOC and carbonyl sampling results strongly suggest that motor vehicle emissions were not the primary cause of the elevated levels of total NMOC at JUMX. The factors contributing to these elevated concentrations might be identified through a review of local emissions inventories, if available, or through ongoing sampling efforts that consider a wider range of compounds.

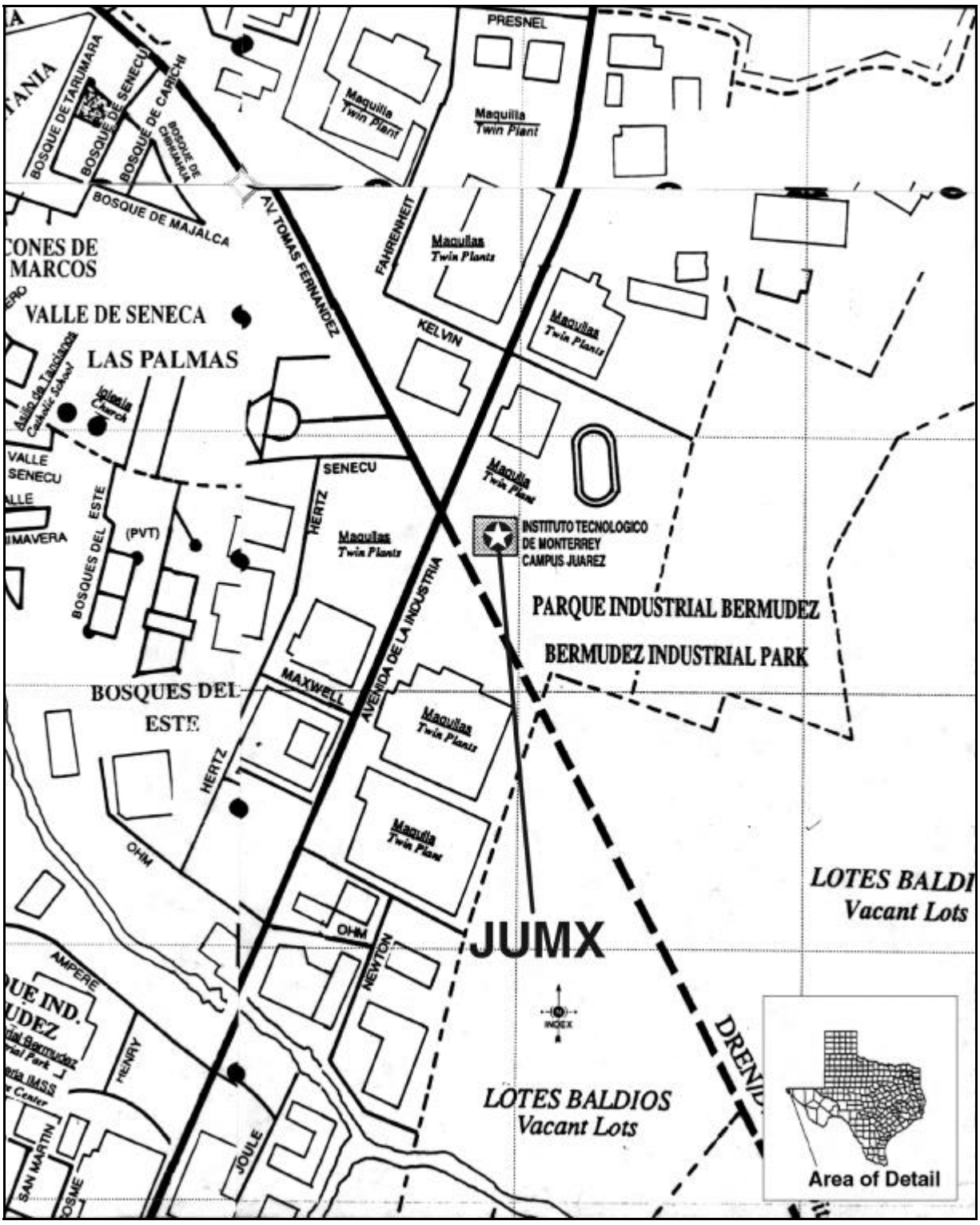
The daily SNMOC measurements allowed for a detailed analysis of associations between selected meteorological parameters and levels of air pollution. This analysis found no statistically significant trends between total NMOC concentrations at JUMX and concurrent observations of humidity, temperature, and wind direction at the El Paso International Airport. Wind speed, on the other hand, had a statistically significant association with total NMOC levels: Concentrations of total NMOC were considerably lower on windier days, and higher when winds were calm or light. This trend was also observed at JUMX during the 1997 program.

The SNMOC measurements provided insight into the chemical composition of ambient air at JUMX. These measurements found that “unknown” compounds (i.e., compounds that the SNMOC sampling and analytical method does not identify) accounted for nearly 90 percent of the airborne organic compounds on days when total NMOC concentrations exceeded 1.0 ppmC. The measurements also found that, excluding the days with elevated total NMOC levels, the composition of alkanes, olefins, and aromatics in the ambient air at JUMX were not notably different from the composition observed during the 1997 program. Analysis of the chemical

reactivity of the air mass at JUMX confirmed a finding of the 1996 NMOC/SNMOC report: The compounds with the greatest potential for forming ozone are not always the compounds with the highest ambient air concentration.

As noted several times in this report, the analyses of ambient air monitoring data presented in this section are only a small subset of the many different numerical and statistical analyses that could be performed. Therefore, though this section provides an extensive and meaningful review of levels of air pollution at JUMX, researchers are encouraged to supplement this review with additional analyses on the large volume of air monitoring data collected at this station.

Figure 6-1
Juarez, Mexico (JUMX), Monitoring Station



Source: SGD 1996.

Figure 6-2
Distribution of Total NMOC Concentrations Measured at JUMX

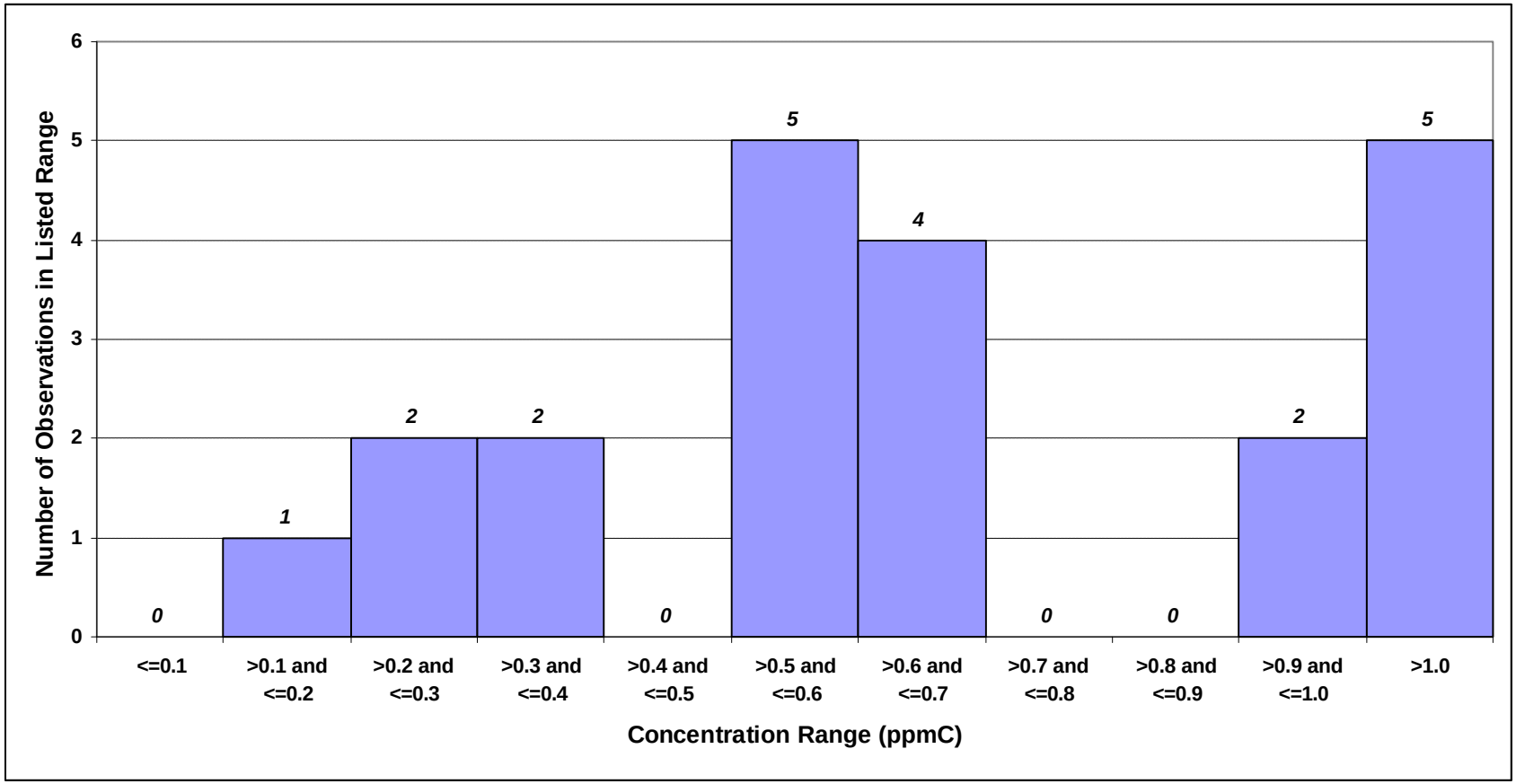
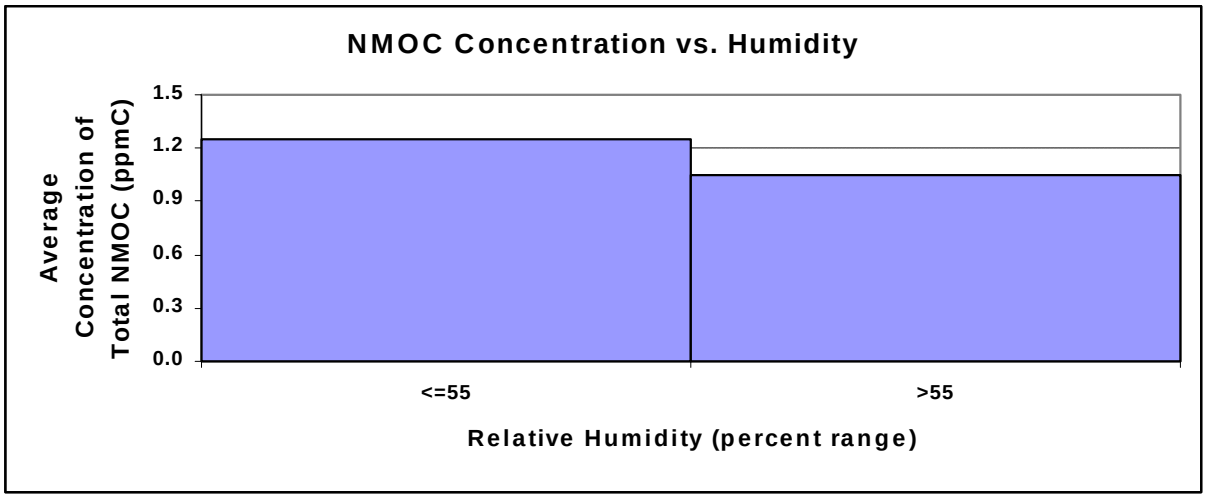
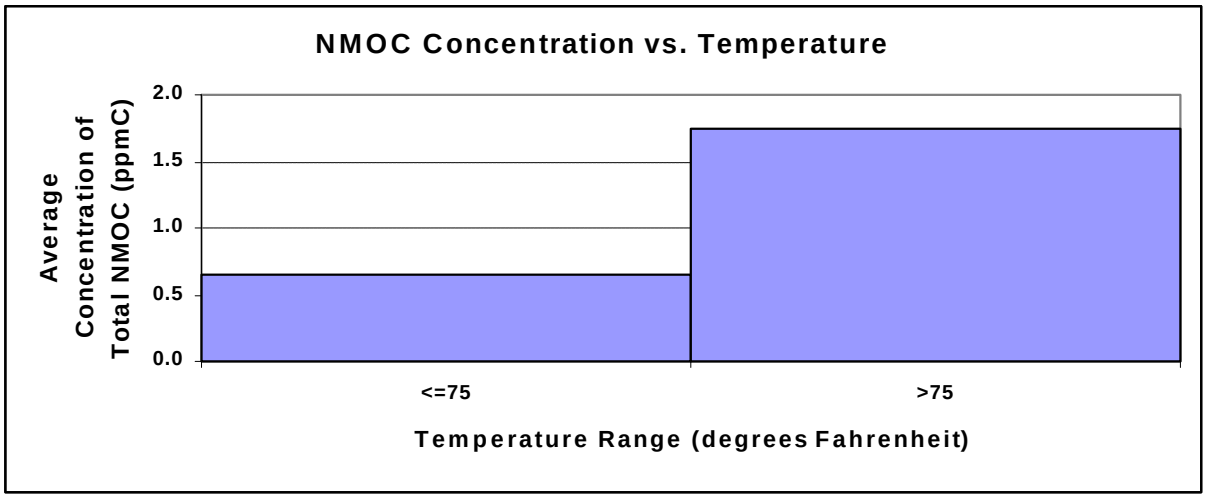


Figure 6-3
Comparison of NMOC Concentrations at JUMX to Selected Meteorological Parameters





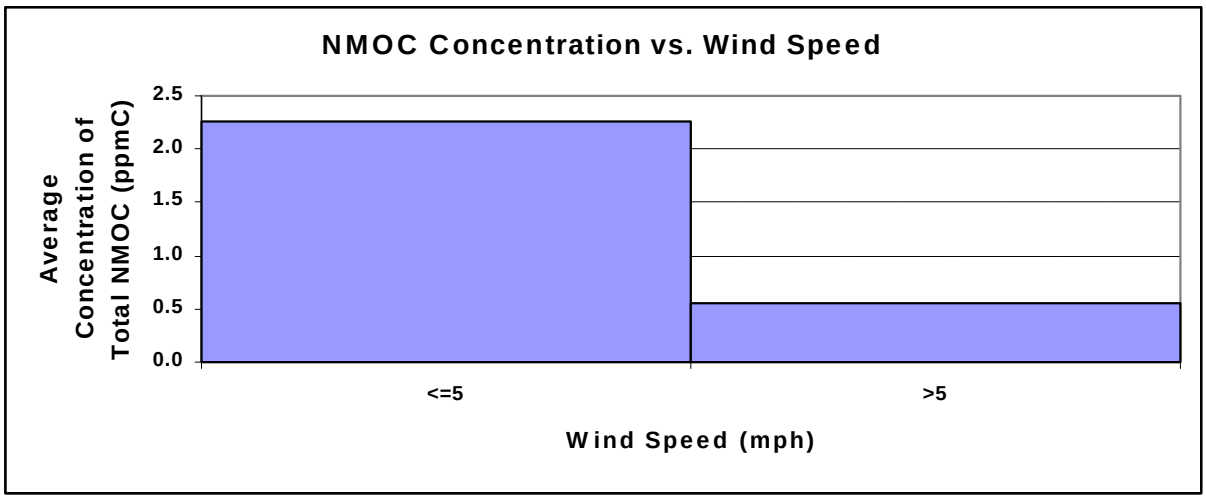
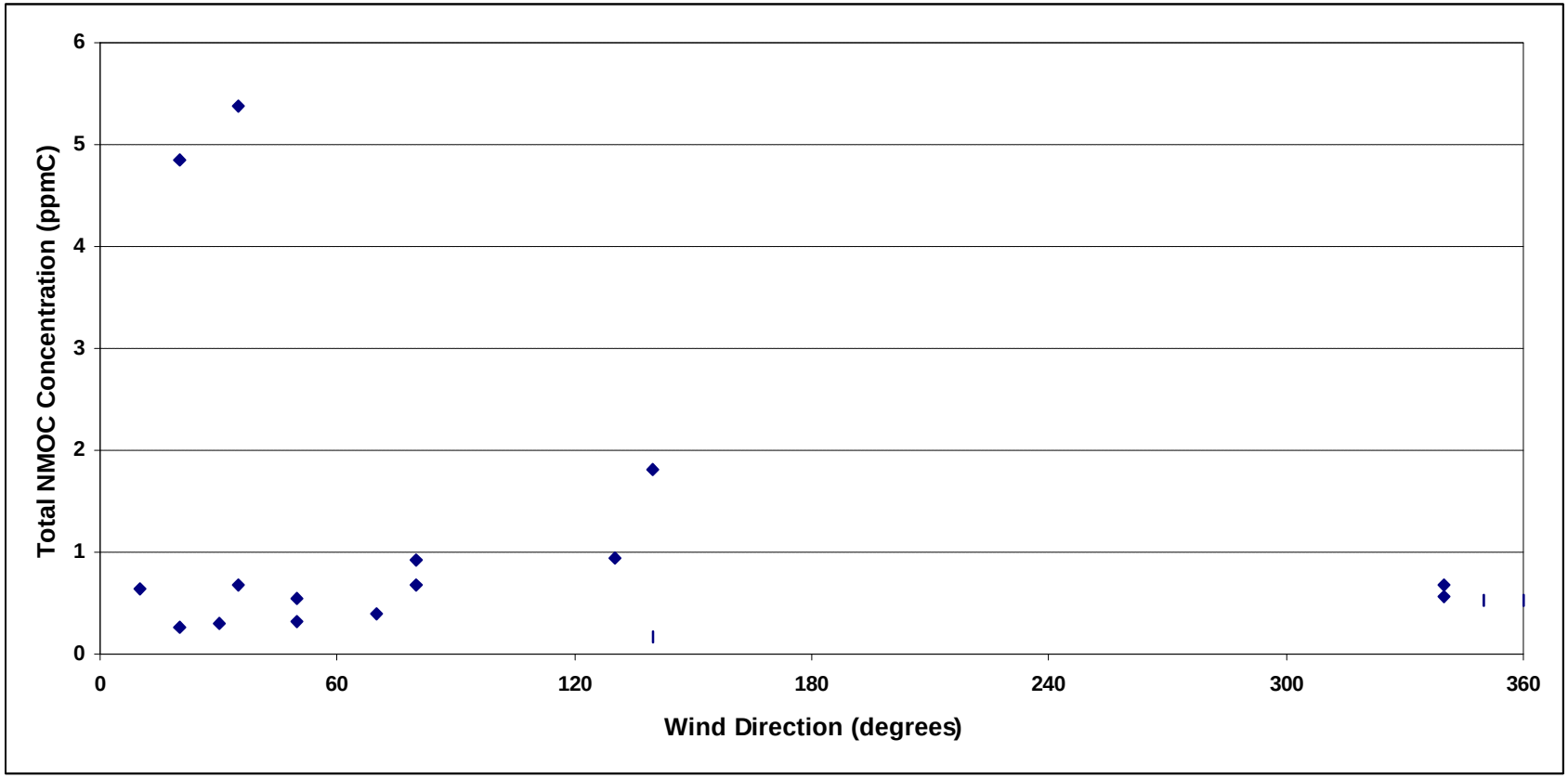
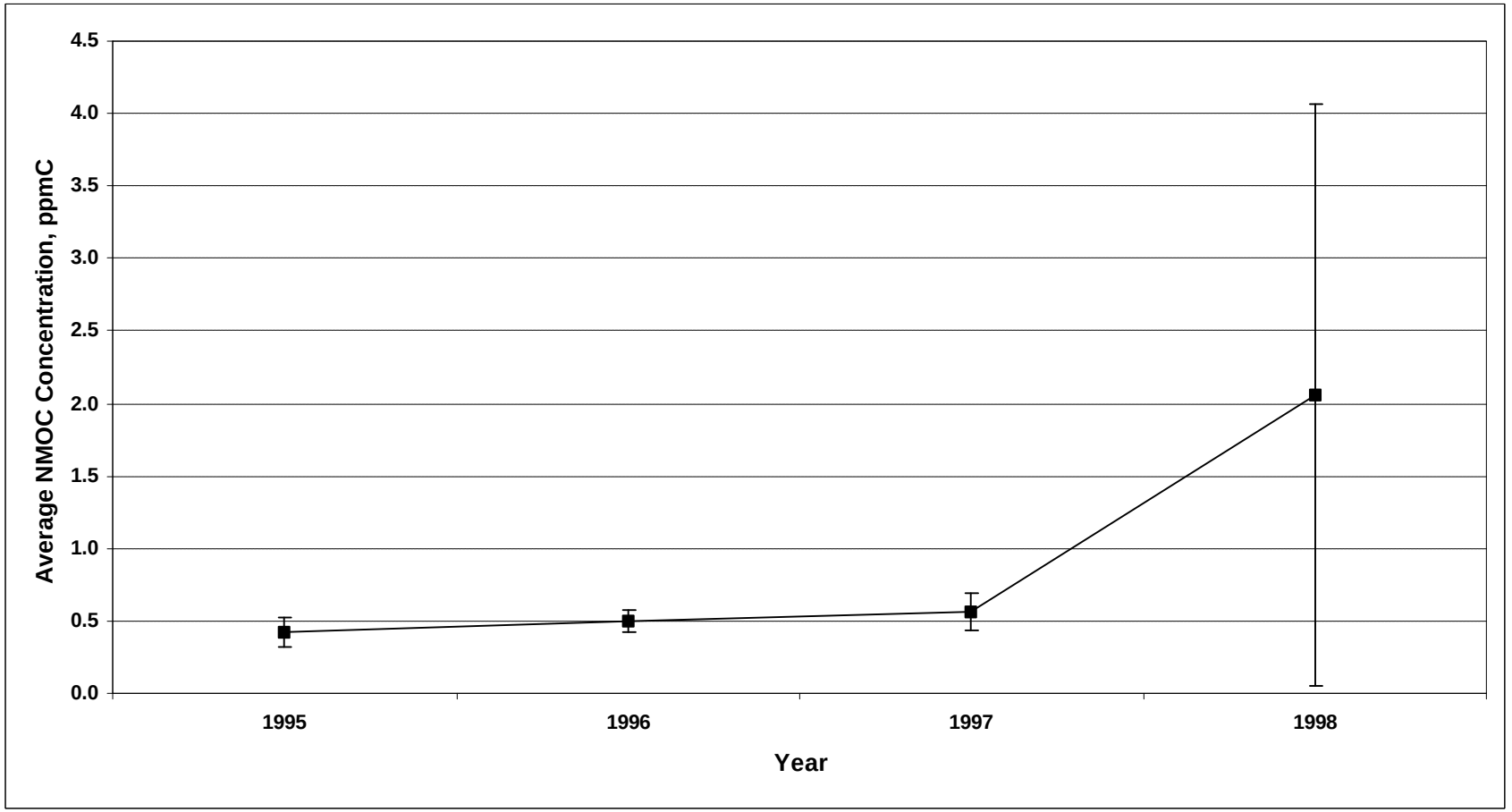


Figure 6-4
Comparison of Total NMOC Concentrations at JUMX to Wind Direction



Notes: Wind direction is the direction from which wind blows. Observations with calm or variable winds are not included in this figure. As Section 6.1.2 notes, the outlier concentration of 20.317 ppmC was not included in this analysis. For reference, the wind direction on the morning of this outlier concentration was 90 degrees.

Figure 6-5
Annual Variations in Average Concentrations of Total NMOC at JUMX



Note: The "error bars" in the graph indicate the 95-percent confidence intervals of the average concentrations. All valid sampling results (including suspected data outliers) are considered in this figure.

Figure 6-6
Annual Variations in the Frequency of Peak Concentrations of Total NMOC at JUMX

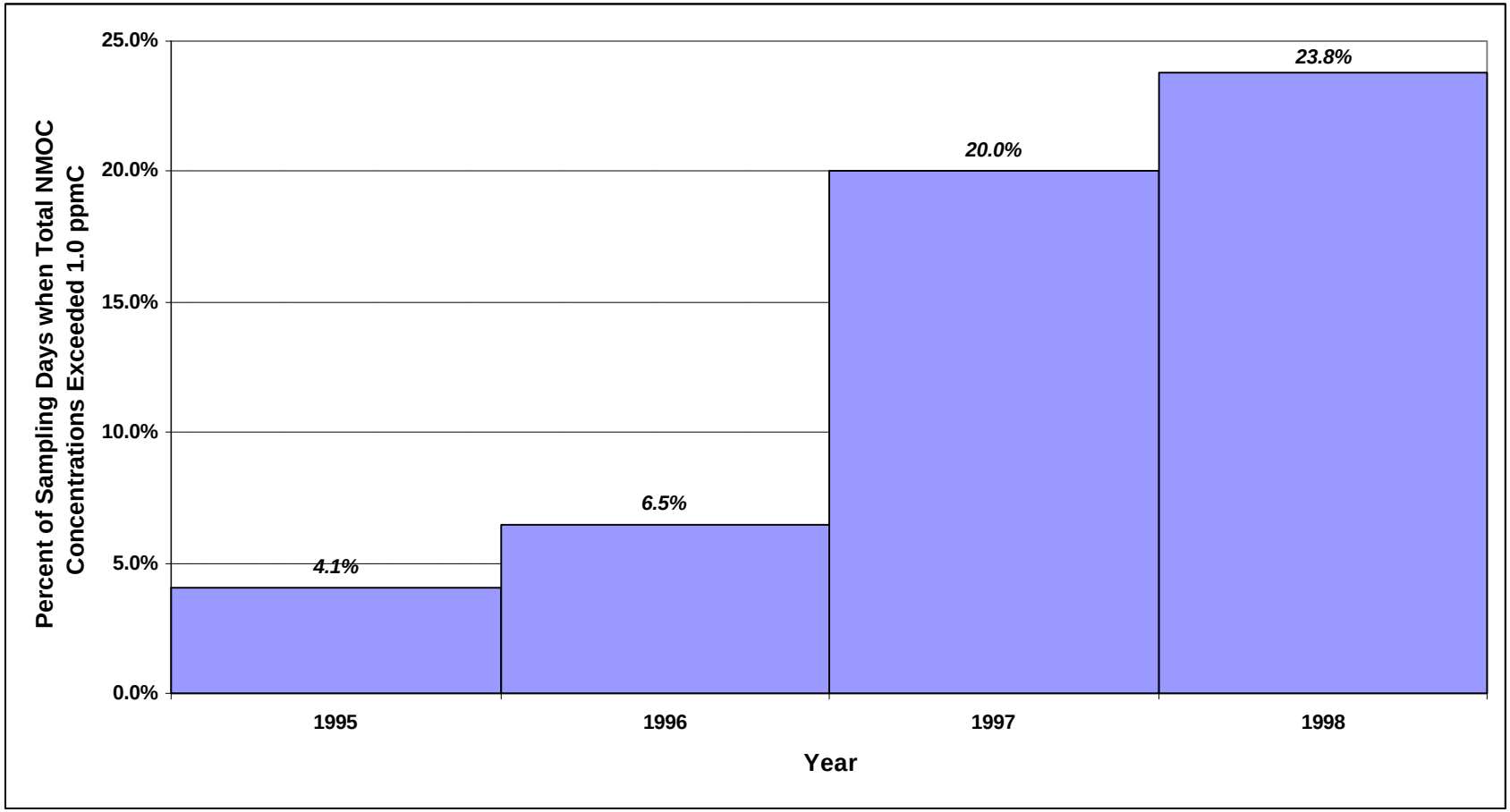
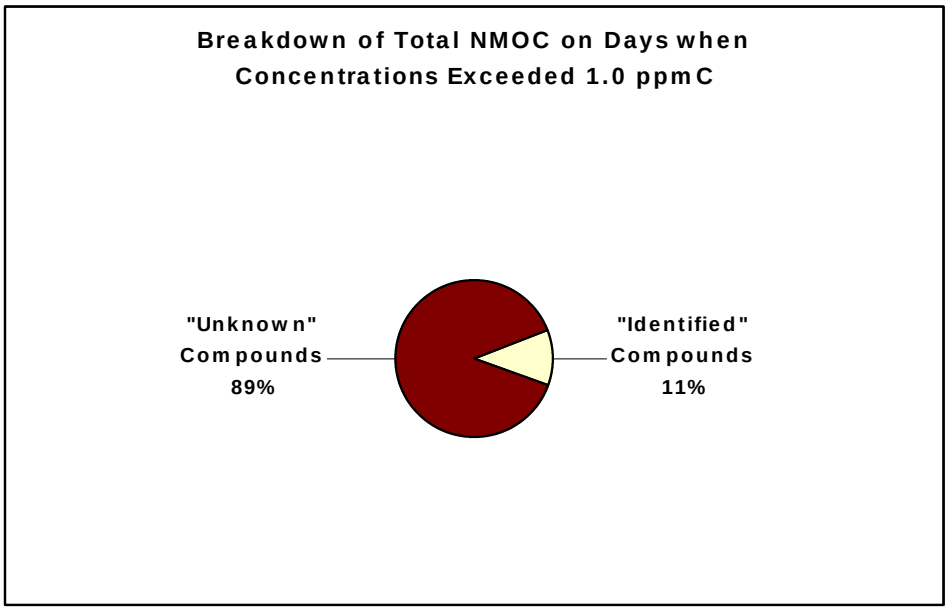


Figure 6-7
Contribution of "Identified" and "Unknown" Compounds to Total NMOC Concentrations at JUMX



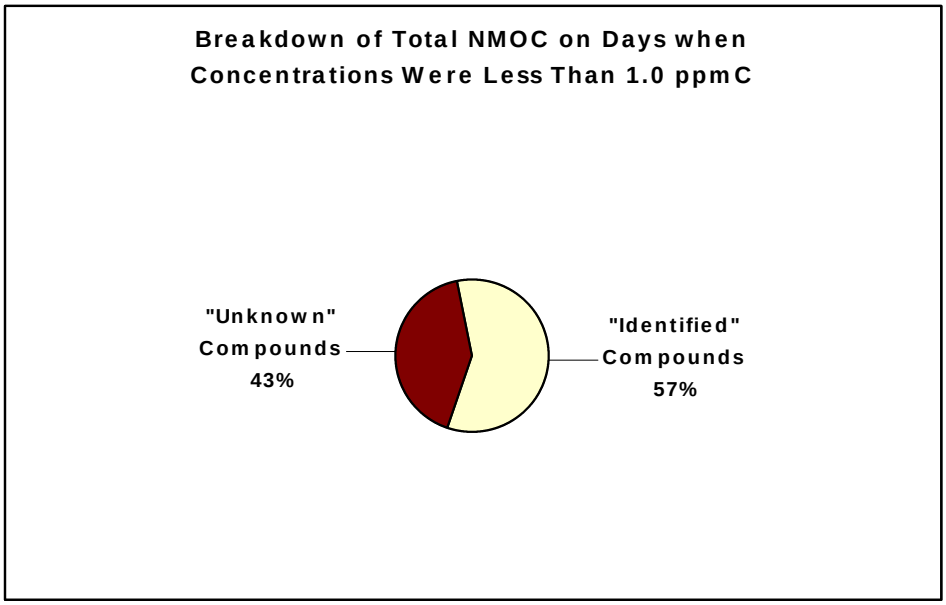
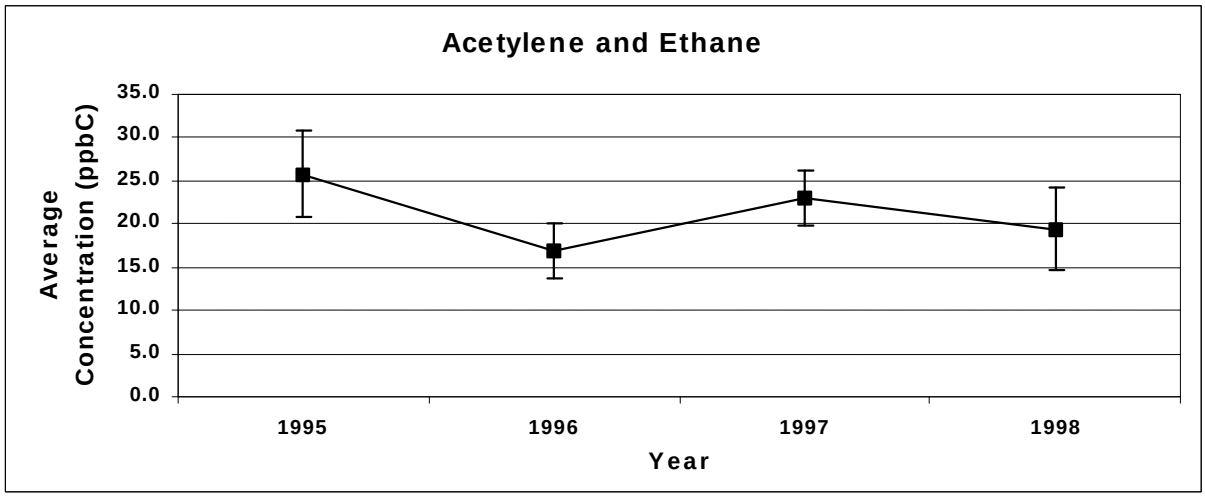
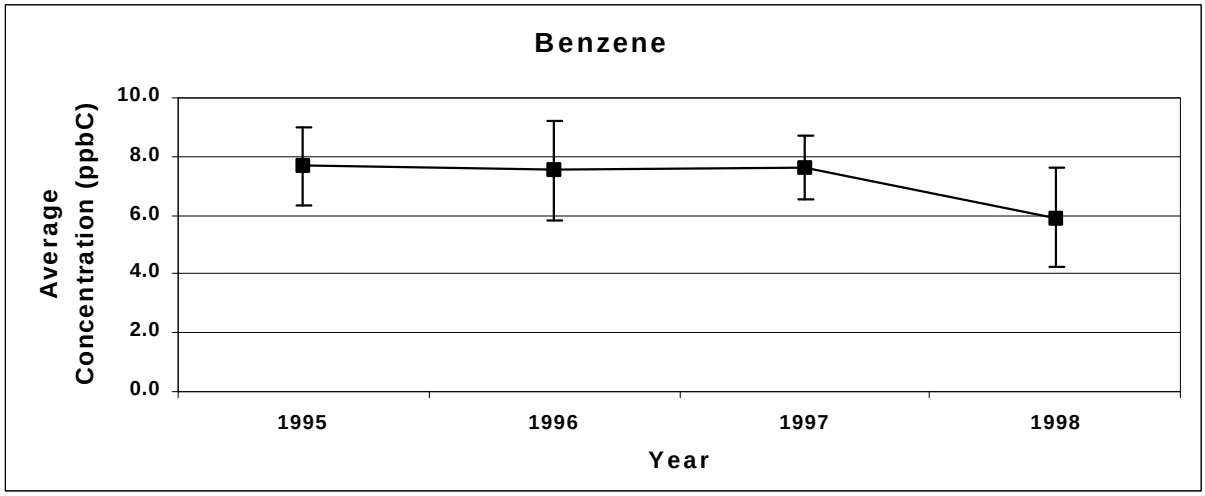
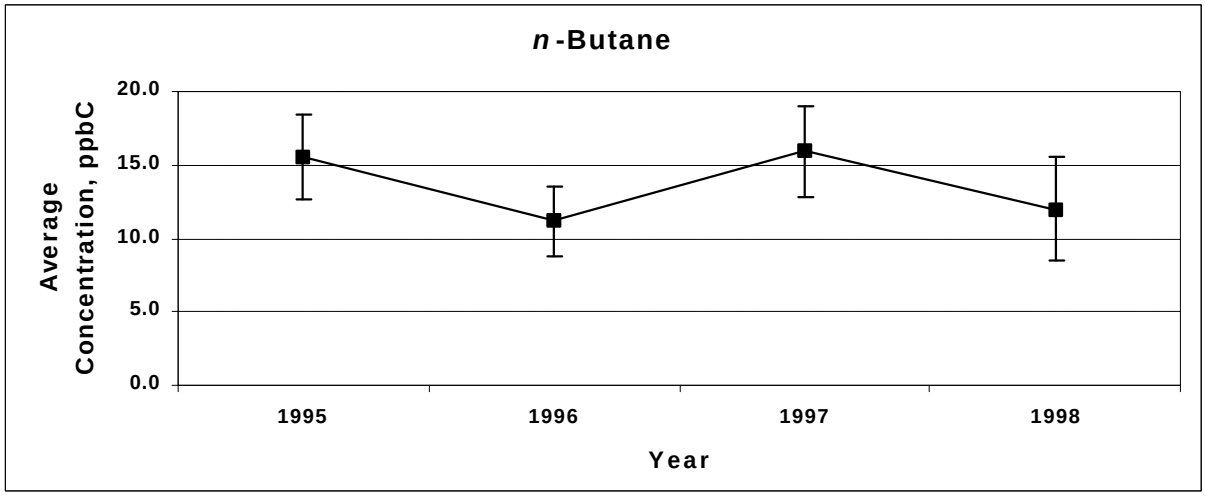


Figure 6-8 (Page 1 of 4)
Annual Variations in Concentrations of Selected SNMOC at JUMX

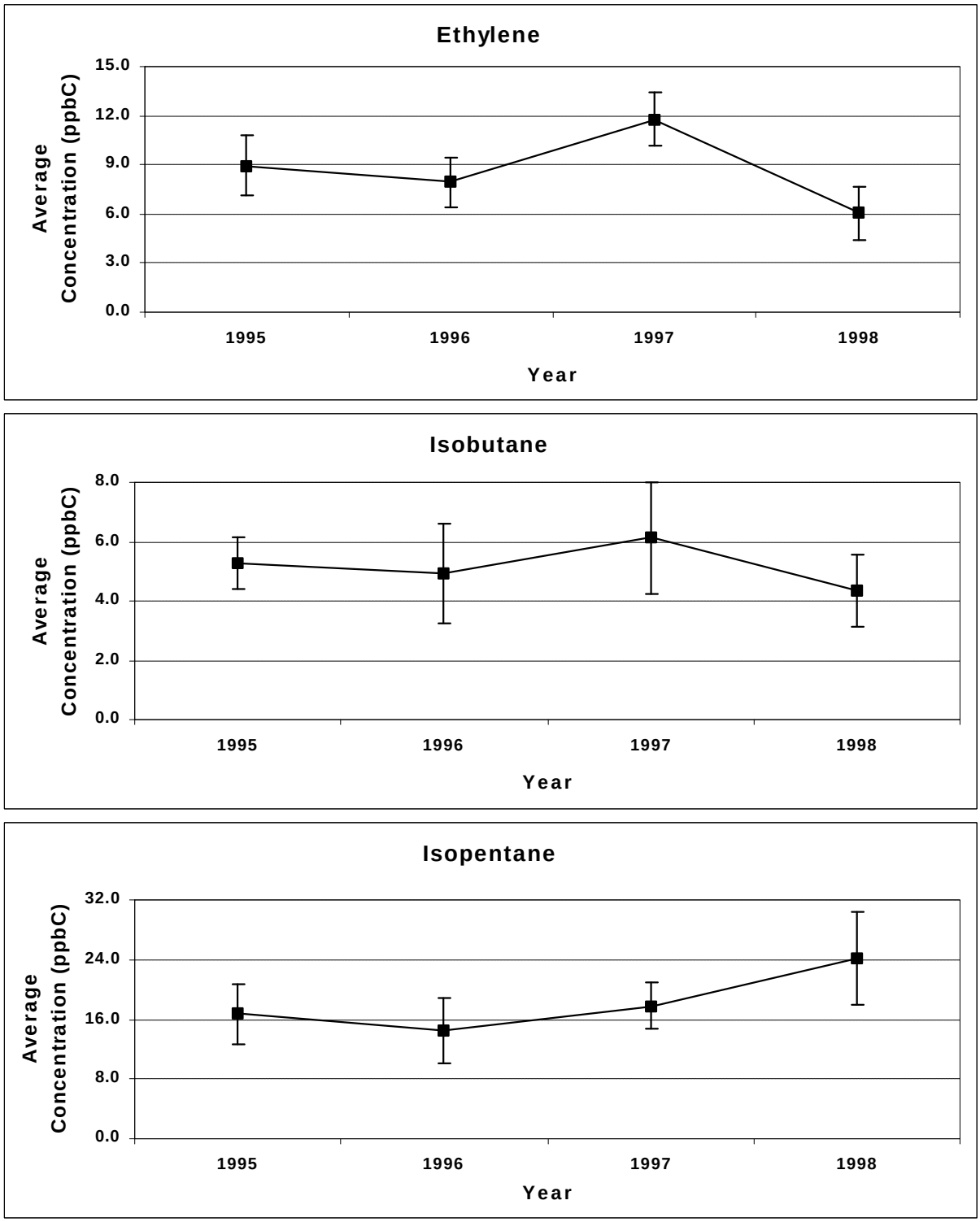






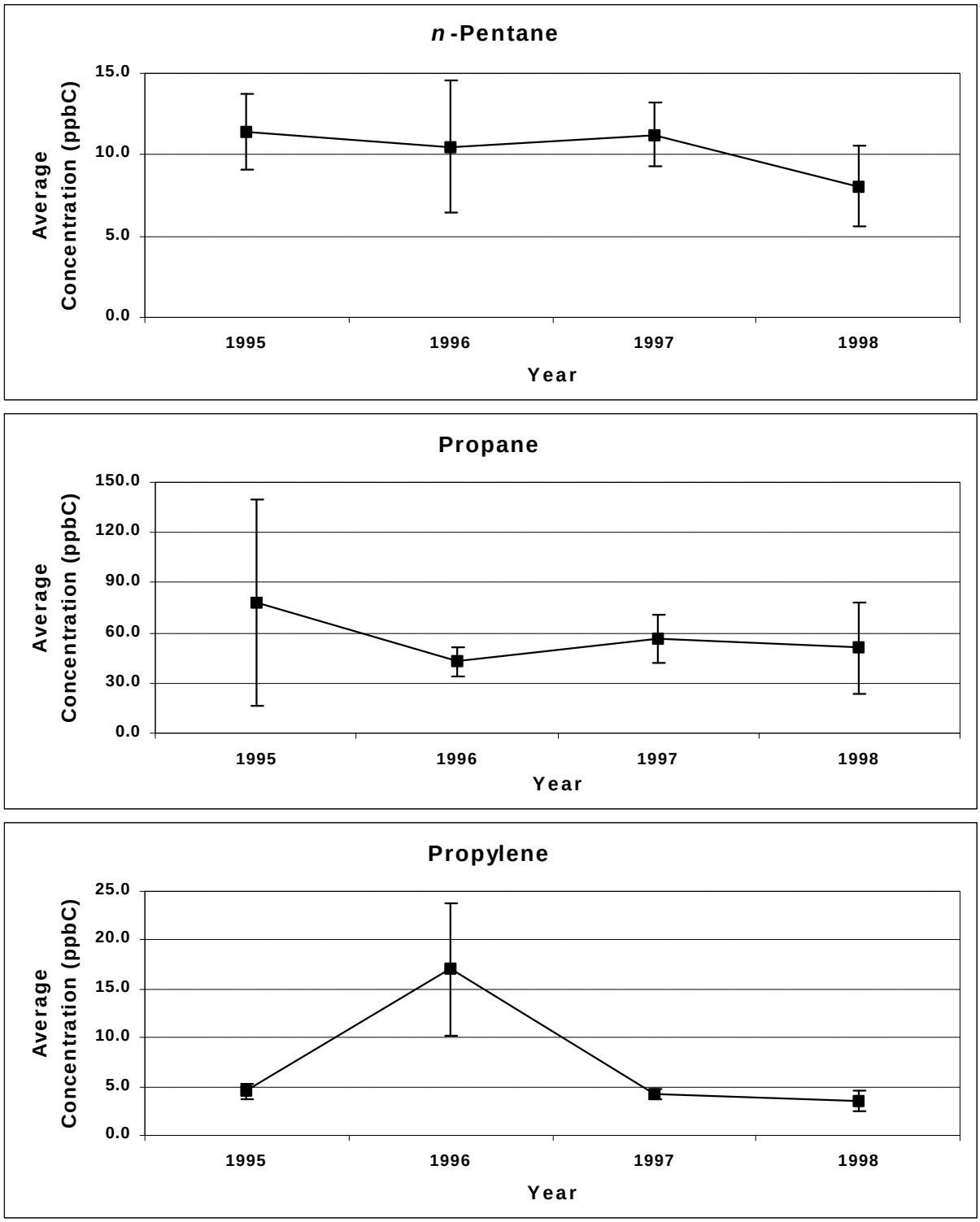
Note: Acetylene and ethane are presented in the same graph because the sampling and analytical method used during the 1996 program could not differentiate these compounds.
Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 6-8 (Page 2 of 4)
Annual Variations in Concentrations of Selected SNMOC at JUMX



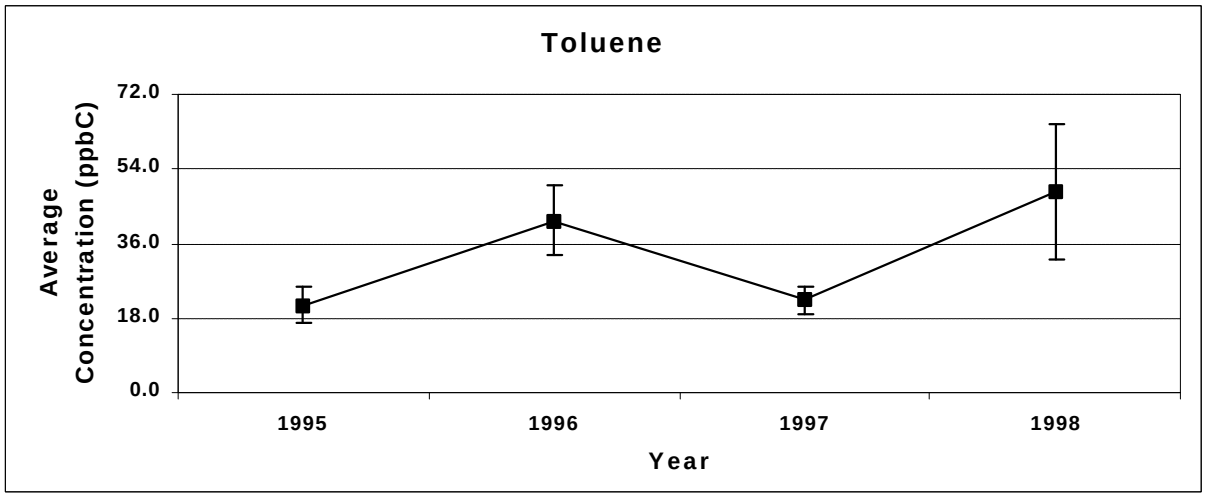
Note: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

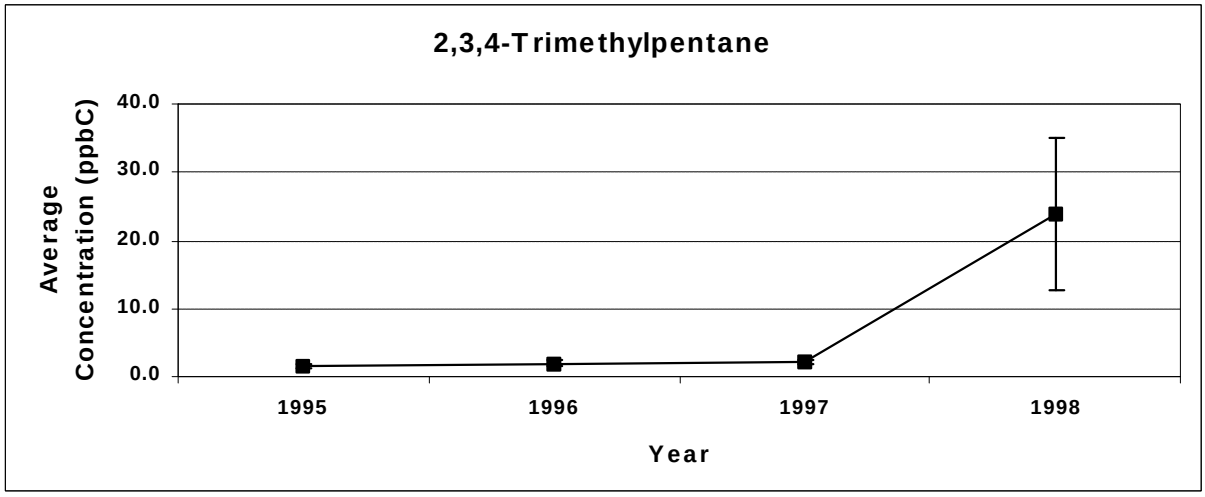
Figure 6-8 (Page 3 of 4)
Annual Variations in Concentrations of Selected SNMOC at JUMX

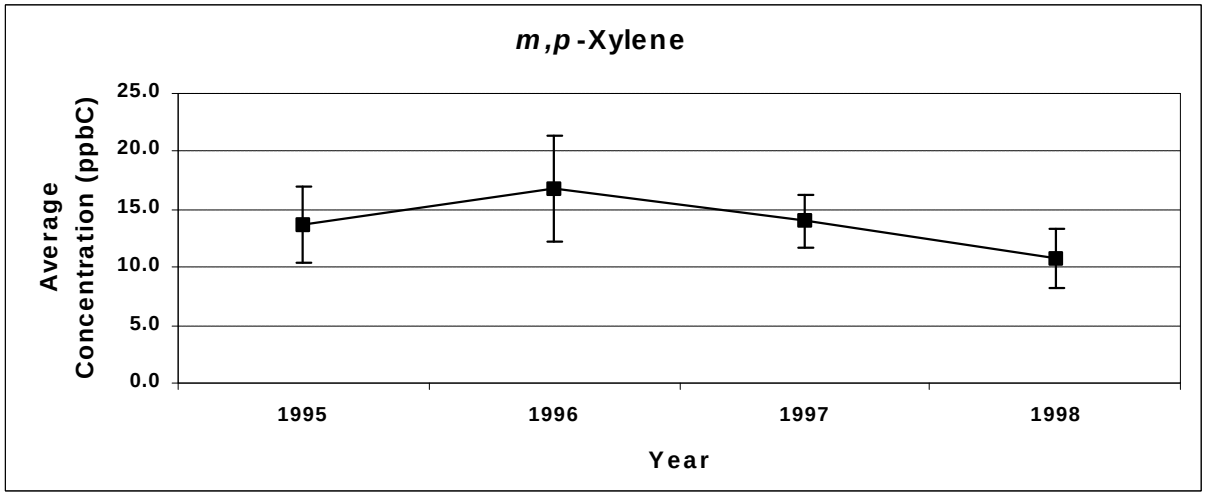


Note: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 6-8 (Page 4 of 4)
Annual Variations in Concentrations of Selected SNMOC at JUMX

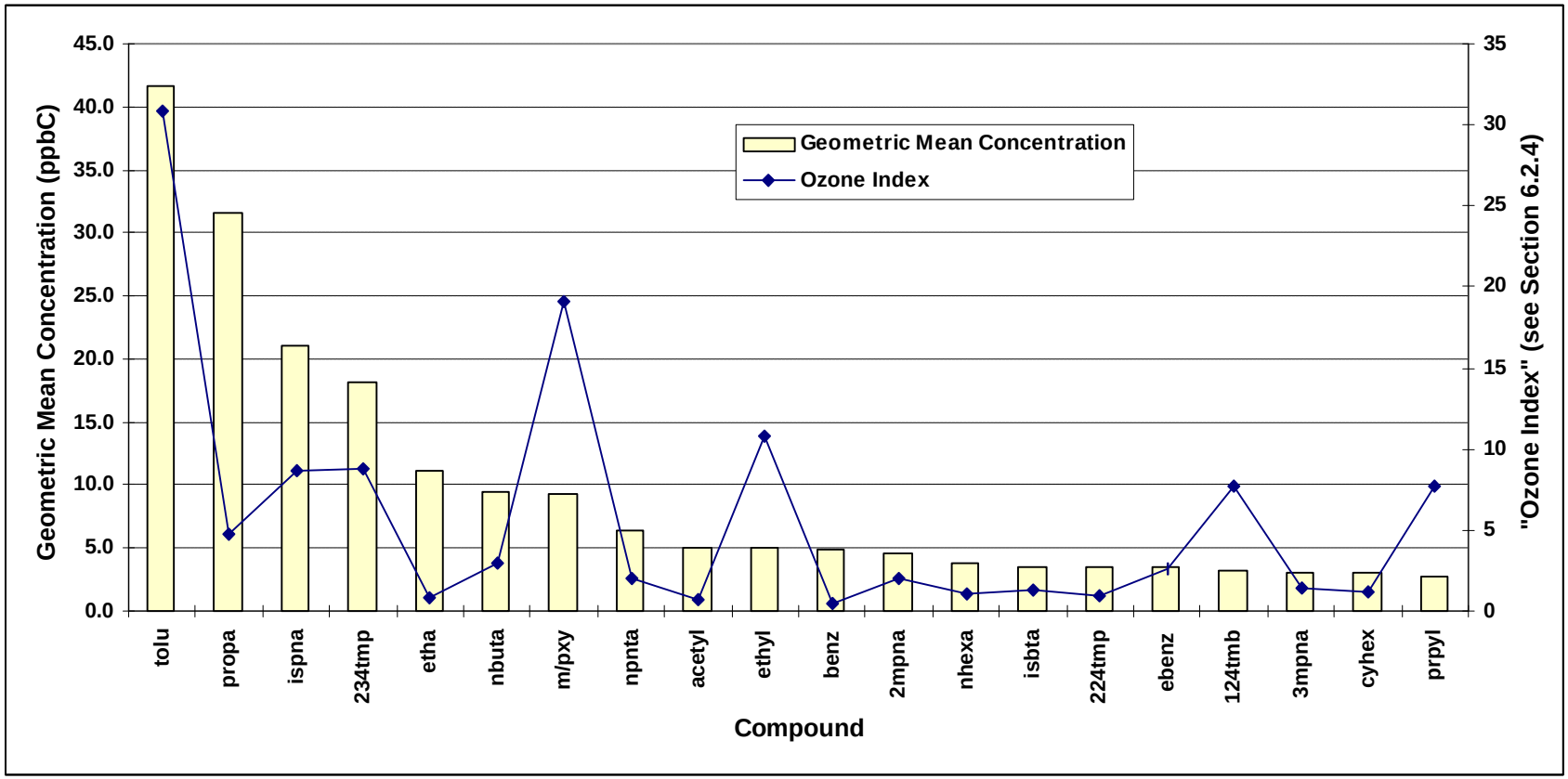






Note: Every graph is shown on a different scale.
The "error bars" indicate 95-percent confidence intervals of the average concentrations.

Figure 6-9
Ozone Indices for the 20 SNMOC with Highest Geometric Mean Concentration at JUMX



Notes: Only those compounds with MIR values listed in Table 3-1 were considered.
Table 6-3 lists the abbreviations used for the compounds.

Table 6-1
Summary Statistics for Concentrations of Total NMOC at JUMX

Category	Parameter	Monitoring Station JUMX
Prevalence	Number of valid sampling days	21
	Number of nondetects	0
	Frequency of detection	100%
Concentration Range	Lowest concentration (ppmC)	0.173
	25th percentile concentration (ppmC)	0.531
	50th percentile concentration (ppmC)	0.633
	75th percentile concentration (ppmC)	0.944
	Highest concentration (ppmC)	20.317
Central Tendency	Median concentration (ppmC)	0.633
	Arithmetic mean concentration (ppmC)	2.060
	Geometric mean concentration (ppmC)	0.845
Variability	Standard deviation (ppmC)	4.414
	Coefficient of variation	2.14

Table 6-2
Summary Statistics for SNMOC Concentrations Measured at Juarez, Mexico (JUMX)
(Based on 21 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Acetylene	0	100%	1.14	17.42	5.28	6.36	5.08	4.12	0.65
Benzene	0	100%	1.39	14.34	4.88	5.93	4.85	3.69	0.62
1,3-Butadiene	0	100%	0.10	1.47	0.55	0.64	0.49	0.43	0.67
n-Butane	0	100%	2.25	27.41	10.11	12.00	9.41	7.74	0.65
cis-2-Butene	0	100%	0.33	1.39	0.62	0.70	0.63	0.34	0.49
trans-2-Butene	0	100%	0.22	1.32	0.43	0.59	0.52	0.32	0.54
Cyclohexane	0	100%	0.72	110.41	2.08	10.78	3.09	26.00	2.41
Cyclopentane	0	100%	0.31	2.33	0.83	0.96	0.84	0.52	0.54
Cyclopentene	0	100%	0.11	1.04	0.41	0.43	0.36	0.25	0.58
n-Decane	0	100%	0.46	4.20	1.46	1.66	1.43	0.95	0.57
1-Decene	21	0%	ND	ND	0.14	0.14	0.14	0.00	0.00
m-Diethylbenzene	0	100%	0.26	0.86	0.46	0.47	0.45	0.13	0.28
p-Diethylbenzene	0	100%	0.30	0.85	0.49	0.50	0.48	0.14	0.28
2,2-Dimethylbutane	0	100%	0.43	1.62	0.79	0.88	0.82	0.34	0.38
2,3-Dimethylbutane	0	100%	0.71	9.00	2.42	2.67	2.19	1.90	0.71
2,3-Dimethylpentane	0	100%	0.80	7.11	2.49	3.04	2.60	1.71	0.56
2,4-Dimethylpentane	0	100%	0.55	4.61	1.63	1.99	1.67	1.18	0.59
n-Dodecane	0	100%	0.15	9.72	0.43	1.14	0.54	2.18	1.91

ND = nondetect

Note: Due to the limited sample size, data for all compounds should be interpreted with caution, since they may not be representative of SNMOC concentrations in the morning hours throughout the summer.

Table 6-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Juarez, Mexico (JUMX)
(Based on 21 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
1-Dodecene	1	95%	ND	1.07	0.32	0.37	0.31	0.23	0.63
Ethane	0	100%	3.43	31.80	11.32	13.07	11.10	7.76	0.59
Ethylbenzene	0	100%	1.11	7.34	3.87	3.90	3.46	1.79	0.46
2-Ethyl-1-Butene	21	0%	ND	ND	0.12	0.12	0.12	0.00	0.00
Ethylene	0	100%	1.28	13.87	4.89	6.05	5.02	3.56	0.59
m-Ethyltoluene	0	100%	0.71	5.20	2.17	2.28	2.01	1.15	0.51
o-Ethyltoluene	0	100%	0.36	1.97	0.86	0.93	0.84	0.41	0.45
p-Ethyltoluene	0	100%	0.53	2.78	1.29	1.31	1.20	0.57	0.43
n-Heptane	0	100%	0.50	5.73	2.13	2.22	1.89	1.27	0.57
1-Heptene	17	19%	ND	0.94	0.26	0.36	0.31	0.22	0.63
n-Hexane	0	100%	1.03	12.20	4.09	4.88	3.84	3.33	0.68
1-Hexene	1	95%	ND	0.56	0.21	0.25	0.21	0.14	0.55
cis-2-Hexene	2	90%	ND	1.10	0.17	0.28	0.19	0.25	0.91
trans-2-Hexene	1	95%	ND	1.01	0.22	0.30	0.21	0.26	0.87
Isobutane	0	100%	0.92	11.73	4.07	4.35	3.53	2.71	0.62
Isobutene/1-Butene	0	100%	1.18	4.37	2.47	2.68	2.51	0.95	0.35
Isopentane	0	100%	8.83	51.10	18.42	24.17	21.11	13.11	0.54
Isoprene	0	100%	0.34	1.21	0.72	0.71	0.67	0.24	0.34

ND = nondetect

Note: Due to the limited sample size, data for all compounds should be interpreted with caution, since they may not be representative of SNMOC concentrations in the morning hours throughout the summer.

Table 6-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Juarez, Mexico (JUMX)
(Based on 21 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Isopropylbenzene	0	100%	0.27	0.65	0.40	0.43	0.42	0.11	0.25
2-Methyl-1-Butene	0	100%	0.13	2.72	0.88	1.08	0.81	0.79	0.73
2-Methyl-2-Butene	0	100%	0.14	4.32	0.84	1.24	0.78	1.21	0.97
3-Methyl-1-Butene	2	90%	ND	26.14	0.62	2.01	0.51	5.58	2.78
Methylcyclohexane	0	100%	0.58	4.21	1.66	1.83	1.53	1.09	0.59
Methylcyclopentane	0	100%	0.62	7.94	2.31	2.94	2.38	1.90	0.65
2-Methylheptane	0	100%	0.46	2.03	1.14	1.22	1.15	0.41	0.33
3-Methylheptane	0	100%	0.49	2.26	1.17	1.27	1.20	0.45	0.35
2-Methylhexane	0	100%	0.93	5.32	2.38	2.39	2.13	1.17	0.49
3-Methylhexane	0	100%	0.64	6.07	2.69	2.64	2.28	1.40	0.53
2-Methylpentane	0	100%	1.22	14.64	4.51	5.59	4.57	3.55	0.63
3-Methylpentane	0	100%	0.91	9.29	3.05	3.75	3.09	2.29	0.61
2-Methyl-1-Pentene	1	95%	ND	0.93	0.27	0.33	0.25	0.23	0.70
4-Methyl-1-Pentene	10	52%	ND	0.21	0.12	0.11	0.11	0.03	0.29
n-Nonane	0	100%	0.40	2.06	0.91	1.09	0.99	0.49	0.45
1-Nonene	0	100%	0.87	11.49	2.44	3.19	2.65	2.49	0.78
n-Octane	0	100%	0.48	2.26	1.09	1.20	1.12	0.47	0.39
1-Octene	1	95%	ND	0.46	0.18	0.21	0.19	0.11	0.50

ND = nondetect

Note: Due to the limited sample size, data for all compounds should be interpreted with caution, since they may not be representative of SNMOC concentrations in the morning hours throughout the summer.

Table 6-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Juarez, Mexico (JUMX)
(Based on 21 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
n-Pentane	0	100%	1.68	21.58	6.32	8.06	6.37	5.44	0.68
1-Pentene	0	100%	0.29	1.84	0.76	0.82	0.71	0.46	0.56
cis-2-Pentene	0	100%	0.28	1.99	0.73	0.83	0.71	0.50	0.60
trans-2-Pentene	0	100%	0.37	3.73	1.00	1.34	1.07	0.94	0.71
"-Pinene	1	95%	ND	2.12	0.37	0.58	0.41	0.53	0.93
$-Pinene	0	100%	0.10	3.32	1.23	1.35	1.08	0.81	0.60
Propane	0	100%	7.34	242.48	28.64	51.09	31.51	59.79	1.17
n-Propylbenzene	0	100%	0.39	1.76	0.86	0.86	0.80	0.34	0.39
Propylene	0	100%	0.68	8.76	2.84	3.48	2.81	2.23	0.64
Propyne	6	71%	ND	0.51	0.22	0.24	0.21	0.12	0.49
Styrene	0	100%	1.48	9.50	3.53	4.04	3.56	2.17	0.54
Toluene	0	100%	11.30	188.03	38.18	48.46	41.63	36.08	0.74
n-Tridecane	1	95%	ND	1.42	0.11	0.24	0.14	0.37	1.51
1-Tridecene	16	24%	ND	0.14	0.14	0.13	0.12	0.03	0.20
1,2,3-Trimethylbenzene	0	100%	0.26	2.02	0.77	0.84	0.74	0.43	0.52
1,2,4-Trimethylbenzene	0	100%	1.00	8.53	3.17	3.60	3.14	1.90	0.53
1,3,5-Trimethylbenzene	0	100%	0.57	3.29	1.68	1.69	1.55	0.67	0.40
2,2,3-Trimethylpentane	0	100%	0.57	7.28	1.83	2.16	1.90	1.38	0.64

ND = nondetect

Note: Due to the limited sample size, data for all compounds should be interpreted with caution, since they may not be representative of SNMOC concentrations in the morning hours throughout the summer.

Table 6-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Juarez, Mexico (JUMX)
(Based on 21 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
2,2,4-Trimethylpentane	0	100%	1.06	9.44	3.62	4.21	3.52	2.41	0.57
2,3,4-Trimethylpentane	0	100%	6.03	113.85	17.03	23.90	18.22	24.69	1.03
n-Undecane	0	100%	0.47	5.06	1.24	1.51	1.23	1.17	0.77
1-Undecene	5	76%	ND	0.28	0.14	0.15	0.13	0.06	0.40
m,p-Xylene	0	100%	2.83	22.71	9.80	10.75	9.29	5.59	0.52
o-Xylene	0	100%	1.52	10.89	5.33	5.41	4.97	2.18	0.40
TNMOC (w/ unknowns)	0	100%	172.92	20,317.32	633.12	2,060.40	844.76	4,414.40	2.14
TNMOC (speciated)	0	100%	87.60	552.87	332.57	324.89	294.26	136.34	0.42

ND = nondetect

Note: Due to the limited sample size, data for all compounds should be interpreted with caution, since they may not be representative of SNMOC concentrations in the morning hours throughout the summer.

Table 6-3
Abbreviations Used in Figure 6-9

Abbreviation	Compound
tolu	Toluene
propa	Propane
ispna	Isopentane
234tmp	2,3,4-Trimethylpentane
etha	Ethane
nbuta	*n*-Butane
m/pxy	*m,p*-Xylene
npnta	*n*-Pentane
acetyl	Acetylene
ethyl	Ethylene
benz	Benzene
2mpna	2-Methylpentane
nhexa	*n*-Hexane
isbta	Isobutane
224tmp	2,2,4-Trimethylpentane
ebenz	Ethylbenzene
124tmb	1,2,4-Trimethylbenzene
3mpna	3-Methylpentane
cyhex	Cyclohexane
prpyl	Propylene

Note: Abbreviations in this table are presented in the same order as in Figure 6-9 (i.e., in the order of compounds with decreasing concentration at JUMX).

Table 6-4
Summary Statistics for Carbonyl Concentrations Measured at Juarez, Mexico (JUMX)
(Based on 4 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbv)	Highest (ppbv)	Median (ppbv)	Arithmetic Mean (ppbv)	Geometric Mean (ppbv)	Standard Deviation (ppbv)	Coefficient of Variation
Acetaldehyde	0	100%	1.07	2.18	1.39	1.51	1.46	0.47	0.31
Acetone	0	100%	1.62	5.01	3.02	3.17	2.93	1.39	0.44
Acrolein	0	100%	0.06	0.20	0.10	0.12	0.10	0.06	0.55
Benzaldehyde	0	100%	0.10	0.17	0.16	0.15	0.15	0.03	0.21
Butyr/Isobutyraldehyde	0	100%	0.31	0.57	0.46	0.45	0.44	0.11	0.24
Crotonaldehyde	4	0%	ND	ND	0.00	0.00	0.00	0.00	0.00
2,5-Dimethylbenzaldehyde	1	75%	ND	0.23	0.21	0.16	0.08	0.11	0.66
Formaldehyde	0	100%	2.09	3.24	2.42	2.54	2.51	0.53	0.21
Hexanaldehyde	1	75%	ND	0.07	0.06	0.05	0.03	0.03	0.60
Isovaleraldehyde	1	75%	ND	0.11	0.09	0.07	0.04	0.05	0.64
Propionaldehyde	0	100%	0.21	0.29	0.23	0.24	0.24	0.04	0.15
Tolualdehydes	4	0%	ND	ND	0.01	0.01	0.01	0.00	0.00
Valeraldehyde	0	100%	0.06	0.30	0.28	0.23	0.19	0.12	0.51

ND = nondetect

Note: Due to the limited sample size (only 4 days with valid samples), the summary statistics for all compounds should be interpreted with caution, since they might not be representative of carbonyl concentrations in the morning hours throughout the summer.

7.0 Monitoring Results for Long Island, New York (LINY)

This section summarizes and interprets the total NMOC monitoring data collected at the Long Island, NY (LINY), monitoring station during the 1998 NMOC/SNMOC Monitoring Program. This section also evaluates total NMOC data from previous years for the purpose of investigating annual variations. As Table 2-1 noted, SNMOC, VOC, and carbonyl data were not collected at this location.

The map in Figure 7-1 indicates the location of the LINY monitoring station and land use in its vicinity. Located on a golf course in a suburban area, the monitoring station is surrounded by open space and mostly single-story buildings. New York City is approximately 15 miles west of the station. Emissions from many different sources impact the ambient levels of total NMOC at LINY. These sources likely include three heavily traveled roads and many other roads that pass within 1 mile of the station and numerous industrial facilities located in the area. Transport of emissions from the densely populated New York City area also affects air quality at LINY.

During the 1998 program, total NMOC samples were attempted on 84 days; 81 of these samples generated valid results, and 3 of the samples were voided. The data completeness, which is defined as the percentage of attempted samples that are valid, was therefore 96 percent. The high completeness figure suggests that the 1998 NMOC/SNMOC Monitoring Program was efficiently managed at LINY.

The remainder of this section provides a summary of the 1998 total NMOC monitoring data for LINY (Section 7.1), compares the measured concentrations to meteorological parameters (Section 7.2), characterizes how total NMOC concentrations have changed at this station since 1990 (Section 7.3), and briefly summarizes the key findings for LINY (Section 7.4).

7.1 Data Summary

Using the four data summary parameters defined in Section 3.1, Table 7-1 presents an overview of the total NMOC monitoring data collected in the summer of 1998 at LINY. When

reviewing these data, it is important to remember that total NMOC includes a wide range of organic compounds (e.g., alkanes, olefins, aromatics, oxygenates, halogenated hydrocarbons), thus providing a composite measure of the air pollution that is known to affect ozone formation processes. Since total NMOC does not include many pollutants typically found in urban ambient air, such as inorganic acids, particulate matter, and heavier organic compounds, the total NMOC concentrations should not be considered the only measure of overall levels of air pollution.

An overview of the data summary presented in Table 7-1 follows:

- *Prevalence.* In every sample collected at LINY during the 1998 program, total NMOC was measured at levels at least an order of magnitude higher than the estimated method detection limit, 0.005 ppmC (or 5 ppbC). The prevalence of total NMOC was therefore 100 percent, and none of the air quality measurements collected at LINY were affected by nondetect observations. Due to the high prevalence, completeness, and measurement precision, the summary statistics presented in Table 7-1 are believed to represent air quality at LINY accurately.

- *Concentration range.* According to Table 7-1, total NMOC concentrations at LINY during the morning hours of the summer of 1998 ranged from 0.067 ppmC to 0.643 ppmC. The quartile concentrations listed in Table 7-1 indicate that three-fourths of the total NMOC concentrations were lower than 0.300 ppmC. Figure 7-2, which presents the distribution of total NMOC concentrations measured at LINY, offers a better visual perspective on the range of concentrations. The data presented in Figure 7-2 indicate that 90 percent of the total NMOC levels at LINY were lower than 0.400 ppmC. Figure 7-2 also illustrates that none of the total NMOC concentrations at LINY appeared to be outliers. (Sections 6 and 8 present examples of outlier concentrations of total NMOC.)

  Not shown in either Table 7-1 or Figure 7-2 is an apparent association between elevated total NMOC concentrations at LINY and elevated total NMOC concentrations at NWNJ, which is located approximately 20 miles west of the LINY station. More specifically, the dates on which two of the three highest total NMOC concentrations were measured at LINY (June 25 and September 25) are the same as the dates on which the nearby NWNJ monitoring station measured its two highest total NMOC concentrations. The coincidence of these dates suggests that certain regional phenomena contribute to the highest levels of total NMOC measured in the Newark–New York City metropolitan area. These phenomena might include unique meteorological conditions or enhanced long-range transport of air pollution from other areas. The associations between selected meteorological conditions and total NMOC concentrations are addressed in Section 7.2.

- *Central tendency*. As Table 7-1 shows, the geometric mean concentration of total NMOC at LINY during the 1998 program was 0.195 ppmC—the lowest geometric mean concentration that has been observed at LINY since this monitoring station first started collecting total NMOC samples in 1990. Section 7.3, which evaluates annual variations in air quality at LINY, shows that the total NMOC levels observed during the 1998 program continue a statistically significant downward trend in average total NMOC concentration.

  In addition to evaluating the program-average central tendency concentrations, monthly-average central tendencies were calculated and evaluated. During the 1998 program, the total NMOC concentrations were, on average, higher during the morning hours of September than during the morning hours of June, July, or August. However, none of these concentration differences were found to be statistically significant.

- *Variability*. As Table 7-1 shows, the standard deviation of total NMOC concentrations during the 1998 program was 0.137 ppmC, which is 60 percent of the arithmetic mean concentration. This finding is notably consistent with the coefficients of variation observed at LINY in the past three summers. More specifically, the coefficient of variation for total NMOC concentrations was 0.62 in 1995, 0.67 in 1996, 0.64 in 1997, and 0.60 in 1998. This similarity suggests that the variability in total NMOC levels at LINY does not change considerably from year to year, even though the average concentration does (see Section 7.3).

7.2 Comparison to Selected Meteorological Conditions

To provide greater insight into the trends and patterns among the total NMOC concentrations at LINY, the following discussion identifies associations between levels of total NMOC and selected meteorological parameters. This analysis considers 3-hour average observations of relative humidity, precipitation, temperature, wind direction, and wind speed, all of which were measured between 7:00 and 10:00 a.m. at nearby John F. Kennedy International Airport. Due to the close proximity of this meteorological station to the LINY monitoring station, the meteorological data are believed to represent typical conditions at the LINY site.

To facilitate comparison of data trends from the 1998 program to those identified previously, the following analyses of meteorological conditions are presented in a format almost identical to that used in Section 4.2.1.1 of the 1997 NMOC/SNMOC report. As a notable improvement, however, the analyses in this report differentiate the data trends that were found to

be statistically significant from those that were not. The following discussion puts the associations between total NMOC at LINY and local meteorological conditions into perspective:

- *Humidity*. The graph in Figure 7-3 shows that, during the summer of 1998, levels of total NMOC at LINY tended to be lower on mornings when the relative humidity was high. However, the concentration differences shown in the figure are marginal, and none of them are statistically significant. In short, total NMOC levels at LINY were observed to be lower, on average, on the more humid mornings, but the association between humidity and total NMOC concentrations was found to be relatively weak and possibly anomalous.

  This general finding is notably different from that reported in the 1997 NMOC/SNMOC report. During the summer of 1997, total NMOC concentrations at LINY on mornings when the relative humidity was less than 60 percent were, on average, *nearly 1.5 times higher* than NMOC concentrations on mornings when relative humidity was greater than or equal to 60 percent. The different findings between the 1997 and 1998 programs highlight an inherent difficulty with assessing and understanding the impacts of local meteorological conditions on air quality: Since so many different factors influence levels of air pollution, a single factor's effect on air quality might be masked in years when other conditions (e.g., temperature or precipitation) have unusually high or low values. As a result, researchers are encouraged to conduct multivariate statistical analyses on the total NMOC monitoring data to understand how different combinations of conditions affect local air quality. Such analyses, however, are not included in the scope of this project.

- *Precipitation.* Measurable rain was observed at John F. Kennedy International Airport during 5 of the 81 valid sampling events at the LINY station. The average concentration of total NMOC for the 5 days with measurable precipitation was 0.111 ppmC, and the average concentration for all other days was 0.237 ppmC. In short, total NMOC concentrations during hours with measurable precipitation were, on average, less than half of the total NMOC concentrations on other days; this difference in concentrations was found to be statistically significant. This general trend—total NMOC levels being lower on rainy days—not only is consistent with the data trends of the 1997 program, but is also consistent with "wet deposition" algorithms in EPA-approved dispersion models (USEPA 1995). These algorithms indicate that precipitation removes portions of gases and particles from ambient air.

- *Temperature.* Figure 7-3 shows that, during the 1998 program, total NMOC concentrations at LINY were generally higher on warmer mornings. More specifically, average levels of total NMOC on mornings when temperatures exceed 80^{o}F were roughly 50 percent higher than levels on cooler mornings; this difference in concentrations was statistically significant. Though this trend of higher concentrations of total NMOC on warmer mornings was also observed during the 1997 program, no such trend was observed

during the summer of 1996 (i.e., concentrations of total NMOC were completely uncorrelated with temperature). Continued review of ambient air monitoring data and meteorological data can confirm the existence of a relationship between total NMOC and temperature.

- *Wind Speed.* According to Figure 7-3, total NMOC concentrations at LINY were, on average, lower on windier mornings than they were on mornings with light or no winds. The roughly 15 percent difference between NMOC concentrations on the windiest days (wind speeds greater than or equal to 14 mph) and concentrations on the moderately windy days (wind speeds greater than or equal to 9 mph, but less than 14 mph) was not statistically significant; however, the 25 percent difference between NMOC concentration on the windiest days and on the least windy days (wind speeds less than 9 mph) was statistically significant. This statistically significant trend is consistent both with findings presented in the 1997 report and dispersion modeling algorithms, which predict that dispersion of pollutants increases with wind speed (USEPA 1995).

- *Wind Direction.* To examine associations between wind direction and total NMOC concentrations, the scatter plot in Figure 7-4 indicates how levels of total NMOC at LINY varied with wind direction during the 1998 program. (The figure does not present sampling results collected when winds were calm or variable.) As Figure 7-4 shows, no particularly strong correlation between total NMOC concentrations and any specific wind direction was observed. Though some of the highest levels of total NMOC were observed when winds were blowing from the south (wind directions between 150 and 210 degrees), the average concentration of total NMOC for this subset of wind directions (0.27 ppmC) was not considerably higher than the average concentration of total NMOC for all other wind directions (0.21 ppmC). Moreover, the difference in these concentrations was not statistically significant.

  The absence of statistically significant data correlations between wind direction and total NMOC concentration suggests that the direction of the wind has little bearing on ambient levels of total NMOC at LINY during the morning hours. The absence of notable correlations is best explained by the hypothesis that the primary components of total NMOC are emitted from sources that are found in all directions from the LINY monitoring station, such as motor vehicles. The analyses in the 1997 report reached the same conclusion.

When interpreting associations between meteorological conditions and total NMOC monitoring data for LINY, it is important to note that this section presents only a small subset of the numerous data analyses that could be performed on this data set. Greater insight into the factors

that affect levels of air pollution can be gained by examining meteorological conditions from longer time frames (e.g., are total NMOC concentrations considerably lower or higher after 24 hours of warmer temperatures?) and by using multivariate statistical techniques (e.g., do higher levels of total NMOC occur when both humidity and temperature are high?). Researchers are encouraged to conduct such additional analyses to identify data trends that are not readily apparent from the analyses presented in this section.

7.3 Annual Variations

Several different measures can be used to evaluate how air quality at a particular location varies from year to year. To put the annual variations for the LINY monitoring stations into perspective, the following discussion examines how average levels of total NMOC and peak levels of total NMOC have changed from the 1990 to the 1998 NMOC/SNMOC Monitoring Programs. (Note: Total NMOC monitoring data from LINY are not available from the 1992 program.)

- *Changes in average concentrations of total NMOC.* Figure 7-5 indicates how the average concentration of total NMOC has changed at LINY since the 1990 NMOC/SNMOC Monitoring Program. Note that the figure presents the average concentrations of total NMOC measured during the morning hours of the summer months, which are likely quite different from annual average concentrations. Clearly, average levels of total NMOC at LINY increased in some years and decreased in others.

  Several important observations can be drawn from the figure. For example, the average concentration of total NMOC observed during the 1998 program is the lowest level that has been observed at LINY over the last 9 years. This trend was found to be statistically significant, except that the average concentration observed in the 1997 program was not found to be statistically different from that of the 1998 program. Furthermore, closer inspection of the diagram reveals that the average concentrations of total NMOC for the 1995, 1997, and 1998 programs are all lower than the average concentrations observed prior to 1995, but the concentration differences in some cases were not statistically significant. It is interesting to note that this apparent decline in concentrations of total NMOC began after motor vehicles in the New York City–Newark metropolitan area began using reformulated fuels. In fact, the average concentration of total NMOC measured in the summer months between 1995 and 1998 is 23 percent lower than the average concentration measured in the summer months between 1990 and 1994; this decrease was statistically significant. The exact causes of the decreasing concentrations are not known, but are likely to include some combination of motor vehicle fuel usage, changes in traffic patterns, and

impacts from various pollution control initiatives. It is also possible that the statistically significant decline in total NMOC concentrations over the last 4 years is merely part of longer-term fluctuations in levels of air pollution. Results from continued monitoring at the same location are needed to determine if the apparent downward trend in levels of total NMOC persists, if the downward trend levels off, or if the average levels of total NMOC increase back to their 1990–1994 levels.

- *Changes in peak concentrations of total NMOC.* Since many environmental statues regulate both long-term average and short-term peak (or "episodic") levels of air pollution, annual variations in the frequency of peak concentrations were evaluated. As one measure of the changing frequency of peak concentrations at LINY, Figure 7-6 shows the number of total NMOC concentrations measured at levels greater than 1.0 ppmC in the 1990–1998 NMOC/SNMOC Monitoring Programs. According to the figure, total NMOC concentrations have not exceeded 1 ppmC during the summer morning hours at LINY since 1996. However, unlike the annual variations of the *average* concentrations, no downward long-term trend in the *peak* concentrations is readily apparent. Analyses of continued monitoring are needed to confirm if the frequency and magnitude of peak concentrations of total NMOC at LINY have indeed decreased.

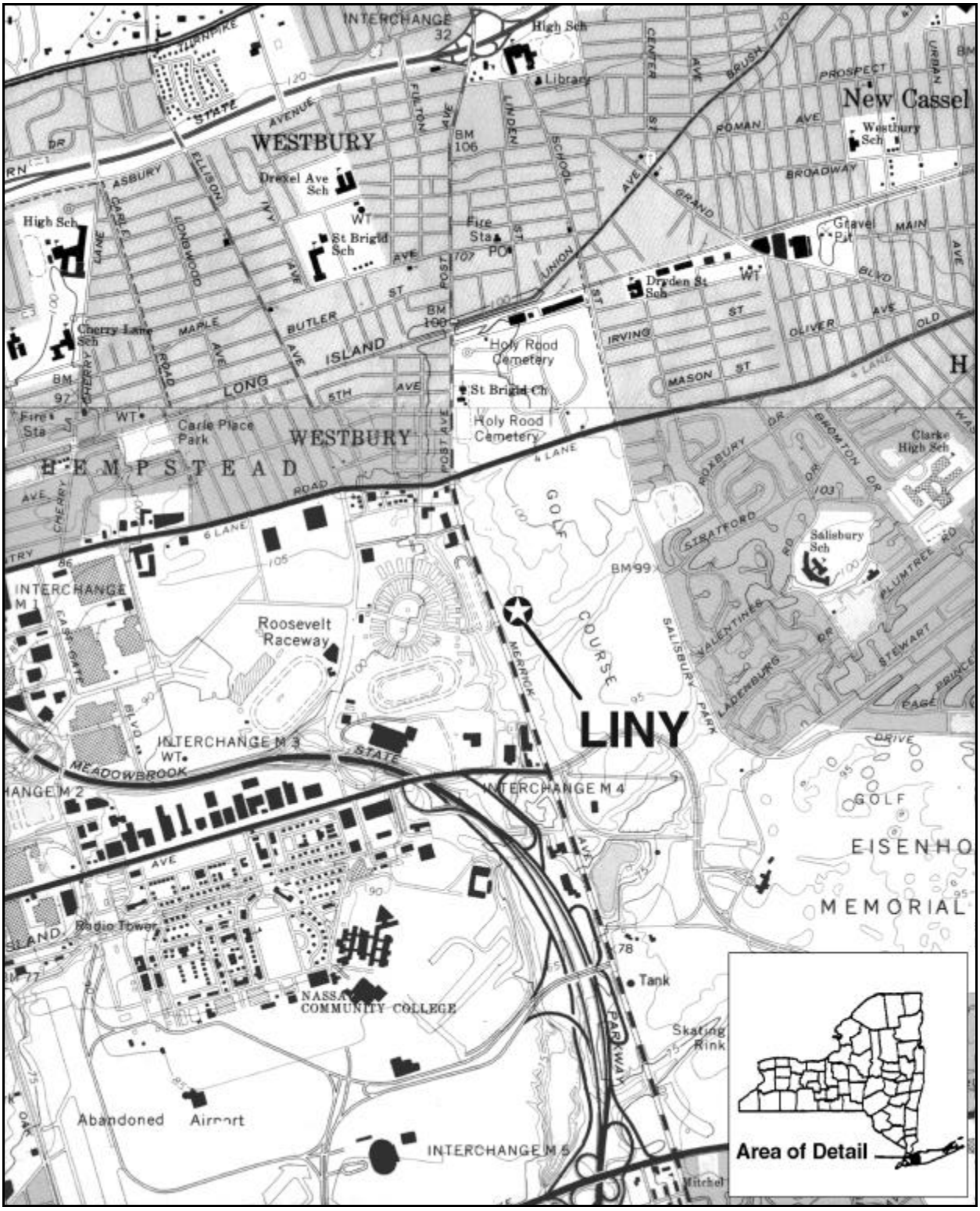
7.4 Chapter Summary

Generally, the total NMOC data collected at the LINY monitoring station are consistent with the data from other years and support the conclusions made in previous reports. For instance, the data collected during the 1998 program indicated that ambient air concentrations of total NMOC were lower on more humid days, on cooler days, on rainier days, and on windier days—all of these trends were observed, to a certain extent, at LINY during the 1997 program. The associations between total NMOC concentration and temperature, precipitation, and wind speed were all found to be statistically significant, but the apparent association between total NMOC concentration and humidity was not. No obvious correlation between wind direction and total NMOC concentration was observed.

On average, the 3-hour average concentrations of total NMOC during 1998 were the lowest that have been observed during the summer months since the station first sampled for this pollutant. Moreover, in the years since 1994, a statistically significant downward trend in concentrations of total NMOC are apparent for the LINY monitoring station. This trend might be due, at least in part, to the introduction of reformulated fuels between the 1994 and 1995

NMOC/SNMOC Monitoring Programs. Continued monitoring at LINY is encouraged to characterize trends in air quality over the longer term.

Figure 7-1
Long Island, New York (LINY), Monitoring Station



Source: USGS 7.5 Minute Series. Map scale: 1:24,000.

Figure 7-2
Distribution of Total NMOC Concentrations Measured at LINY

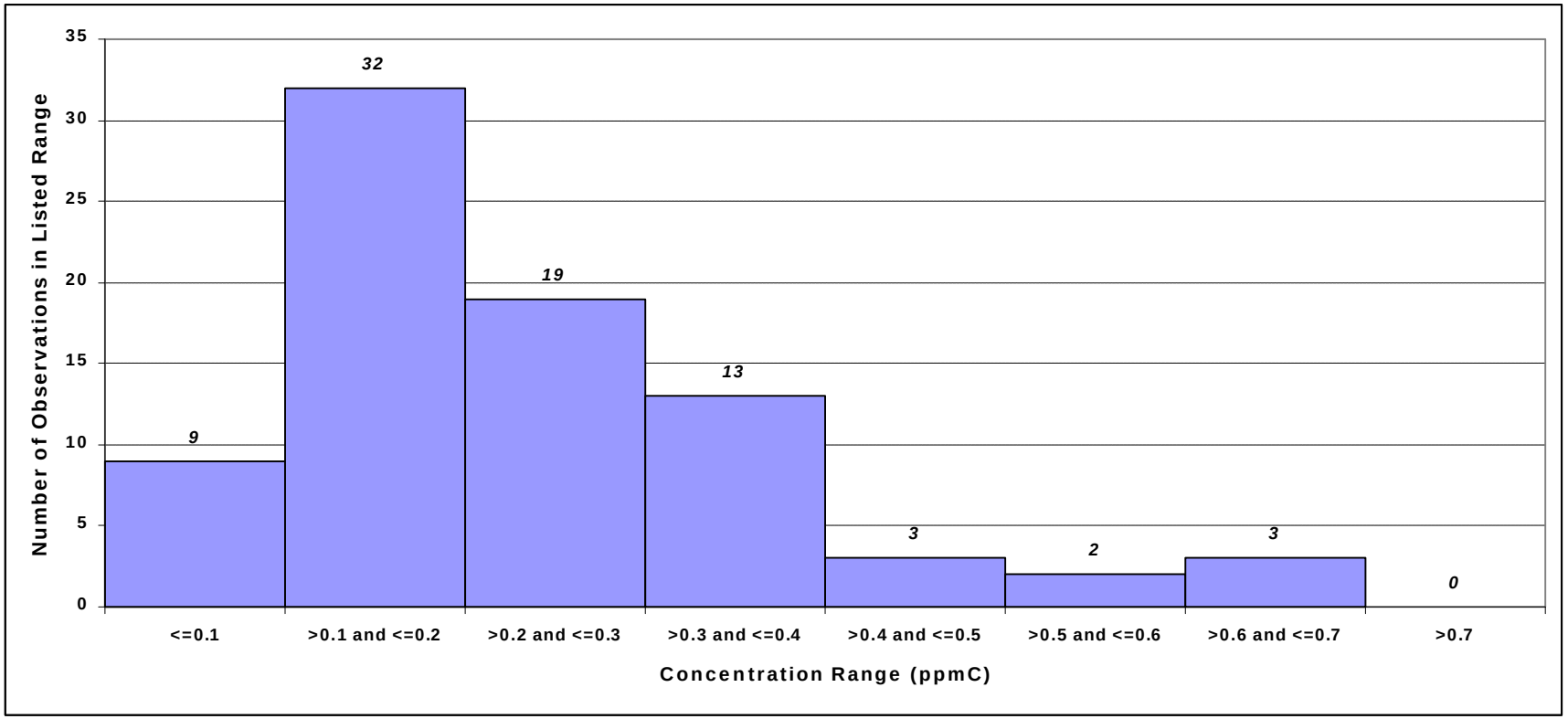
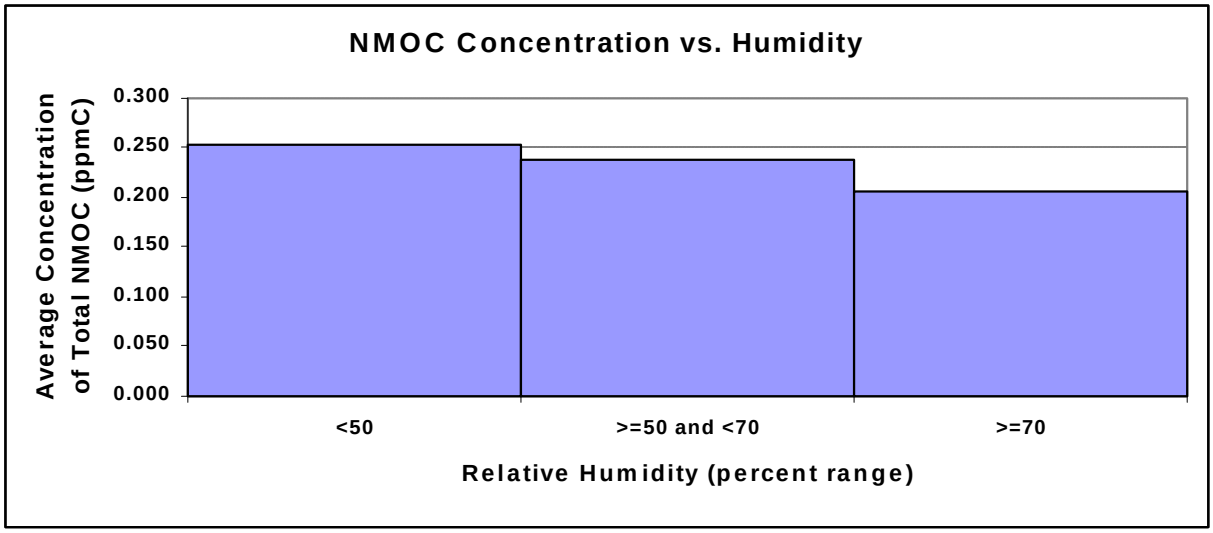
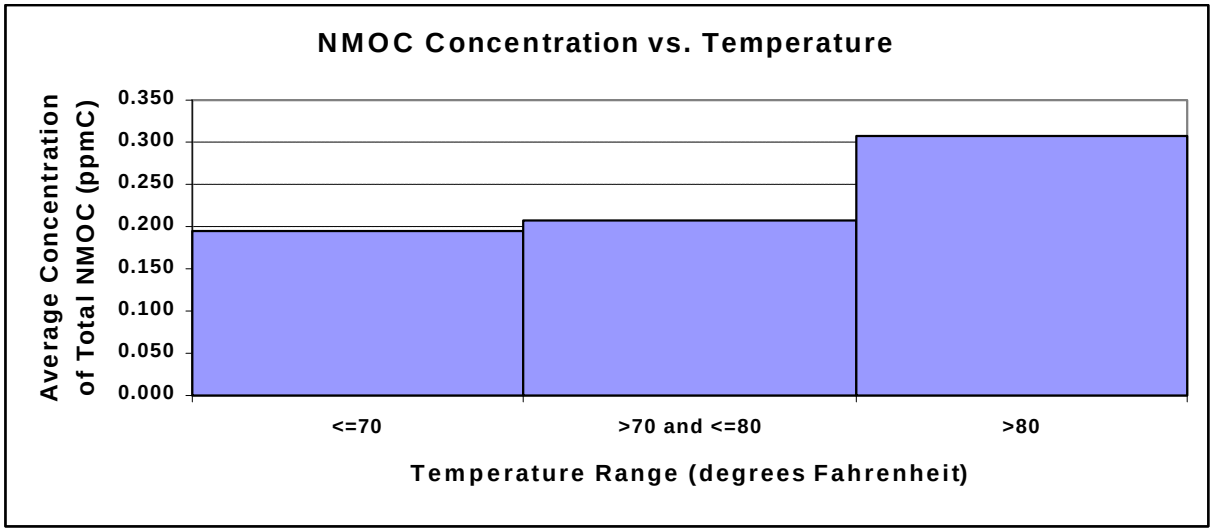


Figure 7-3
Comparison of NMOC Concentrations at LINY to Selected Meteorological Parameters





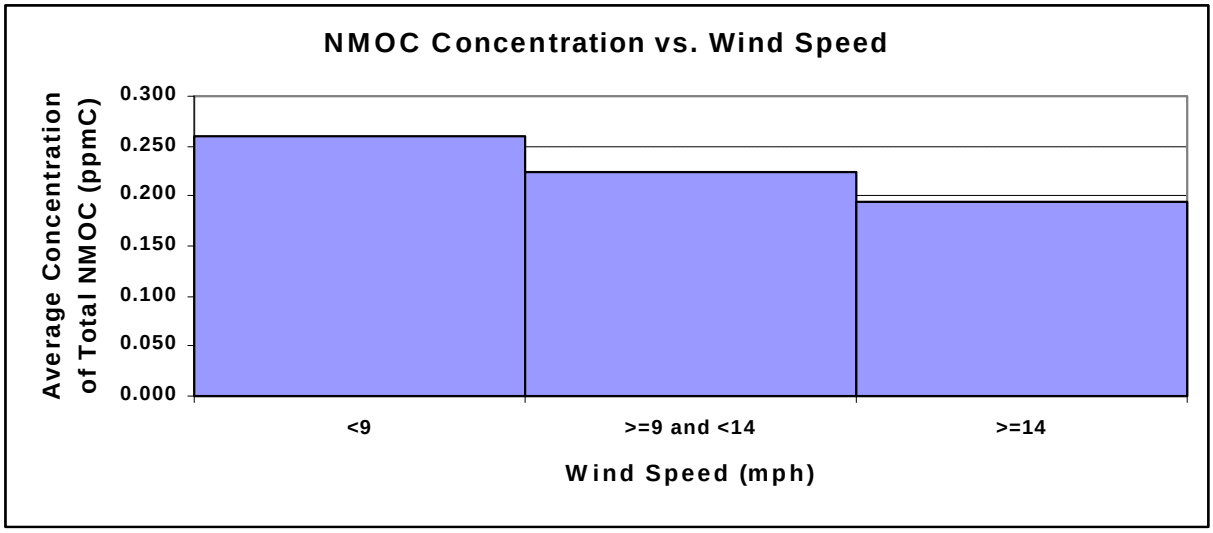
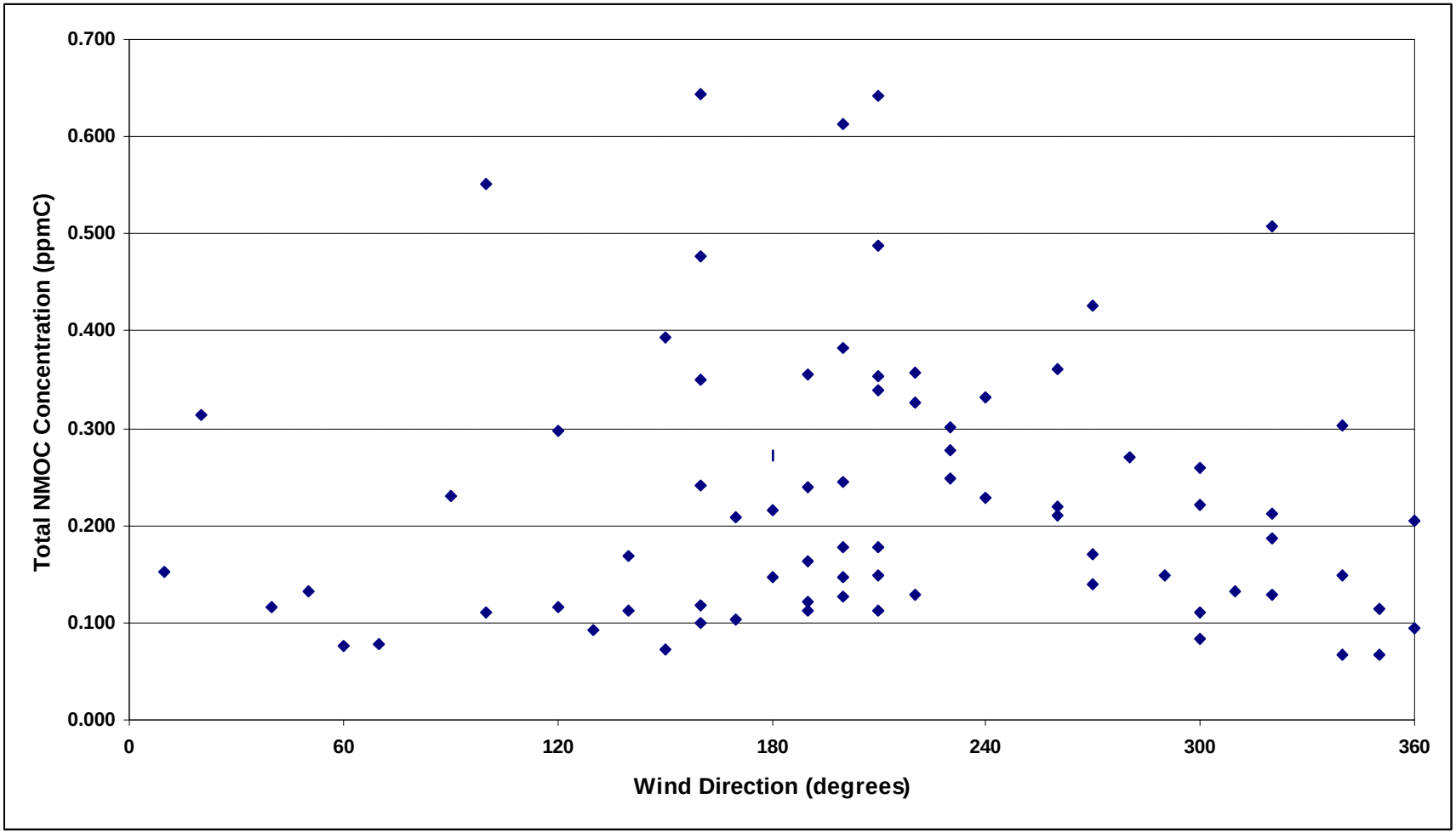
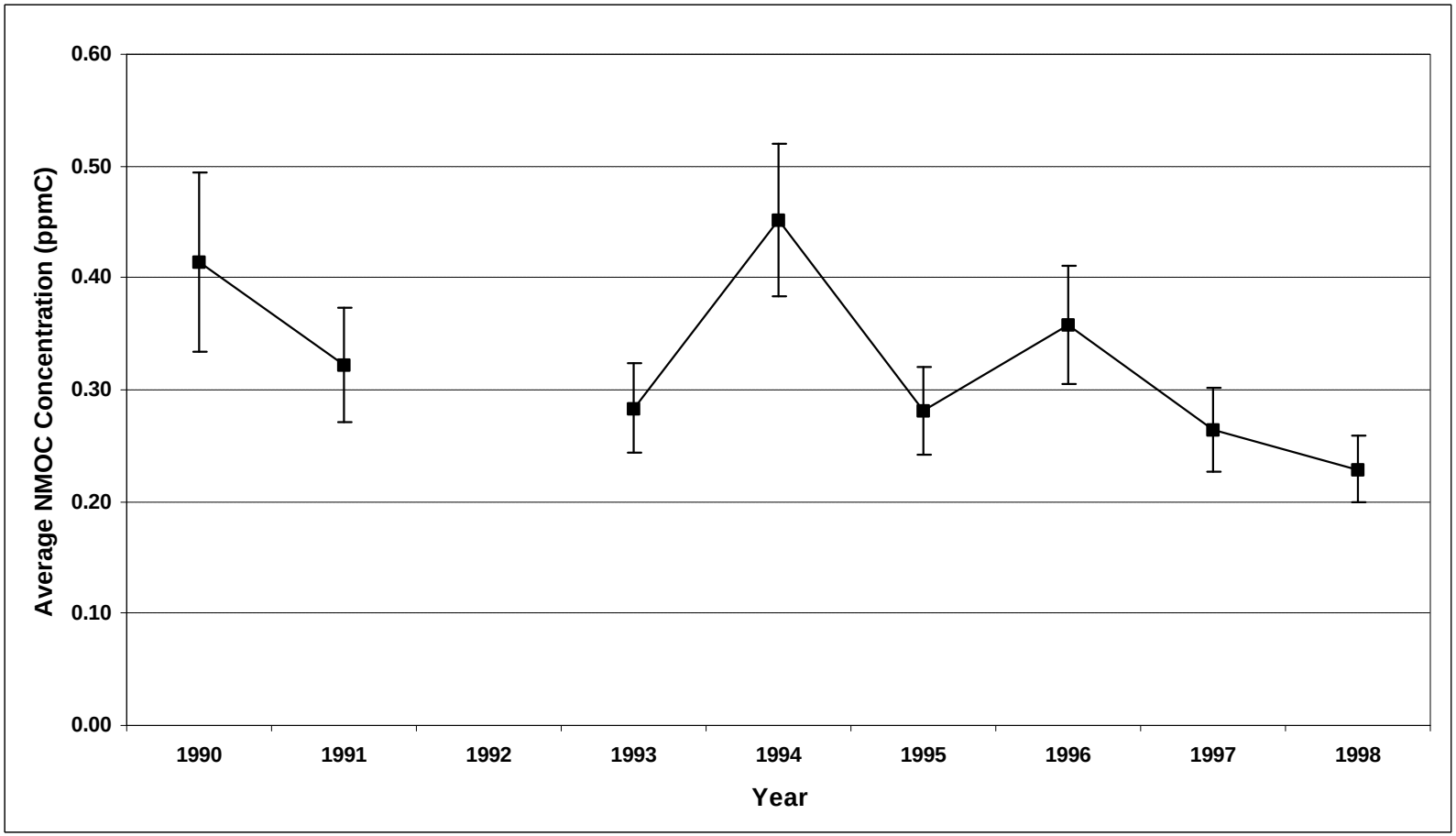


Figure 7-4
Comparison of Total NMOC Concentrations at LINY to Wind Direction



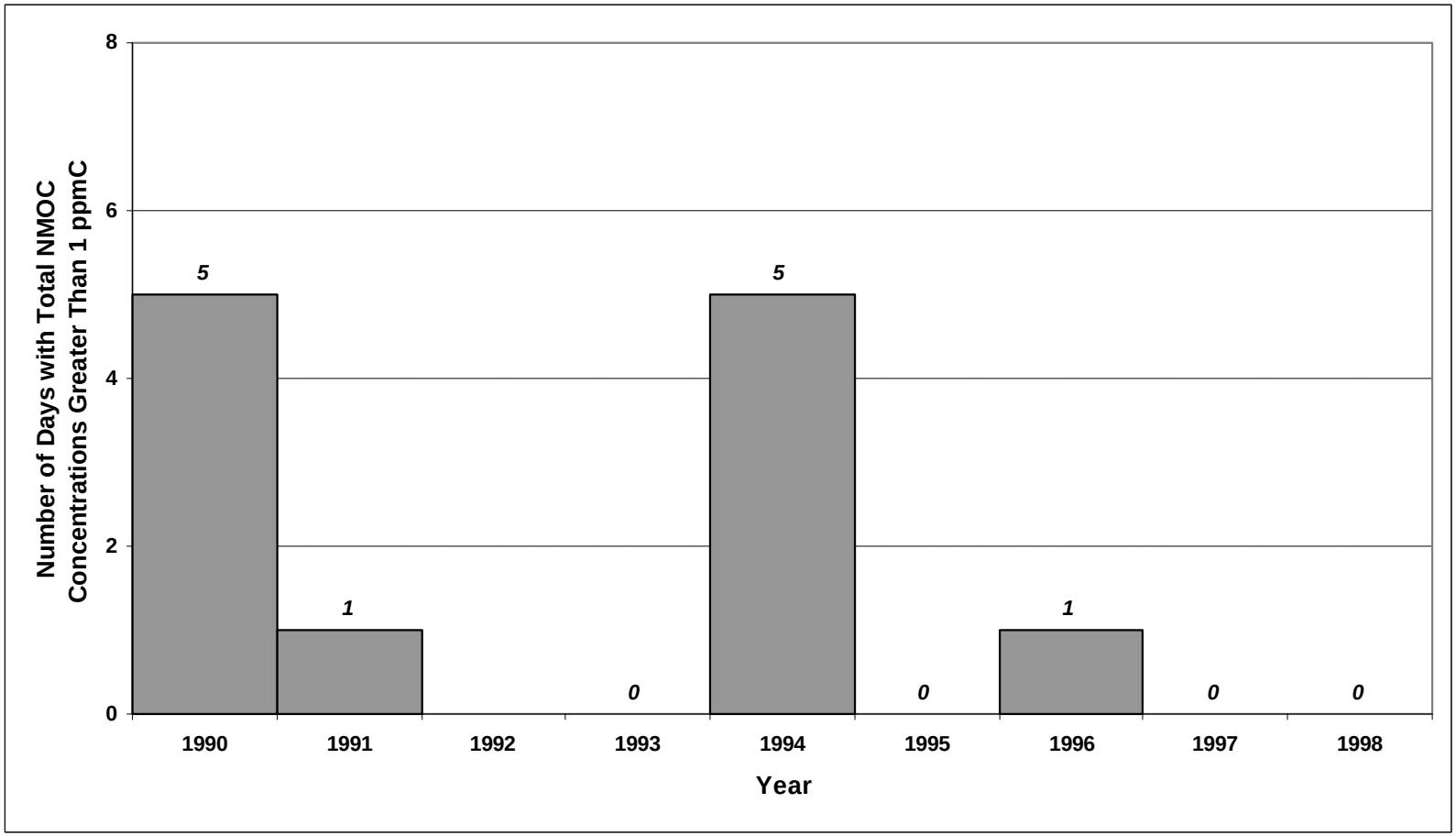
Note: Wind direction is the direction from which wind blows. Observations with calm or variable winds are not included in this figure.

Figure 7-5
Annual Variations in Average Concentrations of Total NMOC at LINY



Note: Total NMOC data from 1992 are not available for the LINY monitoring station.
The "error bars" in the graph indicate the 95-percent confidence intervals of the average concentrations.

Figure 7-6
Annual Variations in Peak Concentrations of Total NMOC at LINY



Note: Total NMOC data from 1992 are not available for the LINY monitoring station.

Table 7-1
Summary Statistics for Concentrations of Total NMOC at LINY

Category	Parameter	Value
Prevalence	Number of valid sampling days	81
	Number of nondetects	0
	Frequency of detection	100%
Concentration Range	Lowest concentration (ppmC)	0.067
	25th percentile concentration (ppmC)	0.122
	50th percentile concentration (ppmC)	0.196
	75th percentile concentration (ppmC)	0.300
	Highest concentration (ppmC)	0.643
Central Tendency	Median concentration (ppmC)	0.196
	Arithmetic mean concentration (ppmC)	0.225
	Geometric mean concentration (ppmC)	0.195
Variability	Standard deviation (ppmC)	0.137
	Coefficient of variation	0.60

8.0 Monitoring Results for Newark, New Jersey (NWNJ)

This section summarizes and interprets the total NMOC, SNMOC, VOC, and carbonyl monitoring data collected at the NWNJ monitoring station during the 1998 NMOC/SNMOC Monitoring Program; total NMOC data from previous years are also included for the purpose of investigating annual variations.

Figure 8-1 indicates the location of the NWNJ monitoring station, which is in an area of mixed industrial, commercial, and residential land use. Many transportation-related emissions sources are in the immediate vicinity of NWNJ: Interstate 95, U.S. Highway 1, numerous surface streets, and several railroads pass within 1 mile of the monitoring station, and the Newark International Airport is approximately 2 miles southwest of the station. In addition, for the 1996 Toxics Release Inventory (TRI), more than 30 industrial facilities within the city limits of Newark reported using large quantities of toxic chemicals and emitting air pollutants. Further, many other industrial facilities operate in this area (i.e., facilities that are not subject to TRI reporting). Therefore, emissions from a great variety of sources impact the air quality at NWNJ.

During the 1998 NMOC/SNMOC Monitoring Program, the NWNJ station collected total NMOC samples every weekday morning, and collected SNMOC, VOC, and carbonyl samples periodically. Overall, valid total NMOC samples were collected on 75 of the 77 days when sampling events were scheduled. Thus, the completeness for the total NMOC measurements, defined as the percentage of attempted samples that are valid, was 97 percent. For the other monitoring options (SNMOC, VOC, and carbonyl), every attempted sampling event was valid, but fewer than 10 samples were scheduled for these three groups of compounds. The analyses in this section focus on interpreting trends and patterns among the daily measurements of total NMOC, with a lesser emphasis placed on evaluating the periodic measurements of SNMOC, VOC, and carbonyls.

The remainder of this section puts the monitoring data collected at NWNJ into perspective. Section 8.1 provides detailed analyses of the total NMOC monitoring data, including comparisons

to selected meteorological conditions and evaluations of long-term trends in total NMOC levels. Sections 8.2, 8.3, and 8.4 summarize the SNMOC, VOC, and carbonyl monitoring results, respectively. Readers should note that Section 8.3 addresses two topics that have not been addressed in earlier NMOC/SNMOC reports: air quality trends for methyl *tert*-butyl ether (MTBE) and a comparison of monitoring results for compounds that are identified by both the SNMOC and VOC sampling and analytical methods. For quick reference, Section 8.5 highlights the most notable data trends observed at NWNJ.

8.1 Total NMOC Monitoring Data

To highlight key findings of the total NMOC monitoring data collected at NWNJ, the following discussion reviews data summary parameters (Section 8.1.1), associations between total NMOC levels and selected meteorological conditions (Section 8.1.2), and annual variations in total NMOC concentrations (Section 8.1.3). When reading these sections, it is important to remember that the total NMOC sampling and analytical method detects a wide range of organic compounds (e.g., alkanes, olefins, aromatics, oxygenates, halogenated hydrocarbons), thus providing a measure of overall levels of a large group of "ozone precursors." However, this method does not characterize *total* levels of air pollution, because the method does not measure other pollutants common to urban air, such as inorganic acids, particulate matter, and heavier organic compounds.

Note: The SNMOC analytical method also measures the concentration of total NMOC. Section 8.2 compares how total NMOC concentrations differed when measured with the total NMOC and SNMOC sampling and analytical methods.

8.1.1 Data Summary

Using the data summary parameters that were defined in Section 3.1, Table 8-1 presents a concise overview of the total NMOC measurements at NWNJ during the summer of 1998. A review of this data summary follows:

- *Prevalence.* In each of the 75 valid samples collected at NWNJ, concentrations of total NMOC were at least an order of magnitude higher than the estimated method detection limit of 0.005 ppmC (or 5 ppbC). Therefore, the prevalence of total NMOC at NWNJ was 100 percent. With no nondetect observations among the total NMOC measurements, the summary statistics presented in Table 8-1 are believed to accurately portray air quality trends at NWNJ.

- *Concentration range.* According to Table 8-1, total NMOC concentrations at NWNJ during the 1998 program ranged from 0.091 ppmC to 6.941 ppmC. The 75th percentile concentration reveals that most samples at NWNJ contained less than 0.386 ppmC of total NMOC. Only two total NMOC concentrations exceeded 1 ppmC during the summer of 1998; these observations are believed to be "outliers" that probably represent anomalous air pollution episodes. In some cases, these two outliers greatly influenced statistical analyses of the monitoring data. As a result, the two outlier concentrations were omitted from certain analyses in this section. (Note, this section clearly indicates which analyses omitted the concentration outliers.)

  As Section 7.1 noted, the dates on which the outlier concentrations were observed at NWNJ (June 25, 1998, and September 25, 1998) correspond to the dates on which two of the highest total NMOC concentrations were observed at LINY. This coincidence suggests that levels of air pollution throughout the Newark–New York City metropolitan area might have been elevated on these two days, but monitoring data from other locations in the area are needed to confirm this hypothesis.

  For greater insight into the concentration distribution, Figure 8-2 presents a histogram of the total NMOC monitoring data collected at NWNJ. As the figure shows, nearly 90 percent of the total NMOC concentrations fell in the range of 0.1–0.5 ppmC. This observation suggests that levels of total NMOC at NWNJ during the morning hours on summer days tend to fall within a fairly narrow range of concentrations, with notably higher or lower concentrations occurring infrequently.

- *Central tendency.* During the 1998 program, the geometric mean concentration for total NMOC at NWNJ was 0.303 ppmC—the lowest geometric mean concentration that has been observed at this site for more than 10 years (see Section 8.1.3). For greater insight into the central tendency concentrations, monthly-average central tendencies were calculated and evaluated. When considering the entire set of total NMOC measurements from NWNJ, the monthly-average concentrations for June and September were notably higher than those for July and August. When considering the data set without the two outlier concentrations, however, no statistically significant differences were observed between the average concentrations of total NMOC for any 2 months. Therefore, the data collected during the 1998 program showed no evidence of considerable monthly variations in concentrations of total NMOC at NWNJ during the morning hours.

- *Variability.* According to Table 8-1, the standard deviation of the total NMOC monitoring data at NWNJ was 0.799 ppmC, and the coefficient of variation was 1.93. This data variability is notably greater than the variability observed at NWNJ during previous monitoring programs. More specifically, the coefficients of variation observed during the 1995, 1996, and 1997 NMOC/SNMOC Monitoring Programs were 0.49, 0.59, and 0.70, respectively. Not surprisingly, the greater variability during the 1998 program appears to be linked to the two outlier concentrations. Omitting these observations from the variability calculation, the coefficient of variation for the 1998 data set at NWNJ is 0.44, which is more comparable to the previous data trends.

8.1.2 Comparison to Selected Meteorological Conditions

To provide greater insight into the trends and patterns among the total NMOC concentrations at NWNJ, this section compares the measured levels of NMOC to selected meteorological parameters. The analysis considers 3-hour average observations of relative humidity, precipitation, temperature, wind direction, and wind speed, all of which were measured between 7:00 and 10:00 a.m. at the Newark International Airport. Since the airport is approximately 2 miles from the ambient air monitoring station, the meteorological data are believed to represent conditions at the NWNJ site.

To enable readers to compare data trends from the 1998 program to those from earlier programs, the following analyses of associations between local meteorological conditions and total NMOC concentrations are presented in a format almost identical to that used in Section 4.2.1.2 of the 1997 NMOC/SNMOC report. Since the following analyses rely on the grouping of meteorological data and total NMOC monitoring data into subsets on the order of ten to twenty observations, the subsets can be significantly influenced by the values of outliers. To avoid this potential bias, the two outliers of total NMOC concentrations were not considered when evaluating correlations between meteorological conditions and the ambient air monitoring data.

An overview of the comparisons of meteorological conditions to total NMOC levels at NWNJ follows:

- *Humidity.* According to Figure 8-3, concentrations of total NMOC at NWNJ, on average, tended to be higher on days with higher relative humidity. However, the concentration differences for the different categories of humidity shown in the figure are all less than 20 percent, and none of these differences were found to be statistically significant. Therefore, the association between total NMOC concentrations at NWNJ during the morning hours and humidity was found to be very weak and possibly anomalous.

  It is interesting to note that the 1997 report showed that levels of total NMOC tended to be *lower* on days with higher relative humidity, contrary to the trend illustrated in Figure 8-3 for the 1998 data. The discrepancy in trends between the 1997 and 1998 programs might result from several factors, such as the possibility that the association between humidity and total NMOC levels is weak and might have been overshadowed during the 1998 program by other influences or that the trend observed in either 1997 or 1998 was atypical. Further research is needed to better understand the relationship between total NMOC levels at NWNJ and humidity, if such a relationship exists.

- *Precipitation.* Measurable rain was observed at the Newark International Airport during 7 of the 75 valid sampling events at NWNJ. The average concentration of total NMOC for the 7 days with measurable precipitation was 0.320 ppmC, and the average concentration for all other days (excluding the two days with outlier concentrations) was 0.308 ppmC. Therefore, levels of total NMOC on rainy mornings were, on average, 4 percent higher than the levels on days without rain, but this concentration difference was not found to be statistically significant.

  The relationship between precipitation and total NMOC levels in Newark during the 1998 program contradicts the data presented in the 1997 report: At every station that participated in the 1997 program (including NWNJ), total NMOC levels on rainy days were notably lower than they were on days without measurable precipitation. The inconsistent trends at NWNJ during the 1998 program might result from many factors, including the fact that only trace amounts of precipitation (0.01 inches or less) were recorded at Newark International Airport on 4 of the 7 days with measurable rain. This trace precipitation was not likely to remove considerable portions of the airborne organic compounds, thus explaining the apparent lack of association between precipitation events and total NMOC concentrations. Additional data from NWNJ must be collected and reviewed to better understand how precipitation events affect local air quality.

- *Temperature.* As Figure 8-3 shows, ambient air concentrations of total NMOC at NWNJ on warmer mornings were, on average, higher than those measured on cooler mornings. The differences in concentrations for the three categories of temperature, however, were only marginal, and none were statistically significant. The temperature in the morning hours, therefore, appears to have minimal impact on levels of total NMOC at NWNJ—a finding that is consistent with conclusions reached in the 1997 report. It should be noted that total NMOC concentrations at NWNJ during the afternoon hours, or during other times

of year, might be temperature-dependent, despite the apparent lack of temperature dependence observed during the past two NMOC/SNMOC Monitoring Programs, which focused on characterizing air quality only during the morning hours. Continued review of temperature and total NMOC concentrations can help clarify the relationship, if any, between these two measurements.

- *Wind Speed.* Figure 8-3 shows that, similar to findings in previous years and at other monitoring stations, total NMOC concentrations at NWNJ tended to be lower on the windiest mornings. In fact, levels of total NMOC when wind speeds were greater than or equal to 14 mph were almost 40 percent lower than levels of total NMOC when wind speeds were less than 9 mph; this concentration difference was statistically significant. This association between wind speed and total NMOC concentration is generally consistent with the analyses presented in the 1997 report and is also supported by the science of atmospheric dispersion, which suggests that pollutants disperse more efficiently as wind speed increases (USEPA 1995).

- *Wind Direction.* The scatter plot in Figure 8-4 shows how total NMOC concentrations varied with wind direction at NWNJ. The figure does not include results from the 12 samples that were collected when the winds were calm or variable, and, to avoid distorting the scale of the figure, the two outlier concentrations also are not shown. On the dates the outliers were detected, winds were blowing from directions of 240 degrees and 280 degrees.

  According to the figure, low to moderate levels of total NMOC were detected at NWNJ, regardless of the direction that the wind was blowing, and total NMOC concentrations do not appear to be strongly correlated with any single span of wind directions. Though the average concentration of total NMOC for some wind directions (e.g., 240 to 310 degrees) was higher than the average concentration for others, the differences in concentrations for the various subsets of wind directions were modest, typically 30 percent or less. The absence of notable associations between total NMOC concentrations and any specific wind direction suggests that emissions sources throughout the Newark–New York City metropolitan area contribute to the levels of total NMOC at NWNJ.

  Though average levels of total NMOC did not vary significantly with wind direction, some of the highest concentrations of total NMOC appeared to be linked to specific wind patterns. More specifically, the three highest total NMOC concentrations at NWNJ occurred primarily during westerly winds (i.e., wind directions of 240 to 300 degrees), and five of the six highest total NMOC concentrations occurred during similar conditions. This trend is somewhat consistent with a trend observed during the 1997 program, when almost every total NMOC concentration greater than 0.5 ppmC occurred when winds blew either from the west to northwest (i.e., wind directions between 270 and 300 degrees) or from the north to northeast (i.e., wind directions between 0 and 60 degrees). Analyses of

additional monitoring data will help confirm whether wind direction in the Newark area is indeed linked with elevated concentrations of total NMOC at NWNJ.

As noted in Section 7.2, the analyses comparing selected meteorological conditions and total NMOC concentrations in this report are only a small subset of the numerous types of graphical and statistical analyses that could be performed on this data set. Use of multivariate statistical techniques and consideration of meteorological conditions from longer time frames (e.g., for the 24 hours prior to a sampling event) might provide greater insight into the many complex factors that affect levels of air pollution at NWNJ.

8.1.3 Annual Variations

The NWNJ monitoring station has measured total NMOC concentrations on weekday mornings every summer since 1988, thus providing 11 years of data to consider for evaluating annual variations. To put the past data into perspective, this section examines how average levels of total NMOC and peak levels of total NMOC have changed at NWNJ from the 1988 to 1998 NMOC/SNMOC Monitoring Programs. A summary of the key findings regarding annual variations follows:

- *Changes in average concentrations of total NMOC.* Figure 8-5 indicates how the average concentration of total NMOC has changed at NWNJ since the 1988 NMOC/SNMOC Monitoring Program. It is important to remember that the figure depicts annual variations in levels of air pollution during the morning hours of the summer and annual variations for other time frames (e.g., annual-average concentrations) might differ from those shown in Figure 8-5.

  In general, Figure 8-5 shows that average concentrations of total NMOC have increased at NWNJ in some years and decreased in others; the figure also clearly shows that average levels of total NMOC from 1995 to 1998 rank among the lowest observed at this station over the last 11 years. The downward trend likely results from many factors, including the requirement that all motor vehicles in the Newark–New York City metropolitan area use reformulated fuels as of January 1, 1995. To examine the potential impact of motor vehicles switching from conventional fuels to reformulated fuels, average concentrations of total NMOC from 1988 to 1994 were compared to those from 1995 to 1998. On average, the levels of total NMOC in the last 4 years (0.418 ppmC) was 31 percent lower than the levels observed between 1988 and 1994 (0.603 ppmC), and this concentration difference

was found to be statistically significant. Though the use of reformulated fuels might have caused, to a certain extent, the considerable decrease in total NMOC concentrations at NWNJ, other factors likely contributed to this decrease as well. These other factors might include state and local pollution prevention initiatives, declining emissions from industrial sources, and long-term patterns in meteorological conditions.

- *Changes in peak concentrations of total NMOC.* For additional insight into annual variations in levels of total NMOC, Figure 8-6 indicates how the frequency of peak concentrations of total NMOC (defined here as concentrations greater than 1.0 ppmC) has changed at NWNJ between the 1988 and 1998 programs. Clearly, the frequency of peak concentrations of total NMOC was considerably higher between 1988 and 1994 than it was between 1995 and 1998. Though this notable decline in total NMOC concentrations greater than 1.0 ppmC might be linked to the use of reformulated fuels, it is extremely difficult to determine the extent to which the decline in peak concentrations is linked to any one factor.

Overall, the two different measures of annual variations—considering average and peak concentrations—indicate that levels of total NMOC at NWNJ have decreased over the last 11 years and that the levels of total NMOC between 1995 and 1998, in particular, are lower than those measured between 1988 and 1994.

For greater insight into the specific compounds that constitute total NMOC at NWNJ, the remainder of this section summarizes the monitoring results for SNMOC, VOC, and carbonyls. Since fewer than 10 samples were collected at NWNJ for these categories of compounds, the analyses in Sections 8.2, 8.3, and 8.4 are less detailed than those presented in Section 8.1 for the extensive total NMOC sampling.

8.2 SNMOC Monitoring Data

During the 1998 program, SNMOC samples were collected at NWNJ on seven days. As Section 2.3.2 explained, the SNMOC sampling and analytical method measures ambient air concentrations of 80 different hydrocarbons as well as the concentration of total NMOC, thus providing extensive information on the composition and magnitude of selected components of air pollution. The following discussion summarizes the SNMOC data, comments on the composition

of the SNMOC samples, and compares the total NMOC concentrations measured by the total NMOC sampling and analytical method to those measured concurrently by the SNMOC sampling and analytical method.

8.2.1 Data Summary

Table 8-2 presents the data summary parameters, which Section 3.1 defined, for SNMOC measurements at NWNJ in 1998. An overview of these summary parameters follows:

- *Prevalence*. According to Table 8-2, 73 of the 80 hydrocarbons identified by the SNMOC sampling and analytical method were detected in all seven samples collected at NWNJ during the 1998 program. These compounds, therefore, have a prevalence of 100 percent and their summary statistics are not biased by nondetect observations. Only three compounds (1-decene, 2-ethyl-1-butene, and 1-heptene) were detected in fewer than 50 percent of the SNMOC samples. Summary statistics for these compounds should be interpreted with caution, as they might be significantly biased by a high fraction of nondetect observations. In general, however, the high prevalence for almost every SNMOC confirms that air pollution at the NWNJ monitoring station during the summer months is a complex mixture of numerous hydrocarbons.

- *Concentration range*. As Table 8-2 indicates, concentration ranges for SNMOC vary greatly from one compound to the next, and the highest concentrations at NWNJ were observed for ethylene (23.20 ppbC), ethane (32.92 ppbC), propane (35.70 ppbC), isopentane (42.52 ppbC), and toluene (33.54 ppbC). The highest concentrations for the remaining 75 SNMOC were all lower than 20 ppbC.

  Readers should note two limitations when interpreting the concentration range data in Table 8-2. First, because air concentrations were measured only between 6:00 a.m. and 9:00 a.m., local time, the concentration range data in Table 8-2 only represent the span of concentrations during the morning hours. It is highly likely that ambient levels of many compounds rose to higher levels or fell to lower levels during other times of day. Second, since the NWNJ station collected SNMOC samples on only 7 days of the monitoring program, the concentration range data might not even characterize the actual lowest and highest concentrations between 6:00 and 9:00 a.m.

- *Central tendency*. Not surprisingly, the central tendency concentrations in Table 8-2 also vary widely among the compounds detected at NWNJ. For the most prevalent compounds, the measures of central tendency shown in Table 8-2 are believed to accurately represent actual central tendency levels. However, for the three compounds detected in fewer than half of the SNMOC samples, the magnitude of the central tendency values is influenced by

nondetects, which were all replaced with concentrations equal to one-half their corresponding detection limits.

On average, the 80 compounds identified by the SNMOC sampling and analytical method accounted for 79 percent of the total NMOC concentrations. The geometric mean concentration for almost every individual compound was less than 10 ppbC. Only the following nine compounds, presented in order of decreasing concentration, had geometric mean levels greater than 10 ppbC: isopentane (30.13 ppbC), ethane (20.44 ppbC), toluene (20.13 ppbC), propane (19.28 ppbC), ethylene (14.21 ppbC), propylene (11.16 ppbC), 2,3-dimethylbutane (11.13 ppbC), and *m*,*p*-xylene (10.87 ppbC). Combined, the concentrations of these compounds comprised nearly 40 percent of the total NMOC collected in the seven SNMOC samples at NWNJ.

Readers should keep in mind an important data limitation regarding the central tendency concentrations: Since only 7 SNMOC samples were collected at NWNJ, each sample contributes approximately 14 percent to the arithmetic mean concentrations. Therefore, results from each individual sample at NWNJ have a considerable influence on the central tendency concentrations. Central tendency estimates for the stations that collected SNMOC samples every day, however, are believed to be much more representative of the actual central tendencies (see Sections 5.2 and 6.2).

- *Variability*. According to Table 8-2, coefficients of variation for most SNMOC measured at NWNJ were comparable and lower than 1.0. The compounds with the most variable air monitoring data, as gauged by the coefficient of variation, were 1-dodecene (2.20), *cis*-2-hexene (1.60), and 1-undecene (1.57). The greater variability for 1-dodecene and 1-undecene likely results from the fact that these compounds contain more than 10 carbon atoms, and the calculation of coefficients of variation from concentrations measured in units of ppbC inherently gives greater weight to compounds with more carbon atoms. The reason for the greater variability in the *cis*-2-hexene concentrations is not known.

For greater insight into the SNMOC sampling, the following analyses comment on the composition of the air samples (Section 8.3.2) and on the accuracy of the SNMOC measurements (Section 8.3.3).

8.2.2 Composition of Air Samples

As previous NMOC/SNMOC reports have explained, the composition of air samples is an important consideration when evaluating sources of pollution within airsheds. For instance, air samples collected near significant emissions sources typically contain relatively high

concentrations of reactive compounds that are known to decompose readily in ambient air (such as olefins). On the other hand, air samples collected in locations far downwind from emissions sources typically contain lower levels of the reactive compounds and higher levels of their decomposition products. In general, olefinic and aromatic compounds tend to be much more reactive in ambient air than alkanes.

During the 1998 NMOC/SNMOC Monitoring Program, the identified SNMOC at NWNJ contained, on average, 57 percent alkanes, 30 percent olefins, and 13 percent aromatic compounds. This composition was calculated from a database of SNMOC concentrations that had been converted to a volume basis (i.e., units of ppbv) in order to avoid artificially weighing the composition by the number of carbons in different compounds. The composition of SNMOC samples at NWNJ during the 1998 program was nearly identical to that observed at NWNJ during the 1997 program (55 percent alkanes, 31 percent olefins, and 14 percent aromatic compounds), and was quite similar to that observed at the other NMOC/SNMOC monitoring stations. Results from monitoring conducted in earlier and future years should be reviewed to determine if the composition of air at NWNJ has changed considerably over the years; researchers should be sure to make such comparisons on a consistent basis (e.g., either on a ppbC or a ppbv basis).

8.2.3 Comparison of Total NMOC Concentrations Measured by Two Different Methods

As Section 2.3 explained, both the total NMOC and the SNMOC sampling and analytical methods measure concentrations of total NMOC. Of the six monitoring stations that participated in the 1998 program, only the NWNJ monitoring station collected samples by both methods. More specifically, on 6 of the 7 days when SNMOC samples were collected at NWNJ, total NMOC samples were also collected. These common sampling events provide a basis for comparing the total NMOC concentrations measured by two different methods. Overall, the total NMOC concentration measured by the SNMOC sampling and analytical method and that measured by the total NMOC sampling and analytical method differed, on average, by

21 percent. This reasonable agreement in concentrations suggests that both methods are capable of measuring levels of total NMOC accurately.

8.3 VOC Monitoring Data

This section summarizes results of the seven VOC sampling events conducted at NWNJ during the 1998 NMOC/SNMOC program. As Section 8.2.1 noted, the 80 hydrocarbons identified in the SNMOC samples, on average, accounted for nearly 80 percent of the airborne total NMOC. The VOC monitoring data are useful for characterizing ambient levels of certain organic compounds (e.g., selected halogenated hydrocarbons, nitriles, and oxygenated compounds) that the SNMOC analytical method cannot identify: Of the 47 compounds that the VOC analytical method identifies, 11 are currently identified by the SNMOC method, and the remaining 36 are not. The following discussion highlights notable trends among the VOC monitoring data.

8.3.1 Data Summary

Using the data summary parameters that were defined in Section 3.1, Table 8-3 provides a concise summary of the VOC monitoring data collected at NWNJ during the 1998 program. An overview of the data summary parameters follows:

- *Prevalence*. According to Table 8-3, 21 of the 47 VOC were detected in more than 50 percent of the samples collected at the NWNJ monitoring station. The high prevalence for these compounds, many of which are not identified by the SNMOC analytical method, confirms that air pollution at the NWNJ monitoring station during the summer months contains a complex mixture of numerous organic compounds. These compounds' high prevalence suggests that their summary statistics are not significantly affected by nondetect observations. Conversely, summary statistics for the 26 compounds detected in less than 50 percent of the samples should be interpreted with caution, as they might be significantly biased by nondetects, which were replaced within the air monitoring database with an estimated concentration of one-half the detection limit. Of the 26 compounds detected in less than 50 percent of the samples, 22 were not detected in a single sample. The analyses in the remainder of this section focus on the most prevalent compounds.

- *Concentration range.* As Table 8-3 indicates, the highest VOC concentrations measured in the seven sampling events were for propylene (8.04 ppbv), acetylene (7.15 ppbv), toluene (6.92 ppbv), and MTBE (6.21 ppbv). Concentrations of the other compounds were all less than 3.0 ppbv during the seven valid sampling events, and concentrations of many compounds never exceeded 1.0 ppbv.

  The limitations regarding the concentration range of SNMOC (see Section 8.2.1) also apply to the analysis of VOC concentrations. These limitations include the following: Because sampling only occurred during the morning hours, the concentration ranges do not characterize the highest and lowest concentrations that might have occurred during other times of day; and due to the limited number of VOC samples collected, the concentration range data probably do not even characterize the actual highest and lowest concentrations during the morning hours on summer days.

- *Central tendency.* Table 8-3 presents the median, arithmetic mean, and geometric mean concentrations as different measures of the central tendency concentration. Overall, only seven compounds had geometric mean concentrations greater than 1.0 ppbv: propylene (4.08 ppbv), acetylene (3.98 ppbv), toluene (3.04 ppbv), MTBE (2.51 ppbv), *m,p*-xylene (1.32 ppbv), and methyl ethyl ketone (1.15 ppbv). Two of these seven compounds (MTBE and methyl ethyl ketone) are believed to account for a notable portion of the total NMOC that could not be identified by the SNMOC analytical method. The majority of the remaining VOC has geometric mean concentrations less than 0.5 ppbv.

- *Variability.* The coefficient of variation for all of the most prevalent VOC compounds detected at NWNJ during the 1998 program was less than 1.0. This consistently low indicator of variability suggests that concentrations of many VOC do not change considerably from one summer morning to the next. This result is consistent with VOC originating from sources throughout the Newark area (e.g., motor vehicles), as emissions would be detected regardless of wind direction. The relatively low data variability is not consistent with emissions originating primarily from a single source at a discrete location, since emissions would be expected to be highly variable (i.e., dependent upon wind direction) from day to day. The impact of motor vehicle emissions is investigated further in the following section.

8.3.2 Data Trends for MTBE

Ambient air quality trends for MTBE are expected to be influenced by requirements that motor vehicles in selected metropolitan areas use reformulated fuels. As of January 1, 1995, EPA required all motor vehicle fuels sold in the Newark–New York City area to be reformulated gasoline (Main et al. 1998). Though the composition of reformulated gasoline varies among urban centers, reformulated gasoline in the Newark area contains approximately

11 percent MTBE, by weight (Main et al. 1998). As a result, motor vehicle emissions in this area are expected to contain MTBE, along with the many other pollutants typically found in car exhaust.

In support of this hypothesis, ambient air concentrations of MTBE were found to be much more strongly correlated with concentrations of benzene, toluene, ethylbenzene, and xylene isomers (i.e., compounds known to be found in motor vehicle exhaust) than with concentrations of any other compound. To illustrate this correlation, Figure 8-7 compares concentrations of benzene and toluene to concentrations of MTBE. Though the correlation between MTBE and the other compounds is certainly not perfect and is somewhat uncertain due to the limited number of samples, the figure indicates that concentrations of MTBE were generally higher when levels of benzene and toluene were higher, and vice versa. As quantitative evidence of this trend, the Pearson correlation coefficient for MTBE and benzene was 0.84, and for MTBE and toluene was 0.94. These highly correlated data strongly suggest that emissions from motor vehicles probably account for a large portion of the MTBE measured at NWNJ. However, a larger volume of monitoring data is needed to establish statistically significant correlations between these compounds' concentrations.

For purposes of comparison, Figure 8-7 also shows how concentrations of ethylbenzene and toluene varied during the monitoring program. Though the figure does not show correlations between all possible pairings of compounds typically associated with motor vehicle exhaust, the trends displayed in Figure 8-7 suggest that correlations between MTBE and selected aromatic hydrocarbons are weaker than correlations between pairs of aromatic hydrocarbons (the correlation between toluene and ethylbenzene is 0.98), but the difference in data correlations appears to be marginal. Further research is needed to explain the relatively weaker correlations involving MTBE and to characterize the many different sources of MTBE in the Newark area (e.g., motor vehicles, gasoline stations, refineries).

8.3.3 Comparison of VOC and SNMOC Analytical Methods

As noted previously, the VOC analytical method identifies 11 compounds that the SNMOC analytical method can also identify, thus providing a basis for comparing concentrations measured by these two methods. During the 1998 program, air samples collected at NWNJ on 7 days were analyzed for both SNMOC and VOC. Table 8-4 lists the 11 compounds identified by both methods, as well as the average concentrations measured by the VOC and SNMOC analytical methods for these 7 days.

According to Table 8-4, the average concentrations for 9 of the 11 compounds identified by both methods were not more than 15 percent different when measured by both the VOC and SNMOC analytical methods. Only two compounds, styrene and *o*-xylene, had higher concentration differences for the two analytical methods, but neither of these differences were statistically significant. The notable concentration difference observed for styrene is believed to result, to a certain extent, from the fact that the average concentration measured by the VOC method (0.14 ppbv) is only marginally higher than the corresponding detection limit (0.11 ppbv). It has long been established that laboratory analytical methods are least precise when measuring concentrations near their limits of detection. Overall, the absence of statistically significant differences among the concentrations shown in Table 8-4, and the low concentration differences themselves, suggest that the VOC and SNMOC analytical methods are in excellent agreement when measuring ambient air concentrations of selected hydrocarbons.

8.4 Carbonyl Monitoring Data

Since neither the VOC nor the SNMOC analytical methods currently identify carbonyls, the carbonyl monitoring option measures ambient air concentrations of an entire group of compounds not characterized by other monitoring options of the NMOC/SNMOC Monitoring Program. Ambient air concentrations of carbonyls are of particular interest because this group of compounds is both formed by, and consumed by, the complex series of photochemical reactions that produce ozone. During the 1998 program, carbonyl samples were collected at NWNJ on 8 days between June and September. Due to the limited number of samples, extensive

analyses of the carbonyl monitoring data were not conducted. Rather, this section only presents data summary parameters for the carbonyl monitoring results (see Table 8-5). An overview of this data summary follows:

- *Prevalence.* According to Table 8-5, 11 of the 16 compounds identified by the carbonyl analytical method were detected in more than half of the samples collected at NWNJ during the 1998 program. Summary statistics for these compounds are expected to accurately represent the actual distribution of concentrations, since few data points were replaced with concentrations of one-half the detection limit. Since the remaining 5 compounds were not detected in any of the samples, the summary statistics for those compounds shown in Table 8-5 are essentially meaningless.

- *Concentration range.* Referring again to Table 8-5, the highest ambient air concentrations for carbonyls were observed for formaldehyde (25.34 ppbv), acetone (8.83 ppbv), and acetaldehyde (5.43 ppbv). Every concentration measured for the remaining carbonyls was lower than 5.0 ppbv, and concentrations of many carbonyls never exceeded 1.0 ppbv. Since ambient air concentrations of many carbonyl compounds are known to reach their highest levels during the early afternoon hours (Brimblecombe 1996), and not during the scheduled sampling times for this program (between 6:00 a.m. and 9:00 a.m.), the concentration ranges shown in Table 8-5 probably do not characterize the actual span of ambient air concentrations during the summertime. Moreover, the concentration ranges in Table 8-5 might not be representative of the ranges observed in other seasons.

- *Central tendency.* The central tendency data in Table 8-5 indicate that acetaldehyde, acetone, and formaldehyde account for more than 90 percent of the carbonyls detected in the air at NWNJ. This result is consistent with previous measurements at NWNJ and with measurements at the other NMOC/SNMOC monitoring stations. Of the remaining carbonyls, only butyr/isobutyraldehyde had a geometric mean concentration greater than 1.0 ppbv, and the remaining compounds had considerably lower geometric mean concentrations.

  To put the central tendency figures into perspective, the geometric mean concentrations of the 16 carbonyls were compared to those for the 47 VOC and the 80 SNMOC. This analysis found that the geometric mean concentration of formaldehyde (12.46 ppbv) was higher than that of any other compound measured at NWNJ. Moreover, the geometric mean concentrations of acetone (5.99 ppbv) and acetaldehyde (3.21 ppbv) had the sixth highest and ninth highest geometric mean concentrations of all compounds, respectively. This analysis shows that certain carbonyls are among the most abundant organic compounds found in the Newark ambient air.

- *Variability.* As Table 8-5 shows, the coefficient of variation for all 16 carbonyls was less than 1.0. This relatively low coefficient of variation suggests that carbonyls were consistently measured in the air at NWNJ, regardless of changing wind directions. This trend is not consistent with carbonyls originating primarily from a single emissions source at a discrete location, since this scenario would be likely to lead to carbonyls being detected only under certain wind conditions. Rather, the relatively low data variability is consistent with carbonyls being emitted from sources throughout the Newark–New York City area (e.g., motor vehicles) or being formed by photochemical reactions throughout this airshed.

The carbonyl monitoring data collected at NWNJ provide important context for understanding the composition of air pollution during the morning hours. Greater insight into the air quality trends for carbonyls can be gained through additional air monitoring efforts that collect samples more frequently than was done during the 1998 program.

8.5 Chapter Summary

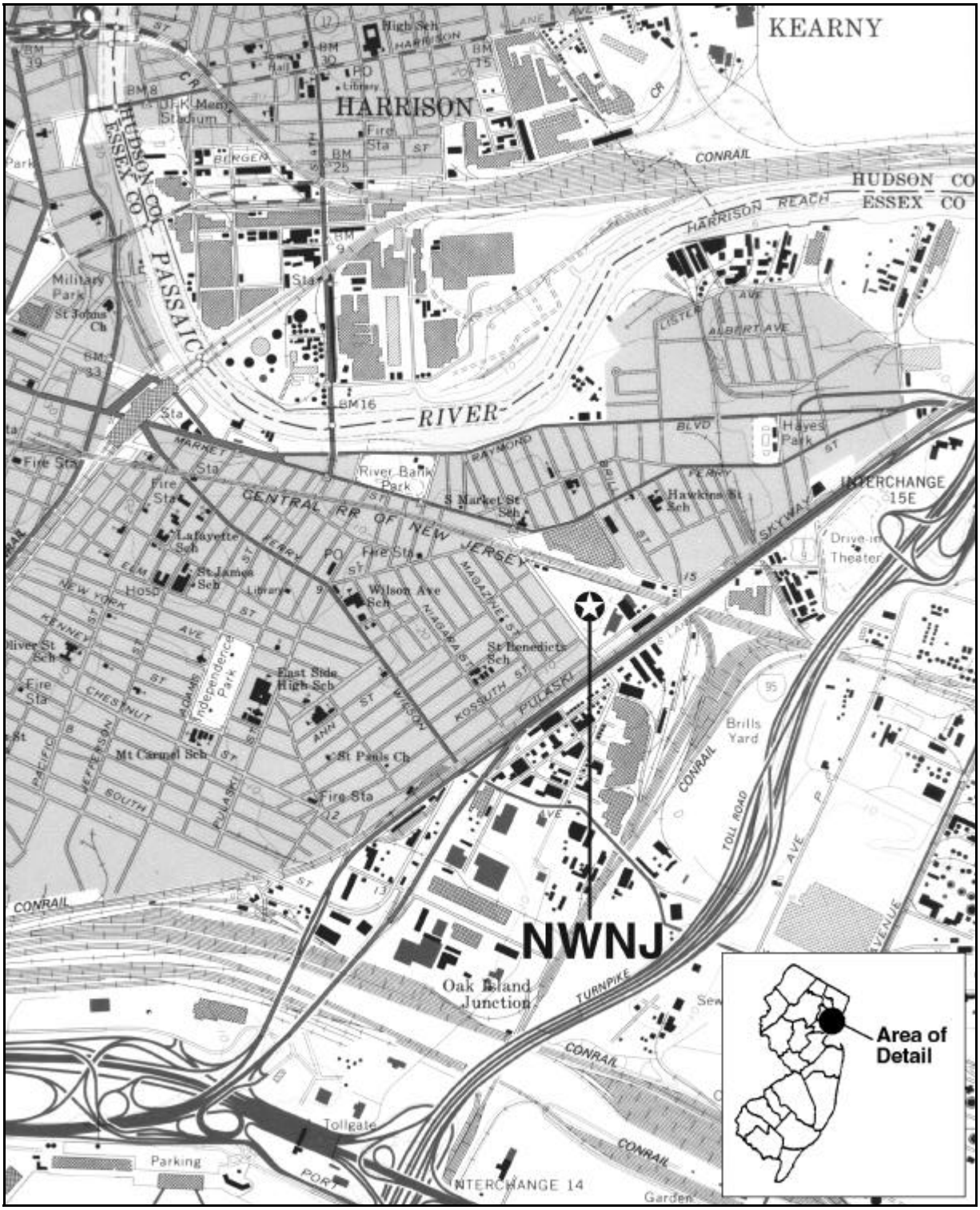
The ambient air monitoring data collected at NWNJ during the 1998 program provide a wealth of information on the composition and magnitude of air pollution in the Newark area. Characterizing ambient air concentrations of more than 125 compounds, the NMOC/SNMOC monitoring data from NWNJ identified the subset of compounds consistently found at highest levels during the morning hours. The compounds with the highest concentrations include several hydrocarbons (ethane, ethylene, propane, isopentane, acetylene, propylene, and toluene), carbonyls (formaldehyde, acetone, and acetaldehyde), and other oxygenated compounds (MTBE). Emissions from motor vehicles are believed to account for much of the airborne hydrocarbons and MTBE at NWNJ.

The daily total NMOC measurements allowed for a detailed analysis of associations between selected meteorological parameters and levels of air pollution. In general, no statistically significant trends were observed between total NMOC concentrations and humidity, precipitation, temperature, and wind direction. However, the absence of statistically significant trends does not mean that these meteorological parameters have no impact on air quality. Rather, the effect of these parameters on total NMOC concentrations at NWNJ might have been

masked by other factors that exhibit a stronger influence on levels of air pollution. Wind speed was the only meteorological parameter that had a statistically significant association with levels of total NMOC: concentrations of total NMOC tended to be lower on windier days, and higher when winds were calm or light. This trend was also observed at NWNJ during the 1997 program.

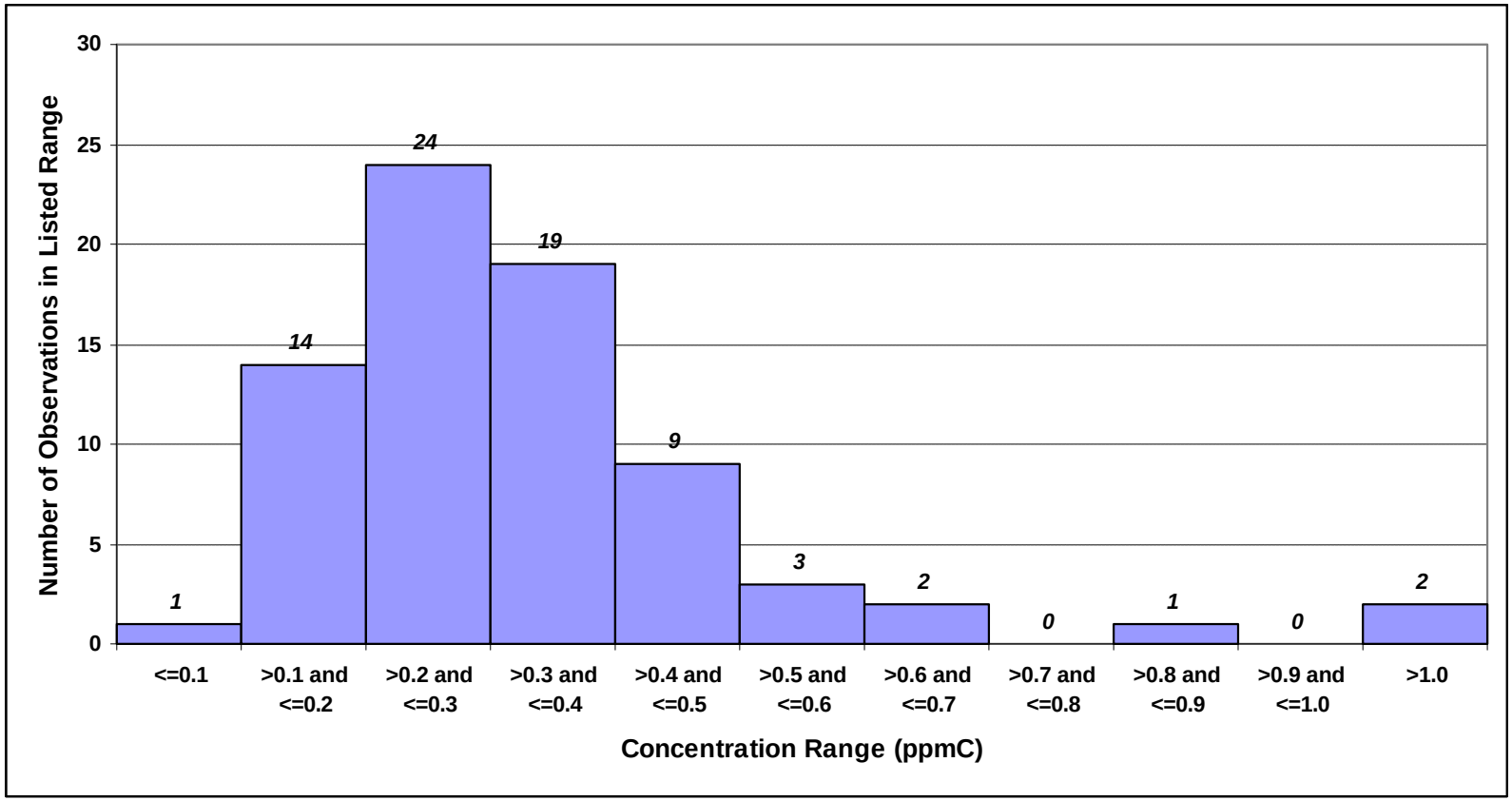
On average, the 3-hour average concentrations of total NMOC during the 1998 program ranked among the lowest observed during the summer months since 1988—the year that the NWNJ monitoring station first sampled for total NMOC. In the years since 1994, levels of total NMOC at NWNJ have been, on average, more than 30 percent lower than the levels measured in the years 1988–1994, and the concentration difference was found to be statistically significant. Furthermore, the frequency with which total NMOC concentrations exceed 1.0 ppmC has also decreased considerably since 1994. The decreasing average and peak levels of total NMOC might be due, at least in part, to the introduction of reformulated fuels between the 1994 and 1995 NMOC/SNMOC Monitoring Programs. Ongoing monitoring at NWNJ is needed, however, to determine whether future levels of total NMOC continue to decrease, stay roughly the same, or rise back to their 1988–1994 levels.

Figure 8-1
Newark, New Jersey (NWNJ), Monitoring Station



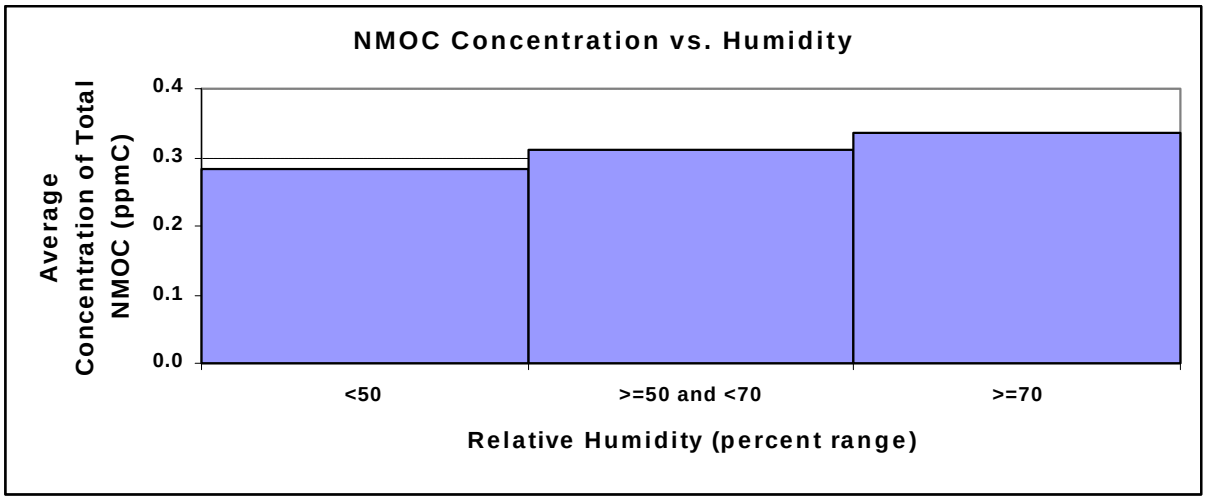
Source: USGS 7.5 Minute Series. Map scale: 1:24,000.

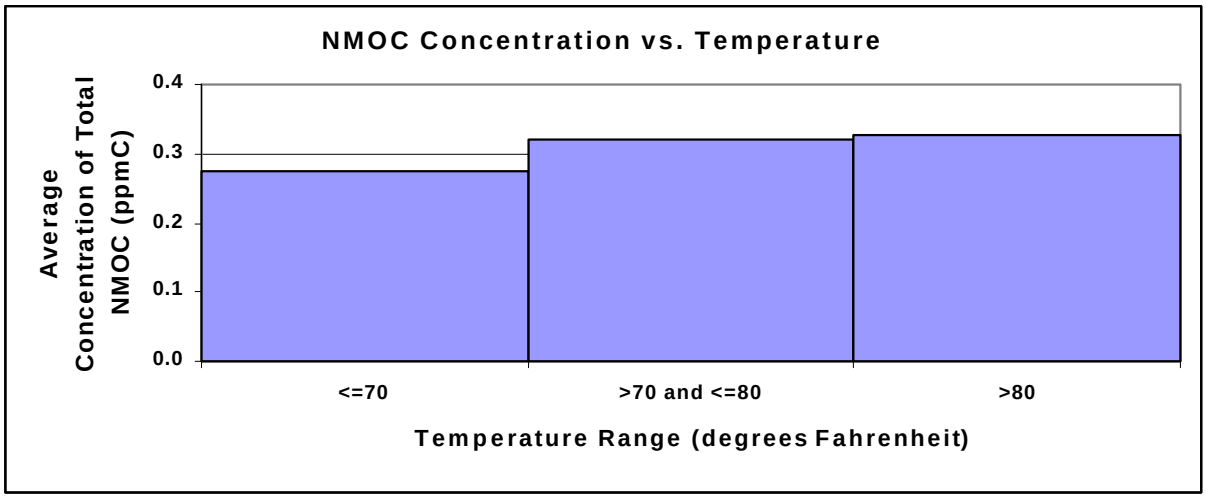
Figure 8-2
Distribution of Total NMOC Concentrations Measured at NWNJ



Note: The two concentrations higher than 1.0 ppmC were 1.208 ppmC and 6.941 ppmC.

Figure 8-3
Comparison of NMOC Concentrations at NWNJ to Selected Meteorological Parameters





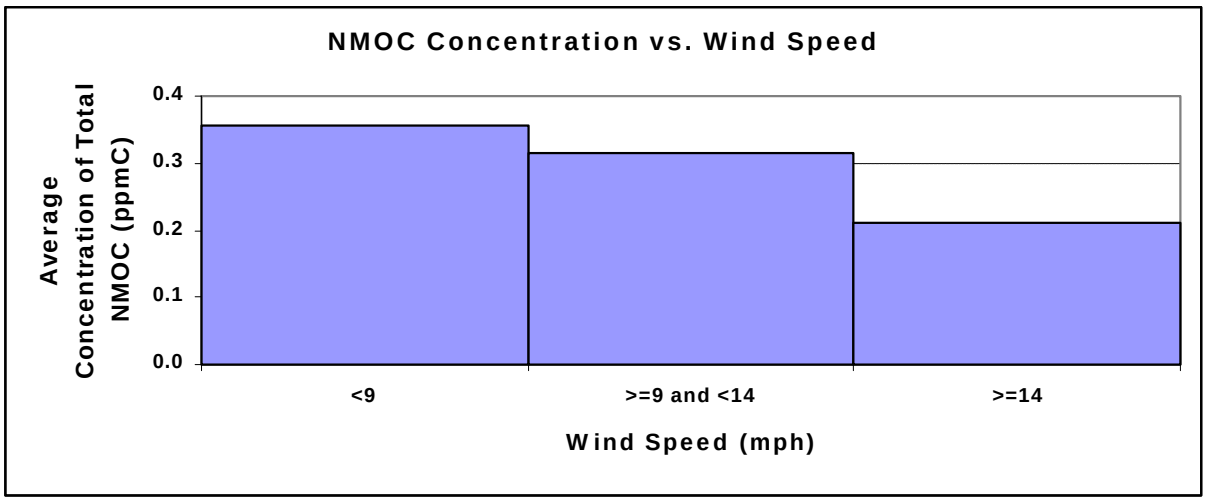
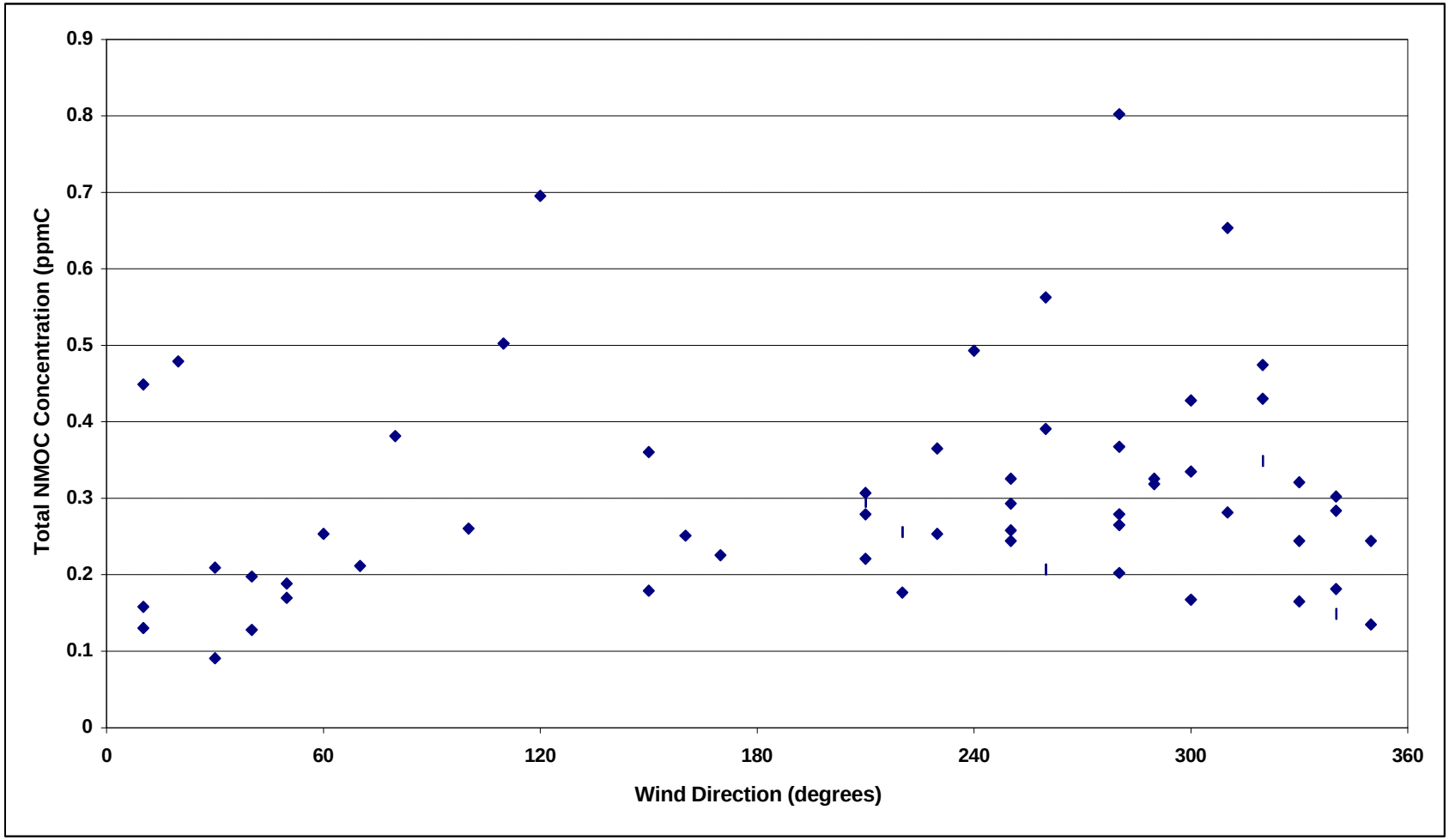
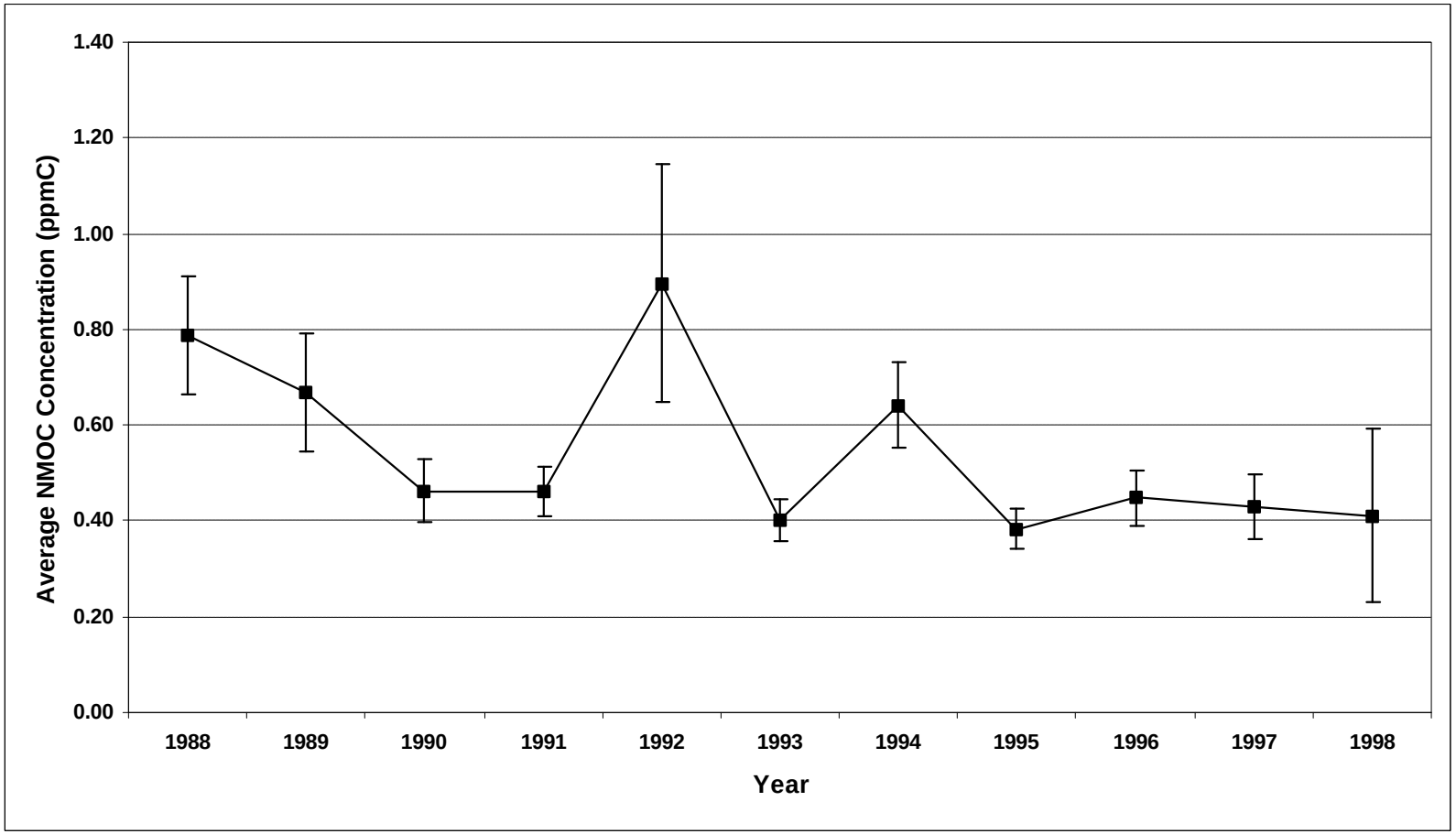


Figure 8-4
Comparison of Total NMOC Concentrations at NWNJ to Wind Direction



Notes: Wind direction is the direction from which wind blows. Observations with calm or variable winds are not included in this figure. As Section 8.1.2 notes, two outlier concentrations are not included in this figure: When the total NMOC concentration was 1.208 ppmC, the wind direction was 280 degrees; when the total NMOC concentration was 6.941 ppmC, the wind direction was 240 degrees.

Figure 8-5
Annual Variations in Average Concentrations of Total NMOC at NWNJ



Note: The "error bars" in the graph indicate the 95-percent confidence intervals of the average concentrations. All valid sampling results are considered in this figure, including suspected data outliers.

Figure 8-6
Annual Variations in Peak Concentrations of Total NMOC at NWNJ

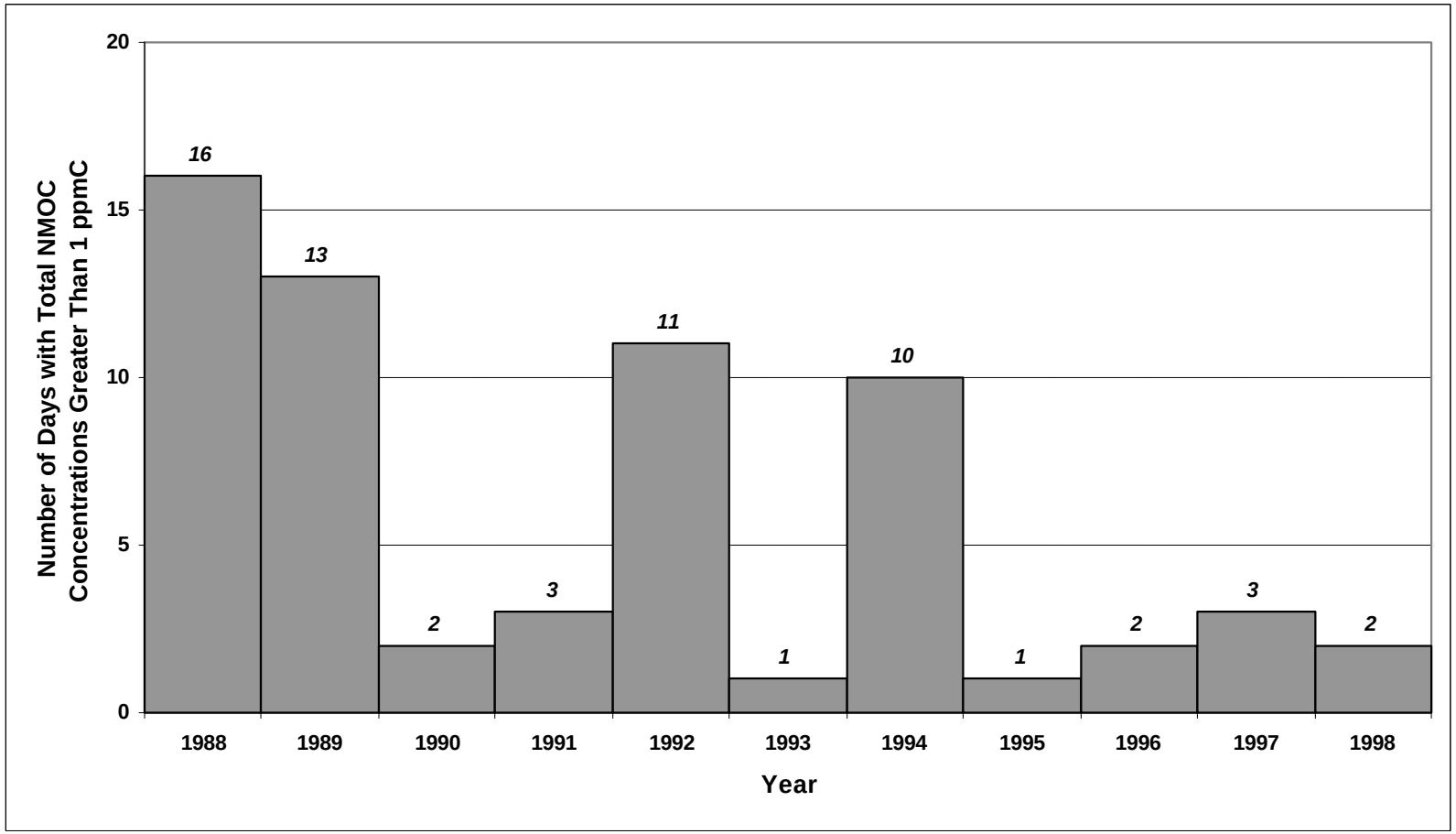
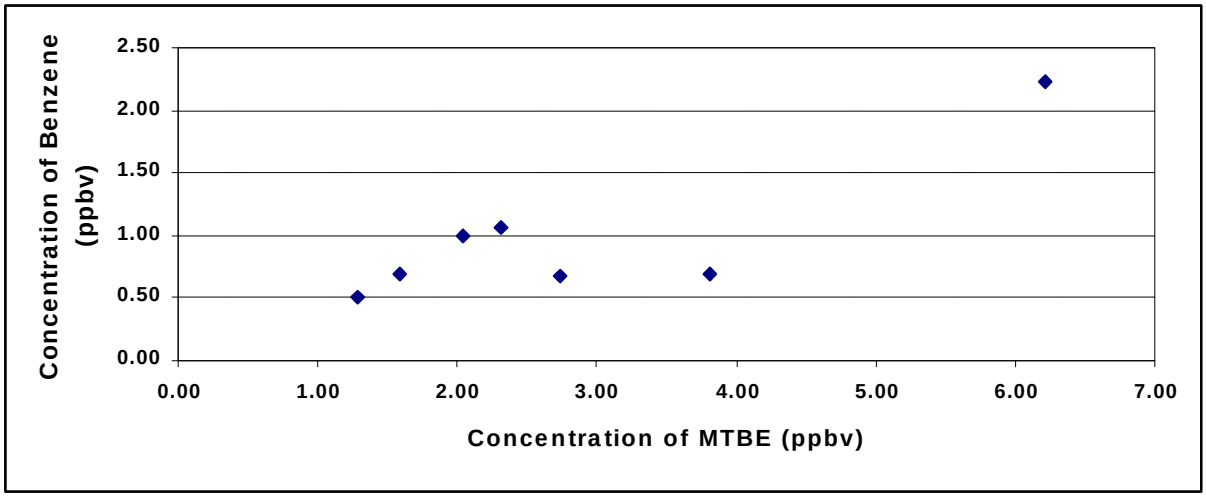
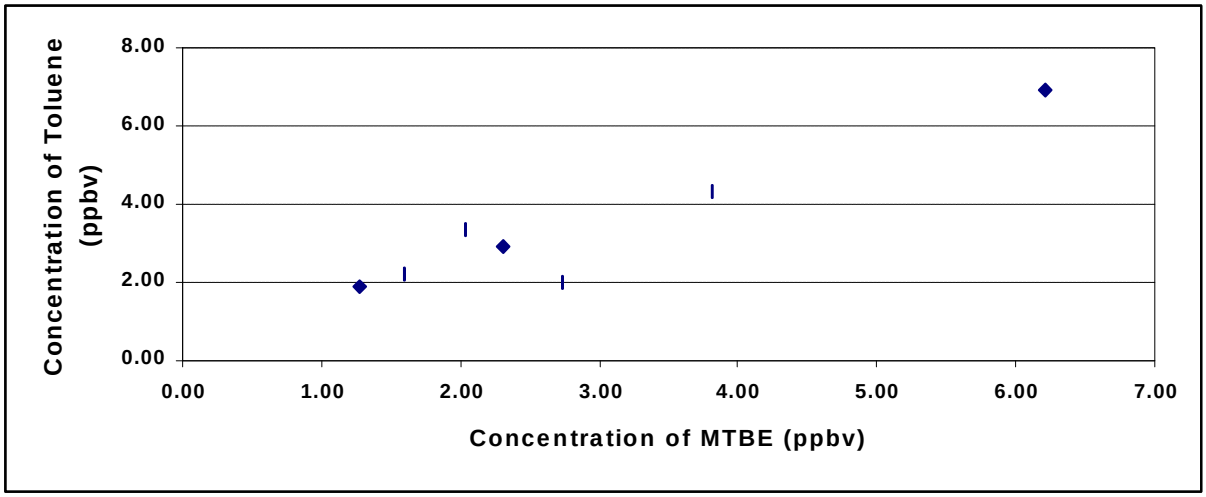
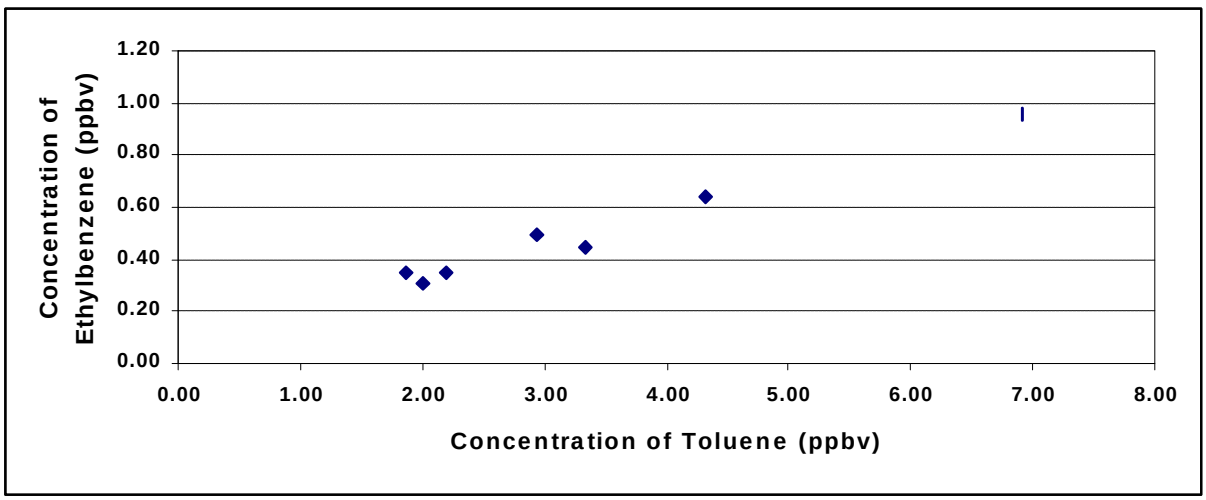


Figure 8-7
Data Correlations for Ambient Air Concentrations of Selected Compounds







Note: Refer to Section 8.3.2 for interpretations of these plots.

Table 8-1
Summary Statistics for Concentrations of Total NMOC at NWNJ

Category	Parameter	Monitoring Station NWNJ
Prevalence	Number of valid sampling days	75
	Number of nondetects	0
	Frequency of detection	100%
Concentration Range	Lowest concentration (ppmC)	0.091
	25th percentile concentration (ppmC)	0.216
	50th percentile concentration (ppmC)	0.292
	75th percentile concentration (ppmC)	0.386
	Highest concentration (ppmC)	6.941
Central Tendency	Median concentration (ppmC)	0.292
	Arithmetic mean concentration (ppmC)	0.411
	Geometric mean concentration (ppmC)	0.303
Variability	Standard deviation (ppmC)	0.799
	Coefficient of variation	1.93

Table 8-2
Summary Statistics for SNMOC Concentrations Measured at Newark, NJ (NWNJ)
(Based on 7 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Acetylene	0	100%	5.38	12.75	8.80	8.69	8.40	2.41	0.28
Benzene	0	100%	3.84	9.33	5.73	5.98	5.78	1.75	0.29
1,3-Butadiene	0	100%	0.33	1.53	0.76	0.76	0.69	0.39	0.51
n-Butane	0	100%	6.25	19.43	9.12	10.23	9.55	4.49	0.44
cis-2-Butene	0	100%	0.87	2.33	1.12	1.32	1.24	0.55	0.41
trans-2-Butene	0	100%	0.84	2.57	1.08	1.33	1.23	0.62	0.46
Cyclohexane	0	100%	1.03	2.01	1.38	1.50	1.45	0.42	0.28
Cyclopentane	0	100%	0.67	1.66	0.95	1.10	1.06	0.33	0.30
Cyclopentene	0	100%	0.39	1.50	0.98	0.95	0.85	0.43	0.45
n-Decane	0	100%	1.41	4.14	1.67	2.35	2.14	1.14	0.48
1-Decene	7	0%	ND	ND	0.14	0.14	0.14	0.00	0.00
m-Diethylbenzene	0	100%	0.53	2.19	0.85	1.00	0.90	0.57	0.57
p-Diethylbenzene	0	100%	0.34	1.66	0.75	0.79	0.70	0.43	0.55
2,2-Dimethylbutane	0	100%	1.25	2.31	1.72	1.64	1.60	0.38	0.23
2,3-Dimethylbutane	0	100%	5.90	19.30	10.09	11.90	11.13	4.60	0.39
2,3-Dimethylpentane	0	100%	1.32	2.39	1.87	1.90	1.85	0.44	0.23
2,4-Dimethylpentane	0	100%	0.94	1.92	1.32	1.37	1.34	0.32	0.23
n-Dodecane	0	100%	0.41	1.05	0.64	0.69	0.65	0.24	0.35

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 8-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Newark, NJ (NWNJ)
(Based on 7 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
1-Dodecene	1	86%	ND	5.46	0.15	0.91	0.24	2.01	2.20
Ethane	0	100%	11.59	32.92	21.47	21.50	20.44	7.27	0.34
Ethylbenzene	0	100%	2.35	5.83	3.33	3.76	3.56	1.35	0.36
2-Ethyl-1-Butene	7	0%	ND	ND	0.12	0.12	0.12	0.00	0.00
Ethylene	0	100%	10.42	23.20	12.61	14.84	14.21	5.00	0.34
m-Ethyltoluene	0	100%	1.80	4.89	2.77	3.13	2.95	1.14	0.36
o-Ethyltoluene	0	100%	0.93	2.44	1.46	1.54	1.46	0.56	0.37
p-Ethyltoluene	0	100%	1.13	2.92	1.68	1.97	1.86	0.73	0.37
n-Heptane	0	100%	1.62	3.84	1.94	2.29	2.20	0.77	0.34
1-Heptene	6	14%	ND	0.89	0.26	0.35	0.30	0.24	0.69
n-Hexane	0	100%	2.83	5.93	3.60	4.15	4.02	1.15	0.28
1-Hexene	0	100%	0.23	0.51	0.30	0.33	0.32	0.11	0.32
cis-2-Hexene	0	100%	0.09	2.46	0.22	0.53	0.28	0.85	1.60
trans-2-Hexene	0	100%	0.15	0.74	0.30	0.33	0.30	0.20	0.59
Isobutane	0	100%	4.88	14.71	6.16	8.44	7.82	3.69	0.44
Isobutene/1-Butene	0	100%	3.31	9.51	5.04	5.51	5.22	2.04	0.37
Isopentane	0	100%	20.05	42.52	29.00	30.91	30.13	7.45	0.24
Isoprene	0	100%	0.32	2.61	1.25	1.30	1.13	0.68	0.53

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 8-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Newark, NJ (NWNJ)
(Based on 7 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
Isopropylbenzene	0	100%	0.55	1.59	0.84	0.90	0.85	0.35	0.39
2-Methyl-1-Butene	0	100%	0.66	2.64	1.28	1.34	1.22	0.66	0.49
2-Methyl-2-Butene	0	100%	0.86	3.92	1.69	1.85	1.66	1.02	0.55
3-Methyl-1-Butene	1	86%	ND	3.37	0.53	1.39	0.64	1.44	1.03
Methylcyclohexane	0	100%	1.18	2.06	1.44	1.58	1.55	0.33	0.21
Methylcyclopentane	0	100%	1.68	3.51	2.25	2.50	2.43	0.66	0.26
2-Methylheptane	0	100%	0.84	1.87	1.17	1.23	1.18	0.37	0.30
3-Methylheptane	0	100%	0.80	1.52	1.04	1.14	1.11	0.28	0.25
2-Methylhexane	0	100%	1.91	4.22	2.54	2.81	2.68	0.92	0.33
3-Methylhexane	0	100%	1.96	3.79	2.46	2.77	2.69	0.71	0.26
2-Methylpentane	0	100%	3.84	9.25	5.62	6.30	6.05	1.94	0.31
3-Methylpentane	0	100%	2.35	5.59	3.50	3.78	3.64	1.14	0.30
2-Methyl-1-Pentene	0	100%	0.23	0.65	0.31	0.36	0.34	0.14	0.39
4-Methyl-1-Pentene	0	100%	0.06	0.17	0.11	0.11	0.10	0.03	0.32
n-Nonane	0	100%	1.15	2.50	1.92	1.75	1.67	0.56	0.32
1-Nonene	0	100%	0.23	0.58	0.31	0.37	0.35	0.16	0.42
n-Octane	0	100%	1.27	2.73	1.58	1.87	1.80	0.57	0.31
1-Octene	1	86%	ND	0.28	0.18	0.19	0.18	0.07	0.38

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 8-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Newark, NJ (NWNJ)
(Based on 7 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
n-Pentane	0	100%	5.02	11.32	7.14	8.09	7.73	2.59	0.32
1-Pentene	0	100%	0.66	1.84	1.14	1.29	1.22	0.45	0.35
cis-2-Pentene	0	100%	0.68	1.76	1.05	1.14	1.08	0.40	0.35
trans-2-Pentene	0	100%	0.94	3.02	1.58	1.76	1.64	0.71	0.40
"-Pinene	0	100%	0.32	1.82	0.74	0.99	0.84	0.60	0.60
$-Pinene	0	100%	0.21	3.75	0.81	1.14	0.83	1.18	1.03
Propane	0	100%	14.05	35.70	19.56	20.28	19.28	7.59	0.37
n-Propylbenzene	0	100%	0.81	2.04	1.07	1.26	1.19	0.47	0.37
Propylene	0	100%	6.74	18.22	10.60	11.82	11.16	4.45	0.38
Propyne	0	100%	0.14	0.52	0.28	0.31	0.29	0.13	0.41
Styrene	0	100%	1.11	5.10	1.83	2.16	1.94	1.32	0.61
Toluene	0	100%	13.03	33.54	20.91	21.44	20.13	8.37	0.39
n-Tridecane	0	100%	0.09	1.36	0.18	0.39	0.25	0.46	1.17
1-Tridecene	3	57%	ND	0.61	0.14	0.17	0.11	0.20	1.14
1,2,3-Trimethylbenzene	0	100%	0.72	2.47	1.32	1.41	1.29	0.64	0.45
1,2,4-Trimethylbenzene	0	100%	2.94	8.17	4.37	5.06	4.75	1.93	0.38
1,3,5-Trimethylbenzene	0	100%	1.14	3.23	1.84	2.23	2.06	0.91	0.41
2,2,3-Trimethylpentane	0	100%	0.58	1.64	0.98	1.03	0.98	0.34	0.33

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 8-2 (Continued)
Summary Statistics for SNMOC Concentrations Measured at Newark, NJ (NWNJ)
(Based on 7 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbC)	Highest (ppbC)	Median (ppbC)	Arithmetic Mean (ppbC)	Geometric Mean (ppbC)	Standard Deviation (ppbC)	Coefficient of Variation
2,2,4-Trimethylpentane	0	100%	2.86	7.67	4.49	4.93	4.72	1.57	0.32
2,3,4-Trimethylpentane	0	100%	1.05	2.83	1.77	1.77	1.70	0.57	0.32
n-Undecane	0	100%	1.09	2.94	1.52	1.90	1.78	0.75	0.39
1-Undecene	0	100%	0.04	2.02	0.25	0.45	0.22	0.70	1.57
m,p-Xylene	0	100%	7.10	18.74	10.78	11.63	10.87	4.69	0.40
o-Xylene	0	100%	2.71	6.50	4.06	4.43	4.20	1.56	0.35
TNMOC (w/ unknowns)	0	100%	239.93	518.03	312.97	367.31	351.72	116.80	0.32
TNMOC (speciated)	0	100%	198.22	420.63	260.37	291.18	280.26	88.80	0.30

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 8-3
Summary Statistics for VOC Concentrations Measured at Newark, NJ (NWNJ)
(Based on 7 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbv)	Highest (ppbv)	Median (ppbv)	Arithmetic Mean (ppbv)	Geometric Mean (ppbv)	Standard Deviation (ppbv)	Coefficient of Variation
Acetonitrile	7	0%	ND	ND	0.11	0.11	0.11	0.00	0.00
Acetylene	0	100%	1.76	7.15	3.74	4.28	3.98	1.66	0.39
Acrylonitrile	7	0%	ND	ND	0.03	0.03	0.03	0.00	0.00
Benzene	0	100%	0.50	2.23	0.69	0.98	0.87	0.59	0.60
Bromochloromethane	7	0%	ND	ND	0.02	0.02	0.02	0.00	0.00
Bromodichloromethane	7	0%	ND	ND	0.03	0.03	0.03	0.00	0.00
Bromoform	7	0%	ND	ND	0.06	0.06	0.06	0.00	0.00
Bromomethane	6	14%	ND	0.02	0.02	0.02	0.02	0.00	0.10
1,3-Butadiene	2	71%	ND	0.46	0.09	0.16	0.10	0.15	0.97
Carbon tetrachloride	0	100%	0.06	0.11	0.11	0.09	0.09	0.02	0.22
Chlorobenzene	7	0%	ND	ND	0.02	0.02	0.02	0.00	0.00
Chloroethane	7	0%	ND	ND	0.03	0.03	0.03	0.00	0.00
Chloroform	2	71%	ND	0.10	0.03	0.04	0.04	0.03	0.68
Chloromethane	0	100%	0.39	0.89	0.57	0.62	0.60	0.17	0.27
Chloroprene	7	0%	ND	ND	0.02	0.02	0.02	0.00	0.00
Dibromochloromethane	7	0%	ND	ND	0.02	0.02	0.02	0.00	0.00
m-Dichlorobenzene	7	0%	ND	ND	0.05	0.05	0.05	0.00	0.00
o-Dichlorobenzene	6	14%	ND	0.05	0.05	0.04	0.04	0.01	0.22

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 8-3 (Continued)
Summary Statistics for VOC Concentrations Measured at Newark, NJ (NWNJ)
(Based on 7 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbv)	Highest (ppbv)	Median (ppbv)	Arithmetic Mean (ppbv)	Geometric Mean (ppbv)	Standard Deviation (ppbv)	Coefficient of Variation
p-Dichlorobenzene	1	86%	ND	0.26	0.07	0.10	0.08	0.08	0.79
1,1-Dichloroethane	7	0%	ND	ND	0.02	0.02	0.02	0.00	0.00
1,2-Dichloroethane	7	0%	ND	ND	0.04	0.04	0.04	0.00	0.00
trans-1,2-Dichloroethylene	7	0%	ND	ND	0.03	0.03	0.03	0.00	0.00
1,2-Dichloropropane	7	0%	ND	ND	0.05	0.05	0.05	0.00	0.00
cis-1,3-Dichloropropene	7	0%	ND	ND	0.02	0.02	0.02	0.00	0.00
trans-1,3-Dichloropropene	7	0%	ND	ND	0.02	0.02	0.02	0.00	0.00
Ethyl Acrylate	7	0%	ND	ND	0.02	0.02	0.02	0.00	0.00
Ethylbenzene	0	100%	0.31	0.96	0.45	0.51	0.47	0.23	0.45
Ethyl *tert*-Butyl Ether	7	0%	ND	ND	0.03	0.03	0.03	0.00	0.00
Methylene Chloride	1	86%	ND	1.25	0.50	0.60	0.42	0.42	0.70
Methyl Ethyl Ketone	0	100%	0.79	1.88	1.09	1.18	1.15	0.34	0.28
Methyl Isobutyl Ketone	3	57%	ND	0.31	0.12	0.12	0.09	0.10	0.84
Methyl Methacrylate	7	0%	ND	ND	0.03	0.03	0.03	0.00	0.00
Methyl *tert*-Butyl Ether	0	100%	1.28	6.21	2.31	2.85	2.51	1.69	0.59
n-Octane	2	71%	ND	0.35	0.15	0.16	0.13	0.11	0.66
Propylene	0	100%	1.92	8.04	3.77	4.54	4.08	2.24	0.49
Styrene	2	71%	ND	0.24	0.16	0.14	0.12	0.07	0.48

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 8-3 (Continued)
Summary Statistics for VOC Concentrations Measured at Newark, NJ (NWNJ)
(Based on 7 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbv)	Highest (ppbv)	Median (ppbv)	Arithmetic Mean (ppbv)	Geometric Mean (ppbv)	Standard Deviation (ppbv)	Coefficient of Variation
tert-Amyl Methyl Ether	5	29%	ND	0.16	0.03	0.06	0.05	0.05	0.88
1,1,2,2-Tetrachloroethane	7	0%	ND	ND	0.03	0.03	0.03	0.00	0.00
Tetrachloroethylene	1	86%	ND	0.42	0.20	0.18	0.14	0.13	0.73
Toluene	0	100%	1.87	6.92	2.95	3.37	3.04	1.79	0.53
1,1,1-Trichloroethane	0	100%	0.42	1.01	0.62	0.63	0.61	0.19	0.30
1,1,2-Trichloroethane	7	0%	ND	ND	0.02	0.02	0.02	0.00	0.00
Trichloroethylene	4	43%	ND	0.37	0.03	0.09	0.05	0.13	1.39
Vinyl Chloride	7	0%	ND	ND	0.04	0.04	0.04	0.00	0.00
m,p-Xylene	0	100%	0.85	2.88	1.32	1.45	1.32	0.73	0.51
o-Xylene	0	100%	0.46	1.43	0.63	0.73	0.68	0.34	0.47

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

Table 8-4
Comparison of Concentrations for Compounds Measured by Both the VOC and SNMOC Analytical Methods (Based on 7 Days with Valid VOC and SNMOC Samples at NWNJ)

Compound	Average Concentration Measured by the VOC Method (ppbv)	Average Concentration Measured by the SNMOC Method (ppbv)	RPD	Is the Concentration Difference Between the Two Methods Statistically Significant?
Acetylene	4.28	4.35	2 %	No
Benzene	0.98	1.00	2 %	No
1,3-Butadiene	0.16	0.19	11 %	No
Ethylbenzene	0.51	0.47	8 %	No
n-Octane	0.16	0.23	12 %	No
Propylene	4.54	3.94	14 %	No
Styrene	0.14	0.27	44 %	No
Toluene	3.37	3.06	10 %	No
m,*p*-Xylene	1.45	1.45	1 %	No
o-Xylene	0.73	0.55	28 %	No

Notes: Concentrations measured by the SNMOC method were converted to units of ppbv for this analysis.
RPD = relative percent difference (see sidebar in Section 2.3 for a definition).
Nondetect observations were omitted from the calculation of RPDs.

Table 8-5
Summary Statistics for Carbonyl Concentrations Measured at Newark, NJ (NWNJ)
(Based on 8 Days with Valid Samples)

Compound	Prevalence of Compound in Ambient Air		Range of Measured Concentrations		Central Tendency of Measured Concentrations			Variability in Measured Concentrations	
	Number of Non-detects	Frequency of Detections	Lowest (ppbv)	Highest (ppbv)	Median (ppbv)	Arithmetic Mean (ppbv)	Geometric Mean (ppbv)	Standard Deviation (ppbv)	Coefficient of Variation
Acetaldehyde	0	100%	1.92	5.43	3.24	3.38	3.21	1.18	0.35
Acetone	0	100%	3.80	8.83	6.31	6.18	5.99	1.61	0.26
Acrolein	0	100%	0.13	1.26	0.48	0.55	0.45	0.35	0.64
Benzaldehyde	3	63%	ND	0.46	0.30	0.23	0.07	0.20	0.85
Butyr/Isobutyraldehyde	0	100%	0.28	3.54	1.53	1.64	1.09	1.29	0.79
Crotonaldehyde	8	0%	ND	ND	0.00	0.00	0.00	0.00	0.00
2,5-Dimethylbenzaldehyde	8	0%	ND	ND	0.00	0.00	0.00	0.00	0.00
Formaldehyde	0	100%	3.79	25.34	19.22	15.28	12.46	8.55	0.56
Hexanaldehyde	0	100%	0.11	0.49	0.32	0.29	0.25	0.15	0.51
Isovaleraldehyde	2	75%	ND	0.30	0.20	0.17	0.08	0.13	0.73
Propionaldehyde	0	100%	0.13	0.46	0.29	0.29	0.27	0.12	0.42
Tolualdehydes	8	0%	ND	ND	0.01	0.01	0.01	0.00	0.00
Valeraldehyde	2	75%	ND	0.24	0.14	0.13	0.07	0.09	0.72

ND = nondetect

Note: Data for compounds detected in less than 50 percent of the samples should be interpreted with caution, since their summary statistics might be influenced by low prevalence (see Section 3.1).

9.0 Conclusions and Recommendations

The National 1998 NMOC/SNMOC Monitoring Program thoroughly characterized the magnitude and composition of ozone precursors during the summer months at six monitoring locations. The following discussion reviews the main conclusions of this report and recommends several improvements for ongoing NMOC/SNMOC monitoring efforts.

9.1 Conclusions

Several different graphical, numerical, and statistical analyses were used to identify and interpret trends and patterns in the data collected during the 1998 program, as well as data collected during earlier NMOC/SNMOC programs. Though these analyses offer an extensive account of air quality near the monitoring stations, they should not be viewed as comprehensive. An overview of key findings from the data analyses follows:

- *Total NMOC Monitoring Data*. During the 1998 program, concentrations of total NMOC were measured on summer weekday mornings at six monitoring stations. Results from duplicate samples and replicate analyses indicated that these measurements were highly precise. Overall, total NMOC concentrations at JUMX were notably higher than those at the other five stations. More specifically, the average concentration of total NMOC at JUMX was 2.06 ppmC, while average levels at the other stations were less than 0.55 ppmC. The relatively high concentrations at JUMX resulted, in part, from several outliers. In fact, one air sample collected at JUMX had a total NMOC concentration higher than 20 ppmC—a level far higher than any other total NMOC concentration measured during the past five NMOC/SNMOC Monitoring Programs.

  At all six stations, total NMOC levels were lower on windier days and higher on days with calm or light winds, but no consistent trends were observed between total NMOC concentrations and other meteorological parameters (i.e., humidity, precipitation, temperature, and wind direction). Even the record high temperatures in Dallas and Fort Worth during the 1998 program appeared to have little bearing on the total NMOC levels in these cities. The trend of decreasing total NMOC levels with increasing wind speed is consistent with a fundamental principle of atmospheric dispersion: High wind speeds enhance the dispersion of pollution.

  The annual variations in total NMOC levels provided insight into long-term trends in air quality at the six monitoring stations. No consistent annual variations were observed among the 4 years of monitoring data available for the three stations in Dallas and Fort Worth: At some stations (CAMS5 and DLTX), total NMOC levels decreased from 1995

to 1998; at the other station (CAMS13), total NMOC levels increased over this time frame. At the monitoring station in Juarez, Mexico, concentrations of total NMOC during the 1998 program were, on average, roughly four times higher than those measured during the 1995, 1996, and 1997 programs. Even when the outlier concentrations were omitted from the analysis, the total NMOC levels at JUMX during 1998 were higher than those during previous years. At the two monitoring stations in the Newark–New York City area (LINY and NWNJ), total NMOC levels have steadily decreased over the last 10 summers. Moreover, the average concentration of total NMOC at LINY during the 1998 program was the lowest level observed at this station since 1990, and the average concentration at NWNJ during the 1998 program was the second lowest observed at the station since 1988. The factors that accounted for each station's unique annual variations were not considered in this report.

C *SNMOC Monitoring Data*. Four of the monitoring stations that participated in the 1998 program collected SNMOC samples every weekday morning during the summer, thus providing a wealth of information on the composition of airborne hydrocarbons. The SNMOC monitoring data were shown to be highly precise, based on the results of 39 duplicate samples that were analyzed in replicate. An overview of key findings for the El Paso–Juarez and Dallas–Fort Worth areas follows.

At JUMX, the SNMOC monitoring data offered insight into the unusually high levels of total NMOC that were measured during the 1998 program. For example, the SNMOC monitoring data revealed an interesting pattern on the composition of the air mass at JUMX: On days when total NMOC levels exceeded 1.0 ppmC, the 80 hydrocarbons identified by the SNMOC sampling and analytical method accounted for only 11 percent of the total NMOC; on all other sampling days, however, these 80 hydrocarbons accounted for 57 percent of the total NMOC. Thus, the many observations of elevated total NMOC levels at JUMX were highly influenced by compounds that the SNMOC sampling and analytical method does not currently identify. For the most abundant SNMOC, average concentrations during the 1998 program were not notably higher or lower than those measured during the 1995, 1996, and 1997 programs.

In the Dallas–Fort Worth area, ambient air concentrations of the most abundant SNMOC at CAMS13 were considerably higher than concentrations of the same compounds at CAMS5 and DLTX. Closer examination of the data revealed that the air mass at CAMS13 contained the greatest proportion of alkanes, while the air mass at DLTX contained the greatest proportion of olefins. This trend was found to be very consistent with the hypothesis that gasoline vapor emissions have a relatively greater influence on air quality at CAMS13 and that mobile source emissions have a relatively greater influence on air quality at DLTX—a hypothesis that should be verified by comparing the SNMOC monitoring data to local emissions inventories for these three stations. With few exceptions, the annual variations for the most abundant SNMOC tended to parallel each station's annual variations in total NMOC levels. In other words, at stations where total

NMOC levels gradually increased from 1995 to 1998, concentrations of the most abundant SNMOC generally increased as well. As one exception to this general trend, the ambient air concentrations of 2,3-dimethylbutane at all three monitoring stations in Dallas and Fort Worth during the 1998 program were significantly higher than those during previous years. This notable increase throughout the Dallas–Fort Worth area might be linked to the record high temperatures observed during the 1998 program, but detailed evaluations of additional monitoring data are needed to verify this association.

At all four stations that collected daily SNMOC samples, data analyses revealed that the compounds with the greatest potential for forming ozone were often not the compounds with the highest ambient air concentrations. This same finding was presented in the 1996 NMOC/SNMOC report.

C *VOC Monitoring Data*. Only one station (NWNJ) collected VOC samples during the 1998 NMOC/SNMOC Monitoring Program. The VOC monitoring data provided insight into air quality trends for many compounds that the SNMOC sampling and analytical method does not identify. Of these compounds, methyl ethyl ketone and MTBE had geometric mean concentrations that ranked among the highest levels measured at NWNJ. Closer evaluation of the monitoring data revealed that mobile source emissions likely accounted for a large portion of the airborne MTBE in the Newark area. Due to the limited number of VOC samples collected during the 1998 program, further analysis of trends and patterns among the VOC data were not performed.

The precision of the VOC monitoring data was not known, because too few duplicate samples were collected to quantify the measurement precision. However, comparison of the VOC and SNMOC sampling results from NWNJ showed that the VOC and SNMOC sampling and analytical methods generated very consistent results for the 11 compounds that can be identified by both methods.

C *Carbonyl Monitoring Data*. The limited carbonyl sampling performed during the 1998 program characterized ambient air concentrations for an entire group of compounds that the SNMOC sampling and analytical method does not identify. Results from four duplicate sampling events demonstrate that the carbonyl monitoring data were highly precise. Further, some noteworthy data trends were identified that appeared to be common to the five stations that collected carbonyl samples (CAMS5, CAMS13, DLTX, JUMX, NWNJ). For instance, at all five stations, acetaldehyde, acetone, and formaldehyde accounted for a large portion—80 percent or higher—of the combined concentration of the 18 carbonyls that the sampling and analytical method can identify. Moreover, at many stations, the average air concentrations of these compounds ranked among the ten highest average concentrations measured during the program (including the 80 SNMOC). Therefore, carbonyls were shown to account for a substantial portion of the total NMOC that was not identified by the SNMOC sampling and analytical method.

9.2 Recommendations

Based on lessons learned from analyzing the 1998 NMOC/SNMOC monitoring data, a number of improvements are recommended for future national ambient air monitoring efforts:

- *Conduct more extensive statistical analyses on the data.* Though this report highlighted numerous trends and patterns in the large volume of monitoring data collected during the 1998 program, the analyses in this report should not be viewed as an exhaustive evaluation of the data collected at the six monitoring stations. Additional statistical analyses of the NMOC/SNMOC monitoring data could reveal subtle trends that were not identified by the data analysis methodology used in this report. Examples of such additional analyses include the use of multivariate statistics to understand how many different parameters affect air quality and the use of factor analyses to determine the extent to which certain emissions profiles are reflected in the air monitoring data.

- *Compare ambient air monitoring data to emissions data.* Though several air quality trends identified in this report appeared to be consistent with emissions profiles for certain types of sources, the link between emissions and ambient air concentrations could not be verified since site-specific emissions inventories were not considered in this report. Consequently, a comparison of air quality trends documented in this report to local emissions inventories should be performed. Understanding the extent to which emissions from specific sources affect air quality is a critical step in developing effective air pollution control strategies.

- *Encourage stations to include the VOC (i.e., Air Toxics) monitoring option.* The VOC monitoring data collected during the 1998 program provided important insight into ambient air quality in the Newark area, primarily by measuring concentrations of many compounds that the SNMOC sampling and analytical method does not identify. Of particular interest, the VOC sampling and analytical method measures concentrations of MTBE—a compound that has gained recent attention in the environmental field—and other oxygenates that are present in photochemical smog (e.g., methyl ethyl ketone). For a more complete picture of air quality in their jurisdictions, agencies that sponsor NMOC/SNMOC monitoring stations are encouraged to have all samples analyzed for both SNMOC and VOC, rather than having samples analyzed for only SNMOC.

- *Encourage long-term participation in the program.* As noted in other NMOC/SNMOC reports, state and local agencies can assess long-term trends in air pollution only by evaluating the results of ongoing ambient air monitoring efforts. These long-term data trends can answer important questions often asked of sponsoring agencies, such as: To what extent has a certain pollution control strategy affected air quality? Is air quality in our city improving or degrading? How can we best reduce ozone levels? To help answer these and other important questions, sponsoring agencies are encouraged to continue measuring levels of air pollutants at the same monitoring locations used in this program.

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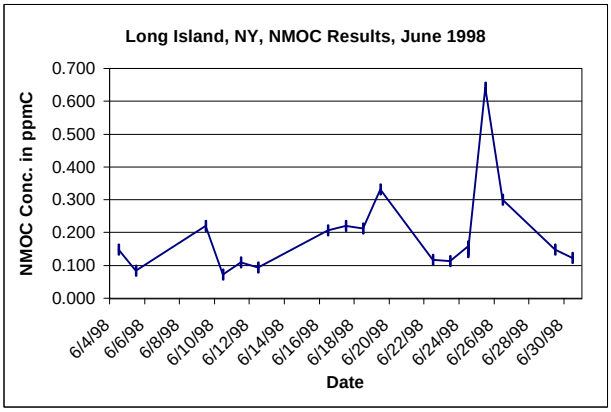
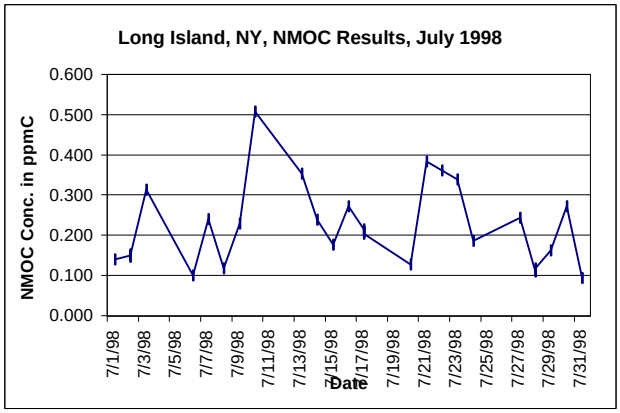
Long Island, NY
Eisenhower Park Monitoring Station
NMOC Results 1998

SITE CODE	SAMPLE ID	COLLECTION DATE	AVERAGE CONC.
LINY	12832	6/4/98	0.148
LINY	12853	6/5/98	0.084
LINY	12856	6/9/98	0.221
LINY	12890	6/10/98	0.072
LINY	12911	6/11/98	0.110
LINY	12912	6/12/98	0.093
LINY	12938	6/16/98	0.208
LINY	12940	6/17/98	0.220
LINY	12966	6/18/98	0.213
LINY	12933	6/19/98	0.331
LINY	12995	6/22/98	0.116
LINY	13013	6/23/98	0.112
LINY	13025	6/24/98	0.159
LINY	13026	6/24/98	0.148
LINY	13025	6/24/98	0.144
LINY	13026	6/24/98	0.139
LINY	13046	6/25/98	0.642
LINY	13070	6/26/98	0.300
LINY	13080	6/29/98	0.148
LINY	13173	6/30/98	0.122
LINY	13174	7/1/98	0.140
LINY	13196	7/2/98	0.149
LINY	13197	7/2/98	0.147
LINY	13196	7/2/98	0.152
LINY	13197	7/2/98	0.150
LINY	13209	7/3/98	0.313
LINY	13250	7/6/98	0.100
LINY	13318	7/7/98	0.241
LINY	13326	7/8/98	0.118
LINY	13344	7/9/98	0.229
LINY	13365	7/10/98	0.508
LINY	13375	7/13/98	0.353
LINY	13529	7/14/98	0.239
LINY	13257	7/15/98	0.177
LINY	13558	7/16/98	0.273
LINY	13594	7/17/98	0.216
LINY	13595	7/17/98	0.210
LINY	13594	7/17/98	0.208
LINY	13595	7/17/98	0.204
LINY	13581	7/20/98	0.127
LINY	13617	7/21/98	0.383
LINY	13705	7/22/98	0.361
LINY	13731	7/23/98	0.339
LINY	13760	7/24/98	0.187
LINY	13776	7/27/98	0.244
LINY	13890	7/28/98	0.109
LINY	13891	7/28/98	0.112
LINY	13890	7/28/98	0.113
LINY	13891	7/28/98	0.117
LINY	13780	7/29/98	0.162
LINY	13898	7/30/98	0.272
LINY	13916	7/31/98	0.094





Long Island, NY
Eisenhower Park Monitoring Station
NMOC Results 1998

SITE CODE	SAMPLE ID	COLLECTION DATE	AVERAGE CONC.
LINY	13923	8/3/98	0.326
LINY	13968	8/4/98	0.467
LINY	13969	8/4/98	0.522
LINY	13968	8/4/98	0.540
LINY	13969	8/4/98	0.426
LINY	12853	8/6/98	0.643
LINY	14054	8/7/98	0.230
LINY	14060	8/10/98	0.113
LINY	14094	8/11/98	0.260
LINY	14178	8/13/98	0.077
LINY	14239	8/14/98	0.089
LINY	14237	8/14/98	0.117
LINY	14230	8/17/98	0.169
LINY	14221	8/18/98	0.425
LINY	14238	8/20/98	0.111
LINY	14353	8/24/98	0.178
LINY	14364	8/25/98	0.248
LINY	14485	8/26/98	0.129
LINY	14496	8/27/98	0.116
LINY	14498	8/28/98	0.077
LINY	14564	8/31/98	0.205
LINY	14548	9/1/98	0.180
LINY	14549	9/1/98	0.208
LINY	14548	9/1/98	0.199
LINY	14549	9/1/98	0.198
LINY	14563	9/2/98	0.350
LINY	14692	9/3/98	0.170
LINY	14676	9/4/98	0.552
LINY	14694	9/8/98	0.303
LINY	14707	9/9/98	0.115
LINY	14708	9/9/98	0.074
LINY	14707	9/9/98	0.116
LINY	14708	9/9/98	0.141
LINY	14768	9/10/98	0.130
LINY	14779	9/11/98	0.357
LINY	14798	9/14/98	0.147
LINY	14807	9/15/98	0.209
LINY	14826	9/16/98	0.278
LINY	14832	9/17/98	0.190
LINY	14833	9/17/98	0.109
LINY	14832	9/17/98	0.208
LINY	14833	9/17/98	0.102
LINY	14892	9/18/98	0.132
LINY	14900	9/21/98	0.216
LINY	14964	9/22/98	0.170
LINY	14979	9/23/98	0.067
LINY	14991	9/24/98	0.355
LINY	15005	9/25/98	0.553
LINY	15006	9/25/98	0.611
LINY	15005	9/25/98	0.642
LINY	15006	9/25/98	0.644
LINY	15026	9/28/98	0.134
LINY	15027	9/28/98	0.096
LINY	15026	9/28/98	0.142
LINY	15027	9/28/98	0.156
LINY	15039	9/29/98	0.289
LINY	15040	9/29/98	0.307
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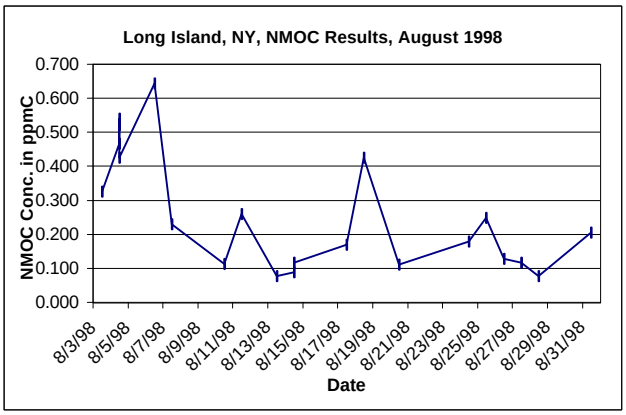

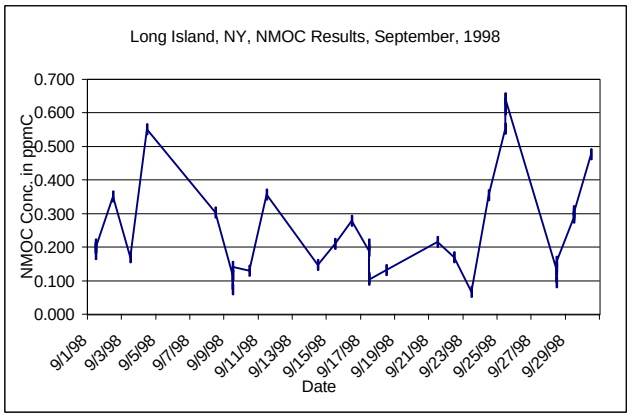

Newark, NJ
SNMOC 1998 Results

SNMOC OPTION REPORT
SITE CODE: NWNJ
Reported in ppbC

Sample No.:	**13179**		**13899**	**14059**	**14468**	**14487D1**	**14487R1**
Sampling Date:	**6/29/98**		**7/29/98**	**8/6/98**	**8/24/98**	**8/25/98**	**8/25/98**
Analysis Date:	**7/23/98**		**12/1/98**	**9/21/98**	**9/23/98**	**9/24/98**	**12/1/98**
Compound							
Ethylene	12.61		10.42	20.71	11.84	15.29	11.80
Acetylene	8.80		9.88	9.78	6.93	8.79	6.16
Ethane	0.00	@	11.59	32.92	16.69	23.72	17.90
Propylene	10.60		6.74	18.22	9.08	12.43	9.36
Propane	14.05		14.41	35.70	19.90	22.77	17.05
Propyne	0.28		0.23	0.43	0.26	0.37	0.25
Isobutane	11.66		4.88	9.76	6.16	6.93	5.14
Isobutene/1-Butene	6.45		4.08	5.69	4.48	5.88	4.48
1,3-Butadiene	0.76		0.67	0.81	0.33	0.95	0.70
n-Butane	10.83		7.20	11.45	9.12	8.50	6.23
trans-2-Butene	1.49		0.84	1.56	0.92	1.29	0.97
cis-2-Butene	1.66		0.87	1.53	0.90	1.27	1.00
3-Methyl-1-butene	3.37		0.29	2.82	ND	0.85	0.17
Isopentane	31.04		29.00	42.52	27.96	30.14	27.33
1-Pentene	1.84		0.91	1.61	1.12	1.40	0.89
2-Methyl-1-butene	1.51		0.85	1.54	0.92	1.47	1.21
n-Pentane	10.08		5.56	11.32	6.71	8.23	6.14
Isoprene	2.61		1.28	1.42	0.32	1.41	1.03
trans-2-Pentene	2.11		1.28	2.09	1.27	1.85	1.35
cis-2-Pentene	1.56		0.83	1.24	0.86	1.26	0.90
2-Methyl-2-butene	1.87		1.30	2.20	1.13	2.03	1.39
2,2-Dimethylbutane	1.30		1.25	1.73	1.84	2.01	1.50
Cyclopentene	1.37		0.39	1.50	0.98	1.17	0.72
4-Methyl-1-pentene	0.12		0.09	0.11	0.06	0.10	0.10
Cyclopentane	1.66		0.95	1.38	0.95	0.93	0.81
2,3-Dimethylbutane	13.46		8.63	15.92	10.09	11.56	8.58
2-Methylpentane	6.87		4.74	8.30	5.50	6.50	5.38
3-Methylpentane	3.75		2.90	5.01	3.50	3.95	2.87
2-Methyl-1-pentene	0.31		0.31	0.43	0.27	0.42	0.26
1-Hexene	0.30		0.25	0.45	0.30	0.35	0.27
2-Ethyl-1-butene	ND		ND	ND	ND	ND	ND
n-Hexane	4.60		3.24	5.29	3.58	4.38	3.05
trans-2-Hexene	0.30		0.23	0.41	0.20	0.34	0.34
cis-2-Hexene	0.32		0.19	0.31	0.14	0.19	0.19
Methylcyclopentane	2.61		2.03	3.24	2.25	2.56	1.93
2,4-Dimethylpentane	1.50		1.23	1.54	1.17	1.69	1.11
Benzene	6.66		4.76	6.19	5.33	6.61	4.82
Cyclohexane	1.84		1.15	2.01	1.03	1.25	1.04
2-Methylhexane	4.22		2.10	3.41	1.91	2.60	2.13
2,3-Dimethylpentane	2.39		1.54	2.29	1.55	2.08	1.72
3-Methylhexane	3.13		2.18	3.54	2.31	2.84	2.14
1-Heptene	0.89		ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	5.42		3.81	5.92	4.31	5.27	3.77
n-Heptane	2.44		1.62	2.58	1.76	2.21	1.64
Methylcyclohexane	1.83		1.29	2.06	1.44	1.54	1.16
2,2,3-Trimethylpentane	0.99		0.85	1.27	0.90	1.25	0.75
2,3,4-Trimethylpentane	1.78		1.38	2.06	1.53	2.03	1.50
Toluene	21.00		14.71	33.54	14.80	22.36	16.42
2-Methylheptane	1.31		0.93	1.52	0.96	1.34	1.02
3-Methylheptane	1.32		0.80	1.40	1.02	1.06	0.92
1-Octene	0.28		0.12	0.26	0.13	0.16	0.11
n-Octane	2.42		1.34	2.18	1.56	1.90	1.27
Ethylbenzene	4.26		2.93	5.83	2.50	3.76	2.95
m-Xylene/p-Xylene	12.30		8.25	18.74	7.24	12.34	9.47
Styrene	5.10		1.11	1.79	1.61	1.92	1.89
o-Xylene	5.02		3.30	6.35	3.05	4.52	3.62
1-Nonene	0.58		0.24	0.58	0.23	0.28	0.20
n-Nonane	1.92		1.17	2.22	1.25	1.48	1.15
Isopropylbenzene	1.59		1.05	0.85	0.83	0.59	0.59
a-Pinene	1.82		0.64	1.80	0.32	0.70	0.48
n-Propylbenzene	2.04		0.94	1.53	0.84	1.13	1.04
m-Ethyltoluene	3.61		2.51	4.21	2.12	2.94	2.65
p-Ethyltoluene	2.92		1.55	2.54	1.29	1.75	1.69
1,3,5-Trimethylbenzene	3.23		1.71	3.05	1.41	2.01	1.76
o-Ethyltoluene	2.44		1.46	1.79	0.95	1.31	1.20
b-Pinene	3.75		0.21	0.71	0.87	0.66	1.02
1,2,4-Trimethylbenzene	6.09		4.26	6.52	3.08	4.60	4.38
1-Decene	ND		ND	ND	ND	ND	ND
n-Decane	2.50		1.44	3.68	1.41	1.81	1.66
1,2,3-Trimethylbenzene	2.47		1.32	1.95	0.73	1.10	1.31
m-Diethylbenzene	2.19		1.10	0.72	0.53	0.65	1.03
p-Diethylbenzene	1.66		0.85	0.75	0.34	0.49	0.88
1-Undecene	0.25		0.13	0.25	2.02	0.09	0.12
n-Undecane	2.94		1.52	2.50	1.09	1.17	1.47
1-Dodecene	5.46		0.15	ND	0.17	0.02	0.38
n-Dodecane	1.05		0.72	0.64	0.41	0.32	0.68
1-Tridecene	0.61		ND	0.03	0.04	ND	0.06
n-Tridecane	0.57		1.36	0.12	0.18	0.07	0.28
TNMOC (w/ unknowns)	437.60		259.34	518.03	299.17	346.79	289.73
TNMOC (speciated)	307.94		217.98	400.35	232.78	293.15	230.90

@ For the 6/29/98 sample, ethane was not quantitated due to an analytical problem.

Newark, NJ
SNMOC 1998 Results

SNMOC OPTION REPORT
SITE CODE: NWNJ
Reported in ppbC

Sample No.:	**14488D2**	**14488R2**	**14984**	**15058**
Sampling Date:	**8/25/98**	**8/25/98**	**9/18/98**	**9/30/98**
Analysis Date:	**9/24/98**	**12/1/98**	**11/3/98**	**10/28/98**
Compound				
Ethylene	14.75	12.14	11.58	23.20
Acetylene	8.30	6.08	5.38	12.75
Ethane	23.35	18.04	22.19	24.86
Propylene	11.59	9.29	9.57	17.87
Propane	21.33	17.10	15.18	23.18
Propyne	0.38	0.26	0.14	0.52
Isobutane	6.84	5.20	5.89	14.71
Isobutene/1-Butene	5.46	4.36	3.31	9.51
1,3-Butadiene	0.88	0.68	0.43	1.53
n-Butane	8.22	6.31	6.25	19.43
trans-2-Butene	1.18	0.87	0.86	2.57
cis-2-Butene	1.23	0.98	0.87	2.33
3-Methyl-1-butene	0.92	0.16	0.15	2.50
Isopentane	28.02	24.10	20.05	38.38
1-Pentene	1.31	0.97	0.66	1.74
2-Methyl-1-butene	1.35	1.10	0.66	2.64
n-Pentane	8.06	6.13	5.02	10.78
Isoprene	1.37	1.05	0.99	1.25
trans-2-Pentene	1.78	1.35	0.94	3.02
cis-2-Pentene	1.17	0.88	0.68	1.76
2-Methyl-2-butene	1.89	1.43	0.86	3.92
2,2-Dimethylbutane	1.84	1.54	1.31	2.31
Cyclopentene	1.11	0.66	0.41	1.07
4-Methyl-1-pentene	0.14	0.08	0.08	0.17
Cyclopentane	1.05	0.80	0.67	1.18
2,3-Dimethylbutane	11.26	8.48	5.90	19.30
2-Methylpentane	6.00	4.59	3.84	9.25
3-Methylpentane	3.80	2.82	2.35	5.59
2-Methyl-1-pentene	0.35	0.30	0.23	0.65
1-Hexene	0.29	0.23	0.23	0.51
2-Ethyl-1-butene	ND	ND	ND	ND
n-Hexane	4.09	2.88	2.83	5.93
trans-2-Hexene	0.34	0.25	0.15	0.74
cis-2-Hexene	0.32	0.20	0.09	2.46
Methylcyclopentane	2.38	1.92	1.68	3.51
2,4-Dimethylpentane	1.39	1.10	0.94	1.92
Benzene	6.42	5.06	3.84	9.33
Cyclohexane	1.27	1.04	1.38	1.94
2-Methylhexane	3.06	2.37	1.93	3.55
2,3-Dimethylpentane	2.08	1.62	1.32	2.33
3-Methylhexane	2.82	2.06	1.96	3.79
1-Heptene	ND	ND	ND	ND
2,2,4-Trimethylpentane	5.16	3.77	2.86	7.67
n-Heptane	2.30	1.60	1.86	3.84
Methylcyclohexane	1.59	1.30	1.18	1.85
2,2,3-Trimethylpentane	1.16	0.75	0.58	1.64
2,3,4-Trimethylpentane	2.05	1.47	1.05	2.83
Toluene	24.01	20.85	13.03	32.08
2-Methylheptane	1.36	0.96	0.84	1.87
3-Methylheptane	1.25	0.94	0.85	1.52
1-Octene	0.10	0.06	ND	0.26
n-Octane	1.86	1.30	1.27	2.73
Ethylbenzene	3.71	2.91	2.35	5.15
m-Xylene/p-Xylene	12.00	9.33	7.10	17.03
Styrene	1.82	1.75	1.88	1.83
o-Xylene	4.44	3.65	2.71	6.50
1-Nonene	0.26	0.24	0.31	0.44
n-Nonane	2.01	3.62	1.15	2.50
Isopropylbenzene	0.58	0.58	0.55	0.84
a-Pinene	0.69	0.47	0.74	0.99
n-Propylbenzene	1.08	1.02	0.81	1.60
m-Ethyltoluene	2.88	2.61	1.80	4.89
p-Ethyltoluene	1.68	1.61	1.13	2.71
1,3,5-Trimethylbenzene	1.84	1.74	1.14	3.21
o-Ethyltoluene	1.20	1.20	0.93	2.00
b-Pinene	0.63	0.70	0.87	0.81
1,2,4-Trimethylbenzene	4.33	4.17	2.94	8.17
1-Decene	ND	ND	ND	ND
n-Decane	1.72	1.50	1.60	4.14
1,2,3-Trimethylbenzene	1.02	1.14	0.72	1.51
m-Diethylbenzene	0.65	1.05	0.56	1.06
p-Diethylbenzene	0.44	0.89	0.41	0.85
1-Undecene	0.10	0.12	0.04	0.32
n-Undecane	1.23	1.55	1.31	2.57
1-Dodecene	0.02	0.12	0.25	0.07
n-Dodecane	0.41	0.65	0.52	0.96
1-Tridecene	ND	ND	ND	ND
n-Tridecane	0.10	0.25	0.09	0.23
TNMOC (w/ unknowns)	336.57	278.78	239.93	504.13
TNMOC (speciated)	285.08	232.34	198.22	420.63

@ For the 6/29/98 sample, ethane

SNMOC 1998 REPORT
SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**13011**	**13012**	**13021D1**	**13021R1**	**13022D2**	**13022R2**
Sampling Date:	**6/22/98**	**6/23/98**	**6/24/98**	**6/24/98**	**6/24/98**	**6/24/98**
Analysis Date:	**7/9/98**	**7/10/98**	**7/8/98**	**@**	**7/8/98**	**7/9/98**
Compound						
Ethylene	1.99	2.63	2.01		1.88	1.94
Acetylene	1.28	2.14	1.71		1.63	1.23
Ethane	3.10	2.73	2.58		2.07	2.78
Propylene	1.00	1.24	1.21		1.29	1.10
Propane	2.27	3.04	3.64		3.55	3.07
Propyne	0.11	0.19	0.13		0.14	0.07
Isobutane	1.28	3.00	1.75		1.79	1.49
Isobutene/1-Butene	1.81	2.35	1.87		2.16	1.83
1,3-Butadiene	ND	0.19	0.19		0.19	0.16
n-Butane	4.89	19.41	9.49		9.51	8.84
trans-2-Butene	0.36	1.29	0.61		0.65	0.55
cis-2-Butene	0.44	1.50	0.70		0.74	0.63
3-Methyl-1-butene	0.82	1.42	0.62		0.62	0.80
Isopentane	18.41	44.13	24.05		24.94	20.35
1-Pentene	0.58	2.20	1.06		0.97	0.89
2-Methyl-1-butene	1.12	3.65	1.76		1.75	1.58
n-Pentane	4.61	14.79	7.31		7.55	6.24
Isoprene	1.36	1.58	1.09		1.14	1.23
trans-2-Pentene	1.16	4.08	1.88		1.95	1.67
cis-2-Pentene	0.55	2.09	0.95		1.00	0.79
2-Methyl-2-butene	1.52	5.58	2.50		2.67	2.13
2,2-Dimethylbutane	0.55	1.88	0.96		1.00	0.78
Cyclopentene	0.48	1.19	0.54		0.61	0.50
4-Methyl-1-pentene	0.03	0.27	0.11		0.12	0.10
Cyclopentane	0.62	1.93	0.94		0.97	0.88
2,3-Dimethylbutane	9.67	28.62	13.87		14.33	12.75
2-Methylpentane	5.13	14.86	7.40		7.55	6.51
3-Methylpentane	2.73	9.70	4.61		4.77	3.89
2-Methyl-1-pentene	0.22	0.85	0.43		0.46	0.31
1-Hexene	0.19	0.43	0.27		0.25	0.23
2-Ethyl-1-butene	ND	ND	ND		ND	ND
n-Hexane	3.16	10.68	5.22		5.28	4.43
trans-2-Hexene	0.18	0.87	0.32		0.32	0.35
cis-2-Hexene	0.12	0.46	0.19		0.20	0.14
Methylcyclopentane	1.42	4.42	2.28		2.34	1.95
2,4-Dimethylpentane	0.46	1.28	0.70		0.71	0.62
Benzene	2.18	4.73	2.90		2.98	2.53
Cyclohexane	0.41	1.13	0.71		0.66	0.56
2-Methylhexane	1.81	4.36	2.57		2.43	2.13
2,3-Dimethylpentane	0.68	1.58	0.83		0.85	0.82
3-Methylhexane	1.44	4.04	2.18		2.32	1.75
1-Heptene	ND	ND	ND		ND	ND
2,2,4-Trimethylpentane	1.92	4.38	2.60		2.72	2.21
n-Heptane	0.99	3.06	1.76		1.81	1.37
Methylcyclohexane	0.54	1.31	0.90		0.93	0.71
2,2,3-Trimethylpentane	0.47	1.04	0.65		0.70	0.54
2,3,4-Trimethylpentane	0.57	1.27	0.84		0.87	0.70
Toluene	6.12	12.87	8.68		9.04	7.50
2-Methylheptane	0.32	0.85	0.51		0.56	0.45
3-Methylheptane	0.29	0.63	0.40		0.42	0.34
1-Octene	0.08	0.11	0.06		0.06	0.05
n-Octane	0.44	0.98	0.62		0.69	0.56
Ethylbenzene	1.02	2.21	1.42		1.46	1.21
m-Xylene/p-Xylene	3.29	7.64	4.87		4.96	4.05
Styrene	0.95	1.12	1.14		1.19	0.86
o-Xylene	1.27	2.77	1.80		1.87	1.53
1-Nonene	0.11	0.14	0.11		0.10	0.06
n-Nonane	0.31	0.51	0.39		0.42	0.32
Isopropylbenzene	0.07	0.15	0.09		0.10	0.07
a-Pinene	0.27	0.29	0.22		0.21	0.17
n-Propylbenzene	0.32	0.69	0.41		0.42	0.35
m-Ethyltoluene	1.05	2.32	1.38		1.70	1.42
p-Ethyltoluene	0.49	1.38	0.71		0.85	0.67
1,3,5-Trimethylbenzene	0.47	1.29	0.73		0.75	0.59
o-Ethyltoluene	0.48	1.00	0.73		0.67	0.44
b-Pinene	0.62	0.60	0.69		0.66	0.51
1,2,4-Trimethylbenzene	1.41	3.47	1.88		2.04	1.65
1-Decene	ND	ND	ND		ND	ND
n-Decane	0.26	0.41	0.52		0.47	0.31
1,2,3-Trimethylbenzene	0.31	0.68	0.36		0.45	0.35
m-Diethylbenzene	0.09	0.16	0.09		0.12	0.08
p-Diethylbenzene	0.10	0.16	0.12		0.15	0.08
1-Undecene	ND	ND	ND		ND	ND
n-Undecane	0.49	0.31	0.15		0.18	0.13
1-Dodecene	ND	ND	ND		ND	ND
n-Dodecane	3.74	4.35	1.97		1.08	0.11
1-Tridecene	ND	0.11	0.54		0.57	1.12
n-Tridecane	0.06	ND	0.77		0.80	2.22
TNMOC (w/ unknowns)	159.79	329.08	200.25		210.54	184.62
TNMOC (speciated)	109.03	270.80	152.20		155.36	133.32

@ The replicate sample file was lost at the lab, and could not be reanalyzed.

SNMOC 1998 REPORT
SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**13054**	**13091**	**13093**	**13195**	**13194D1**	**13194R1**
Sampling Date:	**6/25/98**	**6/29/98**	**6/30/98**	**7/1/98**	**7/2/98**	**7/2/98**
Analysis Date:	**7/10/98**	**7/11/98**	**7/11/98**	**7/10/98**	**7/8/98**	**7/8/98**
Compound						
Ethylene	2.41	4.20	2.15	6.18	4.91	6.00
Acetylene	1.91	3.30	2.05	5.86	4.60	4.14
Ethane	7.07	7.04	2.72	9.24	4.75	6.53
Propylene	1.47	1.95	1.45	3.66	2.83	2.63
Propane	12.00	11.74	4.49	10.42	7.28	6.56
Propyne	0.19	0.28	0.18	0.59	0.45	0.38
Isobutane	2.08	6.09	4.42	7.68	3.97	3.54
Isobutene/1-Butene	2.05	3.19	2.77	6.30	4.14	4.01
1,3-Butadiene	0.22	0.33	0.22	0.74	0.28	0.40
n-Butane	6.44	32.87	28.89	51.86	18.87	19.51
trans-2-Butene	0.14	ND	1.95	3.90	1.63	1.48
cis-2-Butene	0.16	2.29	2.15	4.15	1.72	1.57
3-Methyl-1-butene	1.25	2.43	1.99	3.51	2.02	2.22
Isopentane	14.84	70.43	57.88	108.20	53.13	47.82
1-Pentene	0.24	3.34	3.04	5.92	2.61	2.37
2-Methyl-1-butene	0.43	5.58	5.12	9.83	4.07	3.80
n-Pentane	3.77	26.07	21.22	41.12	19.92	18.03
Isoprene	1.13	1.24	1.19	2.03	1.58	1.52
trans-2-Pentene	0.42	6.12	5.70	11.11	5.07	4.65
cis-2-Pentene	0.19	3.17	3.13	6.01	2.67	2.31
2-Methyl-2-butene	0.51	8.82	8.26	16.20	6.87	6.30
2,2-Dimethylbutane	0.30	3.00	2.73	5.41	2.59	2.37
Cyclopentene	0.49	1.64	1.62	3.05	1.70	1.65
4-Methyl-1-pentene	0.03	0.44	0.42	0.78	0.30	0.36
Cyclopentane	0.34	3.62	3.27	6.29	2.96	2.68
2,3-Dimethylbutane	3.23	47.71	44.78	88.82	39.41	35.80
2-Methylpentane	3.18	24.80	23.80	46.28	21.28	20.03
3-Methylpentane	1.42	15.94	14.77	29.87	13.65	12.36
2-Methyl-1-pentene	0.09	1.46	1.27	2.60	1.30	1.26
1-Hexene	0.13	0.76	0.81	1.62	0.76	0.63
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	1.98	17.97	16.39	32.42	16.18	14.65
trans-2-Hexene	0.07	1.43	1.30	2.64	1.37	1.24
cis-2-Hexene	0.05	0.77	0.70	1.46	0.74	0.67
Methylcyclopentane	1.18	7.67	6.88	13.86	7.23	6.52
2,4-Dimethylpentane	0.37	2.33	2.09	4.39	2.55	2.29
Benzene	2.24	7.61	6.41	13.22	9.91	8.86
Cyclohexane	0.62	14.20	1.72	2.69	9.69	8.79
2-Methylhexane	1.54	6.68	5.98	12.03	8.44	7.18
2,3-Dimethylpentane	0.49	2.71	2.26	4.30	3.23	2.97
3-Methylhexane	1.12	6.51	6.39	13.12	8.37	7.65
1-Heptene	ND	1.13	ND	ND	ND	ND
2,2,4-Trimethylpentane	1.90	6.00	6.49	14.16	12.88	11.69
n-Heptane	0.97	5.25	4.60	9.42	7.06	6.41
Methylcyclohexane	0.89	2.37	1.94	3.76	3.30	2.89
2,2,3-Trimethylpentane	0.48	1.76	1.55	3.44	3.48	3.16
2,3,4-Trimethylpentane	0.67	2.20	1.98	4.68	5.40	4.92
Toluene	7.16	21.73	17.80	38.86	34.12	31.48
2-Methylheptane	0.43	1.54	1.31	2.70	2.73	2.54
3-Methylheptane	0.26	1.42	1.26	2.66	2.74	2.51
1-Octene	0.09	0.17	0.09	0.15	0.19	0.17
n-Octane	0.51	1.69	1.39	2.82	3.19	2.94
Ethylbenzene	1.24	3.57	3.08	6.65	6.25	5.67
m-Xylene/p-Xylene	4.00	12.25	10.84	23.25	20.43	18.78
Styrene	0.94	1.45	1.04	1.76	1.75	1.55
o-Xylene	1.41	4.57	4.05	8.77	7.48	6.97
1-Nonene	0.08	0.24	0.15	0.28	0.39	0.54
n-Nonane	0.29	0.97	0.72	1.35	1.94	1.76
Isopropylbenzene	0.04	0.34	0.25	0.54	0.39	0.36
a-Pinene	0.60	0.45	0.35	0.67	0.63	0.56
n-Propylbenzene	0.28	1.19	1.03	2.17	1.79	1.64
m-Ethyltoluene	1.92	3.90	3.49	7.77	6.10	5.68
p-Ethyltoluene	0.71	2.06	1.80	3.81	3.03	2.77
1,3,5-Trimethylbenzene	0.44	1.95	1.62	3.52	3.05	2.83
o-Ethyltoluene	0.49	1.76	1.45	3.16	2.82	2.43
b-Pinene	0.56	0.54	0.78	1.26	1.53	1.34
1,2,4-Trimethylbenzene	1.48	5.37	4.72	10.00	8.32	7.55
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.21	1.67	0.58	1.02	1.56	1.30
1,2,3-Trimethylbenzene	0.27	1.10	1.06	1.89	1.57	1.42
m-Diethylbenzene	0.07	0.88	0.21	0.53	0.58	0.51
p-Diethylbenzene	0.06	0.57	0.22	0.61	0.60	0.54
1-Undecene	ND	1.02	ND	0.07	0.20	0.17
n-Undecane	0.29	24.37	0.29	0.87	1.14	0.94
1-Dodecene	ND	ND	ND	ND	ND	ND
n-Dodecane	2.21	3.19	ND	0.43	ND	0.26
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.09	ND	ND	0.07	0.12	0.10
TNMOC (w/ unknowns)	153.89	637.34	454.51	883.78	561.44	507.04
TNMOC (speciated)	108.88	486.39	380.70	762.46	451.78	418.12

SNMOC 1998 REPORT
SITE CODE: CAMS13
All concentrations reported in ppbC

Sample No.:	**13207D2**	**13207R2**	**13202**	**13249**	**13324**	**13328**
Sampling Date:	**7/2/98**	**7/2/98**	**7/3/98**	**7/6/98**	**7/7/98**	**7/8/98**
Analysis Date:	**7/9/98**	**7/10/98**	**7/11/98**	**VOID**	**7/15/98**	**7/16/98**
Compound						
Ethylene	2.05	4.97	5.10		3.00	2.59
Acetylene	4.01	3.59	5.13		1.97	3.12
Ethane	6.09	5.92	9.85		3.91	4.67
Propylene	2.23	2.17	3.66		1.22	1.87
Propane	6.67	6.86	15.77		4.02	6.22
Propyne	0.29	0.28	0.50		0.06	0.27
Isobutane	3.10	3.07	10.67		4.13	3.19
Isobutene/1-Butene	3.31	3.21	4.52		2.52	2.41
1,3-Butadiene	0.39	0.37	0.11		0.22	0.32
n-Butane	16.33	16.12	46.28		30.48	20.17
trans-2-Butene	1.11	1.11	3.52		2.47	1.45
cis-2-Butene	1.21	1.19	3.70		2.67	1.62
3-Methyl-1-butene	1.13	1.85	3.22		1.65	1.07
Isopentane	39.07	37.25	100.52		64.14	45.79
1-Pentene	1.72	1.82	5.73		3.92	2.57
2-Methyl-1-butene	2.83	2.92	8.76		6.30	3.95
n-Pentane	15.58	14.53	43.40		26.22	18.06
Isoprene	1.35	1.72	1.52		0.66	0.83
trans-2-Pentene	3.65	3.50	11.38		8.13	5.09
cis-2-Pentene	1.79	1.69	5.93		4.22	2.56
2-Methyl-2-butene	4.74	4.29	15.34		9.38	6.61
2,2-Dimethylbutane	1.75	1.86	5.00		3.26	2.20
Cyclopentene	1.18	1.19	3.21		2.23	1.81
4-Methyl-1-pentene	0.23	0.23	0.74		0.50	0.34
Cyclopentane	1.97	2.12	6.32		4.18	2.86
2,3-Dimethylbutane	28.75	27.35	81.45		58.21	34.07
2-Methylpentane	15.60	15.70	43.88		29.73	20.33
3-Methylpentane	10.11	9.66	27.53		18.41	12.39
2-Methyl-1-pentene	0.94	0.92	2.68		1.89	1.19
1-Hexene	0.54	0.49	1.53		1.04	0.74
2-Ethyl-1-butene	ND	ND	ND		ND	ND
n-Hexane	11.56	11.46	34.61		22.63	15.16
trans-2-Hexene	0.76	0.93	2.93		2.04	1.31
cis-2-Hexene	0.37	0.50	1.55		1.08	0.69
Methylcyclopentane	5.34	5.06	13.69		8.73	5.97
2,4-Dimethylpentane	1.73	1.80	4.25		2.74	1.89
Benzene	6.37	6.28	16.99		10.77	7.77
Cyclohexane	7.47	7.73	4.81		1.63	1.30
2-Methylhexane	4.84	5.67	12.98		7.26	4.17
2,3-Dimethylpentane	1.98	2.32	4.84		2.77	1.72
3-Methylhexane	5.96	5.79	13.83		8.18	5.54
1-Heptene	ND	ND	ND		0.72	0.74
2,2,4-Trimethylpentane	9.68	9.20	15.95		8.59	5.85
n-Heptane	5.14	4.98	11.45		6.75	4.52
Methylcyclohexane	2.33	2.40	5.01		2.58	1.89
2,2,3-Trimethylpentane	2.48	2.52	4.55		2.46	1.66
2,3,4-Trimethylpentane	4.13	3.96	7.33		3.49	2.25
Toluene	26.84	26.03	57.39		33.77	25.09
2-Methylheptane	2.11	2.10	4.21		2.08	1.32
3-Methylheptane	1.70	2.02	3.91		2.00	1.01
1-Octene	0.08	0.13	0.36		0.15	0.16
n-Octane	2.44	2.38	5.29		2.76	1.79
Ethylbenzene	5.46	5.27	11.14		6.96	4.47
m-Xylene/p-Xylene	18.62	18.18	38.01		25.61	16.06
Styrene	1.47	1.64	1.79		1.13	0.62
o-Xylene	5.91	5.68	13.40		8.92	5.42
1-Nonene	0.34	0.39	0.58		0.32	0.23
n-Nonane	1.82	1.82	3.21		1.95	1.12
Isopropylbenzene	0.37	0.37	0.99		0.46	0.28
a-Pinene	1.00	1.30	0.82		0.28	0.31
n-Propylbenzene	1.19	1.36	3.14		2.14	1.21
m-Ethyltoluene	4.50	4.60	10.68		7.41	4.07
p-Ethyltoluene	2.15	2.23	5.45		3.73	2.14
1,3,5-Trimethylbenzene	2.30	2.33	5.30		3.62	1.87
o-Ethyltoluene	1.79	2.01	4.38		2.87	1.67
b-Pinene	0.77	0.94	0.87		0.40	0.33
1,2,4-Trimethylbenzene	6.01	5.53	14.15		10.32	5.33
1-Decene	ND	ND	ND		ND	ND
n-Decane	3.81	4.21	2.20		1.54	0.78
1,2,3-Trimethylbenzene	1.27	1.68	2.62		1.83	1.12
m-Diethylbenzene	0.36	0.42	0.86		0.55	0.23
p-Diethylbenzene	0.39	0.42	0.95		0.55	0.29
1-Undecene	0.18	0.20	0.16		0.98	ND
n-Undecane	6.13	5.98	0.98		0.53	0.15
1-Dodecene	ND	ND	0.05		ND	ND
n-Dodecane	1.69	1.55	0.46		ND	ND
1-Tridecene	ND	ND	0.05		ND	ND
n-Tridecane	0.13	0.06	0.02		ND	ND
TNMOC (w/ unknowns)	405.16	436.80	1011.96		609.15	398.21
TNMOC (speciated)	350.69	349.40	825.15		516.02	349.87

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**13369**	**13531**	**13371**	**13530**	**13523**	**13584**
Sampling Date:	**7/9/98**	**7/10/98**	**7/13/98**	**7/14/98**	**7/15/98**	**7/16/98**
Analysis Date:	**7/16/98**	**8/7/98**	**7/16/98**	**8/7/98**	**8/8/98**	**8/8/98**
Compound						
Ethylene	1.73	14.58	1.50	7.76	9.02	16.71
Acetylene	0.89	4.68	8.84	4.75	6.27	10.22
Ethane	4.72	21.61	12.70	19.01	18.16	25.52
Propylene	0.74	10.33	7.98	3.17	4.06	7.46
Propane	3.97	27.95	16.42	22.23	24.00	20.29
Propyne	0.07	0.29	0.95	0.34	0.41	0.73
Isobutane	1.04	5.83	19.84	9.41	4.89	6.88
Isobutene/1-Butene	1.59	4.95	8.89	3.71	5.00	8.98
1,3-Butadiene	0.10	0.91	1.06	0.52	0.86	1.71
n-Butane	3.51	6.85	33.96	29.55	27.64	34.87
trans-2-Butene	0.19	1.09	3.74	2.76	2.68	3.25
cis-2-Butene	0.19	1.15	3.69	2.41	2.91	3.67
3-Methyl-1-butene	0.18	2.07	3.53	1.75	1.72	2.20
Isopentane	13.13	27.14	76.12	77.10	78.75	104.80
1-Pentene	0.37	1.21	3.41	3.64	4.34	5.61
2-Methyl-1-butene	0.63	1.08	4.83	4.71	6.00	8.02
n-Pentane	2.96	6.21	17.29	27.37	28.62	55.52
Isoprene	0.40	1.94	2.99	1.19	1.38	1.85
trans-2-Pentene	0.70	1.59	5.04	6.68	8.18	10.57
cis-2-Pentene	0.31	1.07	2.61	3.66	4.45	5.67
2-Methyl-2-butene	0.70	1.61	4.95	7.83	10.01	13.97
2,2-Dimethylbutane	0.29	1.14	3.21	3.08	3.71	4.98
Cyclopentene	0.82	1.18	1.83	3.51	1.87	2.19
4-Methyl-1-pentene	0.04	ND	0.47	0.38	0.42	0.58
Cyclopentane	0.29	0.72	1.89	3.22	3.80	5.37
2,3-Dimethylbutane	4.12	10.37	35.99	44.57	49.81	65.26
2-Methylpentane	3.61	5.39	15.18	22.19	26.04	34.45
3-Methylpentane	1.72	3.06	8.44	15.23	16.61	21.99
2-Methyl-1-pentene	0.16	0.38	0.86	1.37	1.62	2.36
1-Hexene	0.20	0.34	0.64	1.07	0.93	1.24
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	2.47	3.38	7.55	19.92	20.85	26.36
trans-2-Hexene	0.23	0.34	1.10	1.32	1.45	1.96
cis-2-Hexene	0.11	0.17	0.49	0.86	0.95	1.30
Methylcyclopentane	1.01	1.98	4.92	7.78	8.36	10.90
2,4-Dimethylpentane	0.31	1.28	1.85	2.73	3.09	4.27
Benzene	2.01	4.85	9.26	11.92	12.35	17.00
Cyclohexane	0.37	1.39	1.91	2.47	2.21	3.94
2-Methylhexane	1.93	2.22	4.87	7.09	6.99	9.01
2,3-Dimethylpentane	0.60	1.50	2.66	3.23	2.85	3.72
3-Methylhexane	1.09	2.45	5.40	7.78	7.80	10.85
1-Heptene	0.22	ND	0.62	0.18	ND	0.33
2,2,4-Trimethylpentane	1.40	4.10	8.80	9.39	10.17	15.03
n-Heptane	0.93	1.93	4.39	7.29	7.38	9.35
Methylcyclohexane	0.61	1.46	2.82	3.05	2.89	3.41
2,2,3-Trimethylpentane	0.40	1.01	2.11	2.62	2.49	3.87
2,3,4-Trimethylpentane	0.50	1.46	2.92	3.82	3.61	5.50
Toluene	6.40	19.74	34.33	42.53	39.34	56.63
2-Methylheptane	0.28	1.17	1.83	2.61	2.44	3.29
3-Methylheptane	0.24	1.27	1.51	2.68	2.54	3.20
1-Octene	0.12	0.18	0.19	0.24	0.15	0.17
n-Octane	0.52	2.05	2.13	3.79	3.17	4.12
Ethylbenzene	1.19	3.26	4.60	8.03	7.78	11.37
m-Xylene/p-Xylene	4.33	10.05	14.79	28.60	26.93	39.33
Styrene	0.96	2.86	1.47	2.05	1.65	1.60
o-Xylene	1.46	4.17	5.73	9.97	9.31	13.85
1-Nonene	0.13	0.47	0.64	0.58	0.45	0.28
n-Nonane	0.37	1.72	2.10	2.90	2.46	2.79
Isopropylbenzene	0.06	0.53	0.08	1.13	0.86	1.12
a-Pinene	0.24	1.87	1.53	0.37	0.46	1.02
n-Propylbenzene	0.31	1.07	1.21	2.53	2.44	3.39
m-Ethyltoluene	1.10	2.91	4.09	8.40	7.81	11.14
p-Ethyltoluene	0.58	1.82	2.09	4.67	4.27	5.73
1,3,5-Trimethylbenzene	0.48	1.88	2.46	4.32	4.24	5.79
o-Ethyltoluene	0.39	1.39	2.23	3.31	2.97	4.21
b-Pinene	0.48	2.35	1.15	1.45	1.16	1.37
1,2,4-Trimethylbenzene	1.57	4.70	6.73	12.52	11.32	16.14
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.58	2.57	3.65	2.09	2.29	2.51
1,2,3-Trimethylbenzene	0.28	1.45	1.56	3.23	2.82	3.86
m-Diethylbenzene	0.09	0.54	0.59	1.13	1.08	1.59
p-Diethylbenzene	0.12	0.62	0.38	1.21	1.32	1.18
1-Undecene	ND	0.16	0.15	0.17	0.16	0.32
n-Undecane	2.78	2.34	1.77	1.72	1.77	2.28
1-Dodecene	ND	0.50	ND	0.29	0.46	0.29
n-Dodecane	1.12	0.96	ND	1.14	0.92	1.34
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.04	0.37	ND	0.34	0.19	0.34
TNMOC (w/ unknowns)	113.97	350.43	571.38	686.14	685.36	934.38
TNMOC (speciated)	89.77	271.17	469.51	579.62	590.36	813.96

SNMOC 1998 REPORT
SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**13703D1**	**13703R1**	**13704D2**	**13704R2**	**13604**	**13727**
Sampling Date:	**7/17/98**	**7/17/98**	**7/17/98**	**7/17/98**	**7/20/98**	**7/21/98**
Analysis Date:	**8/8/98**	**8/19/98**	**8/8/98**	**8/19/98**	**8/8/98**	**8/20/98**
Compound						
Ethylene	13.28	10.96	13.74	11.43	2.89	3.84
Acetylene	8.48	7.64	8.43	7.55	1.65	3.56
Ethane	26.23	20.08	26.13	20.36	12.35	6.11
Propylene	5.53	5.19	5.58	5.02	1.54	2.10
Propane	26.19	23.59	26.15	23.86	9.27	4.81
Propyne	0.58	0.33	0.55	0.39	0.67	0.05
Isobutane	11.87	10.96	12.12	11.05	2.45	2.75
Isobutene/1-Butene	6.13	5.46	6.21	5.83	2.17	2.76
1,3-Butadiene	1.17	0.95	1.18	1.10	0.13	0.42
n-Butane	36.53	32.81	36.47	33.65	5.48	13.53
trans-2-Butene	2.91	2.49	2.62	2.64	0.59	1.42
cis-2-Butene	3.04	2.79	3.14	2.78	0.61	1.65
3-Methyl-1-butene	1.73	1.55	2.36	2.06	ND	0.78
Isopentane	85.59	81.49	86.40	84.58	17.59	44.26
1-Pentene	4.32	3.97	4.21	4.01	0.90	2.33
2-Methyl-1-butene	5.72	5.19	5.73	5.33	0.57	3.51
n-Pentane	38.88	35.65	38.97	35.91	7.10	15.85
Isoprene	1.45	1.30	1.46	1.33	0.86	1.01
trans-2-Pentene	7.45	6.80	7.50	6.82	1.15	4.93
cis-2-Pentene	3.94	3.62	4.08	3.66	0.75	2.64
2-Methyl-2-butene	9.29	8.38	9.49	8.69	0.96	6.08
2,2-Dimethylbutane	4.37	4.16	4.50	3.99	0.98	2.49
Cyclopentene	2.75	2.06	3.85	3.69	0.48	1.62
4-Methyl-1-pentene	0.39	0.44	0.36	0.41	0.07	0.31
Cyclopentane	4.10	3.92	4.03	4.10	0.67	2.68
2,3-Dimethylbutane	46.90	42.82	51.09	46.26	7.27	30.44
2-Methylpentane	25.29	23.36	27.03	25.35	4.83	15.98
3-Methylpentane	16.60	15.19	16.67	15.22	2.97	9.59
2-Methyl-1-pentene	1.51	1.29	1.62	1.15	0.16	0.85
1-Hexene	0.98	0.86	0.83	0.81	0.19	0.51
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	20.59	18.90	20.11	18.76	4.10	11.53
trans-2-Hexene	1.41	1.40	1.28	1.37	0.26	0.84
cis-2-Hexene	0.91	0.87	0.97	0.76	0.05	0.54
Methylcyclopentane	8.16	7.56	8.30	7.59	1.83	4.67
2,4-Dimethylpentane	3.26	2.81	3.36	2.72	0.95	1.90
Benzene	12.79	11.58	12.89	12.24	3.44	7.28
Cyclohexane	2.43	2.35	2.47	2.12	0.69	1.34
2-Methylhexane	7.32	6.97	7.21	6.57	1.43	4.20
2,3-Dimethylpentane	3.10	2.87	3.07	2.74	0.96	1.99
3-Methylhexane	8.10	7.25	8.02	7.20	1.97	4.25
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	11.40	10.43	11.40	10.41	2.75	5.51
n-Heptane	7.25	6.60	7.30	6.63	1.63	3.72
Methylcyclohexane	3.34	2.74	3.20	2.90	1.09	1.47
2,2,3-Trimethylpentane	2.78	2.51	2.95	2.60	0.61	1.28
2,3,4-Trimethylpentane	4.05	3.62	3.98	3.73	1.13	1.98
Toluene	42.74	39.26	42.82	39.67	10.77	20.00
2-Methylheptane	2.61	2.36	2.66	2.45	0.81	1.28
3-Methylheptane	2.65	2.21	2.63	1.90	0.81	1.27
1-Octene	0.22	0.19	0.34	0.18	0.09	0.07
n-Octane	3.41	3.18	3.78	3.27	1.16	1.66
Ethylbenzene	11.07	10.38	11.23	10.40	2.28	3.92
m-Xylene/p-Xylene	39.92	37.27	40.12	37.36	7.15	13.72
Styrene	2.16	1.91	2.58	2.22	4.50	1.66
o-Xylene	11.97	11.07	12.13	11.18	2.59	4.89
1-Nonene	0.45	0.38	0.42	0.44	0.17	0.22
n-Nonane	2.48	2.40	2.52	2.36	1.18	1.27
Isopropylbenzene	0.90	0.84	1.07	1.03	0.55	0.68
a-Pinene	1.25	1.17	1.24	1.18	0.12	0.13
n-Propylbenzene	2.36	2.31	2.38	2.21	0.88	1.40
m-Ethyltoluene	7.77	7.16	7.79	7.35	2.17	4.25
p-Ethyltoluene	4.19	3.87	4.28	4.01	1.58	2.34
1,3,5-Trimethylbenzene	4.15	3.66	4.35	3.94	1.34	2.25
o-Ethyltoluene	3.02	2.86	3.06	2.94	1.01	1.82
b-Pinene	1.30	1.22	1.68	1.36	2.28	1.19
1,2,4-Trimethylbenzene	10.98	10.29	10.96	10.19	3.21	6.08
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	2.61	2.35	2.55	2.45	1.26	0.88
1,2,3-Trimethylbenzene	3.37	2.61	3.22	2.56	0.60	1.47
m-Diethylbenzene	0.90	1.01	0.79	0.77	0.51	0.84
p-Diethylbenzene	1.03	1.09	1.01	1.00	0.61	0.71
1-Undecene	0.22	0.16	0.10	0.15	0.06	0.10
n-Undecane	2.07	1.99	2.17	1.93	1.16	0.81
1-Dodecene	0.11	0.08	0.20	0.19	ND	0.17
n-Dodecane	0.98	0.96	1.02	0.77	0.32	0.51
1-Tridecene	ND	ND	ND	ND	ND	0.05
n-Tridecane	0.21	0.25	0.25	0.27	0.22	0.13
TNMOC (w/ unknowns)	765.83	692.66	785.93	712.71	214.50	372.37
TNMOC (speciated)	667.20	608.27	678.34	623.04	159.57	317.15

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**13729**	**13763**	**13762**	**13781**	**13803D1**	**13803R1**
Sampling Date:	**7/22/98**	**7/23/98**	**7/24/98**	**7/27/98**	**7/28/98**	**7/28/98**
Analysis Date:	**8/20/98**	**8/20/98**	**8/21/98**	**8/21/98**	**8/28/98**	**9/14/98**
Compound						
Ethylene	3.11	2.34	2.69	2.61	2.53	2.49
Acetylene	1.97	1.32	1.54	1.18	2.57	2.47
Ethane	4.70	3.33	3.77	4.10	4.98	4.99
Propylene	1.55	1.12	1.24	1.28	1.22	1.37
Propane	4.16	3.20	42.22	4.17	4.66	5.01
Propyne	0.10	0.08	ND	0.06	0.05	0.10
Isobutane	2.14	1.96	13.28	1.78	1.89	1.94
Isobutene/1-Butene	2.04	1.68	1.83	1.76	1.59	1.67
1,3-Butadiene	0.25	0.20	0.23	0.20	0.25	0.24
n-Butane	10.85	9.65	37.08	9.05	7.77	7.91
trans-2-Butene	1.15	1.01	0.94	0.94	0.87	0.77
cis-2-Butene	1.37	1.21	1.18	1.10	0.92	0.94
3-Methyl-1-butene	0.67	0.65	0.77	0.65	0.49	0.49
Isopentane	34.92	34.18	35.31	36.97	30.03	31.11
1-Pentene	2.12	1.83	1.88	1.92	1.75	1.70
2-Methyl-1-butene	2.99	2.54	2.71	2.61	2.01	2.07
n-Pentane	13.08	11.56	12.23	11.56	9.40	9.58
Isoprene	1.03	0.98	0.92	1.10	0.87	0.92
trans-2-Pentene	4.14	3.62	3.42	3.32	2.78	2.78
cis-2-Pentene	2.26	2.07	1.93	1.93	1.61	1.60
2-Methyl-2-butene	5.32	4.70	4.45	4.36	3.40	3.48
2,2-Dimethylbutane	2.03	1.70	2.20	1.96	1.61	1.51
Cyclopentene	1.14	1.14	1.12	1.13	0.94	0.88
4-Methyl-1-pentene	0.23	0.21	0.10	0.23	0.16	0.16
Cyclopentane	1.94	1.99	2.14	2.01	1.59	1.67
2,3-Dimethylbutane	24.16	22.73	24.79	24.06	17.50	18.75
2-Methylpentane	13.07	12.31	12.80	12.21	9.13	9.63
3-Methylpentane	8.18	7.28	7.93	7.59	5.93	6.39
2-Methyl-1-pentene	0.88	0.76	0.79	0.67	0.62	0.61
1-Hexene	0.41	0.41	0.31	0.46	0.29	0.31
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	9.89	8.71	8.47	8.22	7.28	7.26
trans-2-Hexene	0.78	0.62	0.59	0.59	0.57	0.47
cis-2-Hexene	0.37	0.36	0.40	0.34	0.28	0.29
Methylcyclopentane	4.10	3.60	3.49	3.33	2.82	3.11
2,4-Dimethylpentane	1.70	1.29	1.42	1.47	1.17	1.25
Benzene	5.79	4.61	3.97	3.77	3.96	4.52
Cyclohexane	1.21	1.16	1.12	1.17	3.00	3.36
2-Methylhexane	3.37	3.21	2.93	2.85	2.50	2.85
2,3-Dimethylpentane	1.52	1.62	1.49	1.66	1.37	1.54
3-Methylhexane	3.54	3.17	2.98	2.83	2.65	2.89
1-Heptene	ND	0.79	ND	ND	ND	ND
2,2,4-Trimethylpentane	4.44	4.13	3.91	3.61	3.35	3.54
n-Heptane	2.74	2.62	2.02	2.09	1.93	2.30
Methylcyclohexane	1.25	1.17	1.02	0.91	1.06	1.15
2,2,3-Trimethylpentane	1.04	0.84	0.80	0.72	0.72	0.80
2,3,4-Trimethylpentane	1.58	1.47	1.36	1.24	1.22	1.28
Toluene	16.87	14.14	9.94	8.93	11.77	12.16
2-Methylheptane	1.10	0.92	0.88	0.87	0.83	0.86
3-Methylheptane	1.17	1.00	0.95	0.86	0.95	0.71
1-Octene	0.15	0.08	0.06	0.08	0.05	0.05
n-Octane	1.47	1.37	1.13	1.08	1.08	1.13
Ethylbenzene	3.43	2.92	2.07	1.73	2.27	2.34
m-Xylene/p-Xylene	11.64	9.99	6.07	5.35	7.47	7.56
Styrene	1.15	1.34	1.23	1.35	1.22	0.97
o-Xylene	4.05	3.58	2.38	2.11	2.73	2.75
1-Nonene	0.19	0.13	ND	ND	0.13	0.12
n-Nonane	1.17	1.22	0.92	0.82	0.86	0.82
Isopropylbenzene	0.65	0.61	0.52	0.52	0.53	0.48
a-Pinene	0.29	0.20	0.23	0.28	0.17	0.14
n-Propylbenzene	1.23	1.33	0.88	0.84	0.93	0.93
m-Ethyltoluene	3.50	3.31	2.22	1.95	2.37	2.32
p-Ethyltoluene	2.03	2.04	1.44	1.36	1.47	1.47
1,3,5-Trimethylbenzene	1.86	1.80	1.31	1.15	1.30	1.16
o-Ethyltoluene	1.47	1.53	1.17	0.92	1.06	1.14
b-Pinene	1.06	1.16	1.16	1.27	0.89	0.82
1,2,4-Trimethylbenzene	5.16	4.90	3.31	2.80	3.36	3.13
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.01	1.18	0.94	0.63	0.67	0.65
1,2,3-Trimethylbenzene	1.26	1.07	0.93	0.70	0.90	0.84
m-Diethylbenzene	0.71	0.81	0.76	0.65	0.56	0.50
p-Diethylbenzene	0.61	0.71	0.63	0.51	0.43	0.41
1-Undecene	0.13	0.06	ND	ND	0.04	0.04
n-Undecane	0.78	0.83	0.78	0.64	0.91	0.95
1-Dodecene	0.38	0.13	0.37	0.23	0.08	0.10
n-Dodecane	0.41	0.38	0.35	0.26	0.51	0.54
1-Tridecene	ND	0.03	ND	ND	ND	ND
n-Tridecane	0.13	0.10	0.11	0.09	0.17	0.14
TNMOC (w/ unknowns)	306.00	279.41	345.64	267.56	228.33	237.64
TNMOC (speciated)	260.31	236.02	300.53	214.69	199.00	205.39

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**13804D2**	**13804R2**	**13905**	**13897**	**13914**	**13918**
Sampling Date:	**7/28/98**	**7/28/98**	**7/29/98**	**7/30/98**	**7/31/98**	**8/3/98**
Analysis Date:	**8/28/98**	**9/14/98**	**8/18/98**	**8/18/98**	**8/18/98**	**8/19/98**
Compound						
Ethylene	2.54	2.55	1.90	1.56	2.90	2.41
Acetylene	2.55	2.46	1.46	1.73	1.48	6.60
Ethane	5.08	5.08	3.03	2.99	3.92	16.04
Propylene	1.24	1.33	1.10	1.04	1.45	4.92
Propane	4.59	4.77	2.95	3.15	3.51	18.32
Propyne	0.11	0.13	ND	ND	ND	0.61
Isobutane	1.77	1.88	1.72	1.51	1.76	5.54
Isobutene/1-Butene	1.64	1.69	1.72	1.50	1.98	5.94
1,3-Butadiene	0.23	0.24	0.19	0.12	0.22	1.06
n-Butane	7.52	7.60	10.05	7.89	9.97	25.04
trans-2-Butene	0.84	0.84	0.97	0.88	1.06	3.12
cis-2-Butene	0.86	0.92	1.25	1.06	1.36	2.89
3-Methyl-1-butene	0.48	0.48	ND	0.49	0.80	ND
Isopentane	27.78	29.34	33.30	28.49	34.85	90.38
1-Pentene	1.58	1.77	2.19	1.64	2.11	4.98
2-Methyl-1-butene	1.86	2.03	2.96	2.28	3.17	7.30
n-Pentane	9.12	9.61	13.38	10.40	13.61	35.84
Isoprene	0.93	0.96	0.88	0.93	1.58	1.51
trans-2-Pentene	2.65	2.77	4.10	3.24	4.37	9.88
cis-2-Pentene	1.55	1.59	2.30	1.86	2.46	5.21
2-Methyl-2-butene	3.34	3.38	5.28	4.10	5.88	12.88
2,2-Dimethylbutane	1.55	1.66	1.91	1.35	2.19	4.61
Cyclopentene	1.05	0.99	1.03	0.86	1.24	2.66
4-Methyl-1-pentene	0.14	0.17	0.20	0.16	0.25	0.67
Cyclopentane	1.48	1.63	1.73	1.76	2.41	5.12
2,3-Dimethylbutane	17.00	18.55	25.03	20.23	26.73	62.87
2-Methylpentane	9.05	9.86	12.93	10.96	14.39	33.79
3-Methylpentane	5.79	6.31	8.78	6.91	9.18	21.52
2-Methyl-1-pentene	0.58	0.61	0.87	0.71	0.97	2.13
1-Hexene	0.34	0.36	0.48	0.37	0.51	1.21
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	6.81	7.18	10.67	8.24	11.07	25.61
trans-2-Hexene	0.43	0.47	0.87	0.57	0.87	2.56
cis-2-Hexene	0.29	0.30	0.45	0.33	0.47	ND
Methylcyclopentane	2.79	3.22	4.11	3.35	4.13	10.36
2,4-Dimethylpentane	1.22	1.35	1.55	1.43	1.59	3.62
Benzene	4.55	5.00	5.02	4.23	5.54	15.45
Cyclohexane	3.00	3.37	1.88	1.01	1.35	2.47
2-Methylhexane	2.59	2.79	2.61	2.95	3.65	8.66
2,3-Dimethylpentane	1.40	1.51	1.35	1.53	1.86	3.16
3-Methylhexane	2.55	2.74	3.19	2.71	3.55	9.00
1-Heptene	ND	ND	ND	ND	ND	0.30
2,2,4-Trimethylpentane	3.39	3.57	4.05	3.24	4.39	11.70
n-Heptane	2.10	2.01	2.95	2.13	3.10	8.11
Methylcyclohexane	1.11	1.25	1.10	0.95	1.32	3.47
2,2,3-Trimethylpentane	0.78	0.86	0.96	0.40	0.93	2.75
2,3,4-Trimethylpentane	1.22	1.28	1.36	1.27	1.57	4.07
Toluene	11.54	12.12	15.07	12.03	16.16	42.74
2-Methylheptane	0.84	0.92	1.01	0.90	1.07	2.66
3-Methylheptane	0.84	0.87	1.01	0.87	1.06	2.64
1-Octene	0.09	0.08	0.06	0.12	0.14	ND
n-Octane	1.05	1.15	1.42	1.19	1.46	3.41
Ethylbenzene	2.23	2.30	2.92	2.35	3.20	7.91
m-Xylene/p-Xylene	7.32	7.57	10.08	8.04	10.89	27.39
Styrene	1.34	1.50	1.15	1.17	1.01	1.81
o-Xylene	2.72	2.72	3.41	2.77	3.72	9.43
1-Nonene	0.11	0.14	0.30	ND	0.10	0.35
n-Nonane	0.85	0.85	1.11	0.84	1.08	2.75
Isopropylbenzene	0.48	0.52	0.66	0.52	0.62	0.94
a-Pinene	0.21	0.19	0.25	0.15	0.30	1.04
n-Propylbenzene	0.86	0.84	1.07	0.94	1.12	2.54
m-Ethyltoluene	2.34	2.28	2.79	2.36	3.08	8.32
p-Ethyltoluene	1.40	1.43	1.80	1.54	1.91	4.67
1,3,5-Trimethylbenzene	1.29	1.17	1.50	1.26	1.63	4.59
o-Ethyltoluene	1.17	1.07	1.19	0.81	1.36	3.24
b-Pinene	1.17	1.31	0.97	1.18	0.90	1.71
1,2,4-Trimethylbenzene	3.35	3.14	4.08	3.53	4.40	11.97
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.62	0.57	0.80	0.64	0.87	2.47
1,2,3-Trimethylbenzene	0.86	0.78	1.04	0.81	1.12	3.34
m-Diethylbenzene	0.46	0.48	0.46	0.59	0.62	0.98
p-Diethylbenzene	0.45	0.46	0.43	0.46	0.56	1.14
1-Undecene	0.09	0.09	0.05	ND	0.05	ND
n-Undecane	0.54	0.57	0.71	0.59	0.67	1.61
1-Dodecene	0.25	0.13	ND	ND	ND	ND
n-Dodecane	0.27	0.18	0.26	0.14	0.29	0.79
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.10	0.08	0.10	0.05	0.10	0.24
TNMOC (w/ unknowns)	230.11	247.18	284.64	239.25	309.49	768.76
TNMOC (speciated)	194.28	203.96	241.51	200.37	261.20	657.01

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**13972**	**13977D1**	**13977R1**	**13978D2**	**13978R2**	**14052**
Sampling Date:	**8/4/98**	**8/5/98**	**8/5/98**	**8/5/98**	**8/5/98**	**8/6/98**
Analysis Date:	**8/28/98**	**8/28/98**	**9/16/98**	**8/28/98**	**10/20/98**	**8/28/98**
Compound						
Ethylene	12.78	4.10	3.00	4.12	3.57	2.23
Acetylene	10.92	4.02	2.75	3.97	2.86	2.39
Ethane	26.32	17.10	9.69	17.36	14.02	26.57
Propylene	5.46	1.85	1.47	1.76	1.59	1.25
Propane	40.68	17.85	11.75	18.22	15.65	30.60
Propyne	0.52	0.17	0.10	0.14	0.17	0.08
Isobutane	12.14	4.40	3.33	4.51	3.87	7.12
Isobutene/1-Butene	6.63	2.27	1.62	2.28	1.98	1.70
1,3-Butadiene	0.98	0.33	0.21	0.39	0.35	0.27
n-Butane	42.85	13.88	8.01	14.31	12.19	22.77
trans-2-Butene	3.14	0.92	0.55	0.98	0.80	1.12
cis-2-Butene	3.84	1.11	0.69	1.09	0.93	1.39
3-Methyl-1-butene	2.55	0.60	0.36	0.57	0.57	0.81
Isopentane	156.62	45.61	46.32	45.45	40.79	44.27
1-Pentene	7.10	1.97	1.26	2.16	1.62	2.40
2-Methyl-1-butene	9.70	2.74	1.50	2.84	2.33	3.60
n-Pentane	55.00	15.12	8.13	15.82	13.29	20.84
Isoprene	1.69	0.61	2.94	0.67	0.52	0.69
trans-2-Pentene	12.75	3.61	1.94	3.78	3.06	5.06
cis-2-Pentene	6.91	2.02	1.17	2.06	1.74	2.80
2-Methyl-2-butene	15.84	4.44	2.15	4.55	3.78	6.76
2,2-Dimethylbutane	7.17	2.26	1.57	2.37	2.11	2.58
Cyclopentene	4.61	1.06	1.06	1.07	0.88	0.98
4-Methyl-1-pentene	0.74	0.22	0.12	0.21	0.19	0.32
Cyclopentane	7.34	2.37	1.25	2.40	2.14	2.82
2,3-Dimethylbutane	93.66	27.28	13.98	28.17	24.33	31.10
2-Methylpentane	50.29	15.47	9.16	15.83	13.94	17.89
3-Methylpentane	30.79	9.54	6.00	10.02	8.80	12.11
2-Methyl-1-pentene	2.96	0.84	0.45	0.89	0.75	1.09
1-Hexene	1.73	0.48	0.28	0.56	0.48	0.64
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	37.18	11.69	7.84	12.09	10.49	15.27
trans-2-Hexene	2.32	0.68	0.33	0.73	0.73	0.96
cis-2-Hexene	1.53	0.48	1.90	0.51	0.40	0.62
Methylcyclopentane	14.28	4.63	3.05	4.82	4.43	6.01
2,4-Dimethylpentane	5.08	1.77	1.37	1.87	1.74	2.08
Benzene	21.87	7.10	4.57	7.19	6.12	7.00
Cyclohexane	22.40	1.64	1.61	1.83	1.79	2.46
2-Methylhexane	11.87	3.71	3.27	4.04	3.68	4.68
2,3-Dimethylpentane	5.42	1.64	1.66	1.94	1.83	2.19
3-Methylhexane	12.81	4.02	3.10	4.29	3.89	4.80
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	15.67	5.91	4.02	6.06	5.09	5.68
n-Heptane	11.21	3.66	2.40	3.86	3.00	4.69
Methylcyclohexane	4.32	1.75	1.42	0.45	1.67	2.44
2,2,3-Trimethylpentane	3.74	1.38	0.88	1.41	1.21	1.30
2,3,4-Trimethylpentane	5.19	1.96	1.46	1.99	1.82	1.79
Toluene	59.45	18.94	15.81	19.52	16.40	19.19
2-Methylheptane	3.79	1.23	1.08	1.34	1.07	1.42
3-Methylheptane	3.50	1.27	0.85	1.19	1.05	1.31
1-Octene	0.29	0.15	0.10	0.12	0.11	0.13
n-Octane	4.89	1.59	1.76	1.67	1.45	2.12
Ethylbenzene	10.40	3.47	2.39	3.60	2.92	3.59
m-Xylene/p-Xylene	35.07	11.17	7.30	11.60	9.68	12.46
Styrene	3.81	1.32	1.67	1.22	1.15	0.94
o-Xylene	11.85	3.99	2.72	4.11	3.31	4.09
1-Nonene	0.71	0.10	0.21	0.14	0.11	0.24
n-Nonane	3.56	1.11	1.13	1.21	0.97	1.19
Isopropylbenzene	1.37	0.58	0.52	0.61	0.45	0.49
a-Pinene	2.02	0.21	1.91	0.26	0.11	0.41
n-Propylbenzene	3.16	1.21	0.85	1.14	0.99	1.13
m-Ethyltoluene	9.92	3.28	2.16	3.29	2.62	3.23
p-Ethyltoluene	5.73	1.96	1.34	1.97	1.61	1.93
1,3,5-Trimethylbenzene	4.93	1.58	1.22	1.67	1.23	1.66
o-Ethyltoluene	4.20	1.34	1.10	1.41	1.14	1.28
b-Pinene	2.76	1.12	1.88	1.15	0.94	0.81
1,2,4-Trimethylbenzene	13.68	4.47	4.08	4.65	3.62	4.48
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	3.22	0.76	0.95	0.74	0.65	0.64
1,2,3-Trimethylbenzene	3.23	1.09	0.72	1.22	0.88	1.21
m-Diethylbenzene	1.46	0.64	0.50	0.62	0.46	0.49
p-Diethylbenzene	1.62	0.68	0.47	0.61	0.47	0.45
1-Undecene	0.17	0.04	0.05	ND	0.04	ND
n-Undecane	3.63	0.68	0.79	0.71	0.61	0.54
1-Dodecene	0.27	0.14	0.36	0.16	0.34	0.11
n-Dodecane	2.20	0.27	0.30	0.29	0.27	0.16
1-Tridecene	ND	ND	0.06	0.05	0.04	ND
n-Tridecane	0.55	0.12	0.15	0.12	0.07	0.12
TNMOC (w/ unknowns)	1164.63	367.51	289.91	375.79	322.55	429.12
TNMOC (speciated)	1010.04	320.82	236.11	328.02	281.97	382.02

SNMOC 1998 REPORT
SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**14057**	**14090**	**14174**	**14173**	**14195**	**14233D1**
Sampling Date:	**8/7/98**	**8/10/98**	**8/11/98**	**8/12/98**	**8/13/98**	**8/14/98**
Analysis Date:	**8/28/98**	**8/29/98**	**9/2/98**	**10/19/98**	**9/2/98**	**9/11/98**
Compound						
Ethylene	3.65	1.90	1.75	5.82	6.59	7.68
Acetylene	3.96	1.61	1.49	3.99	7.13	7.92
Ethane	11.64	2.68	12.42	15.56	13.88	12.52
Propylene	1.82	1.11	0.92	2.46	2.91	3.57
Propane	7.87	3.79	14.15	20.48	14.60	9.78
Propyne	0.12	0.04	ND	0.24	0.28	0.32
Isobutane	2.74	1.10	4.24	4.30	5.27	2.68
Isobutene/1-Butene	2.28	1.87	1.45	2.85	3.67	4.29
1,3-Butadiene	0.36	0.20	0.13	0.42	0.54	0.86
n-Butane	5.57	2.59	16.17	16.00	19.70	12.96
trans-2-Butene	0.47	0.36	1.07	1.16	1.65	1.30
cis-2-Butene	0.55	0.44	1.34	1.39	1.99	1.41
3-Methyl-1-butene	0.19	0.09	0.69	0.90	1.19	0.98
Isopentane	19.19	11.53	44.61	58.55	83.82	49.53
1-Pentene	0.74	0.55	2.24	2.88	3.56	2.65
2-Methyl-1-butene	0.64	0.40	3.00	3.84	5.11	4.03
n-Pentane	6.04	2.89	22.46	22.68	36.60	20.60
Isoprene	1.75	1.69	0.67	0.96	0.92	1.00
trans-2-Pentene	0.99	0.75	4.39	5.37	6.75	5.53
cis-2-Pentene	0.67	0.51	2.47	2.86	3.81	3.01
2-Methyl-2-butene	0.87	0.66	5.56	7.36	8.88	7.09
2,2-Dimethylbutane	0.88	0.58	2.82	3.00	3.61	3.12
Cyclopentene	0.33	0.44	1.30	1.81	2.05	1.20
4-Methyl-1-pentene	ND	ND	0.23	0.29	0.40	0.35
Cyclopentane	0.75	0.52	2.83	3.39	4.13	3.54
2,3-Dimethylbutane	7.72	4.11	31.31	40.03	51.64	43.49
2-Methylpentane	4.80	2.90	16.65	23.06	26.94	23.17
3-Methylpentane	2.97	1.77	10.53	14.18	17.49	15.32
2-Methyl-1-pentene	0.23	0.16	1.07	1.31	1.71	1.35
1-Hexene	0.19	0.14	0.50	0.76	0.91	0.86
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	3.36	2.35	13.23	17.43	21.36	18.13
trans-2-Hexene	0.18	0.12	1.00	1.28	1.67	1.25
cis-2-Hexene	0.12	0.11	0.58	0.66	0.87	0.80
Methylcyclopentane	1.75	1.07	5.18	7.25	8.59	8.03
2,4-Dimethylpentane	0.87	0.60	2.31	2.62	3.18	3.02
Benzene	3.90	2.05	5.73	9.64	11.52	10.86
Cyclohexane	0.67	0.62	2.00	2.52	5.78	2.11
2-Methylhexane	1.43	1.42	4.13	5.82	7.77	6.27
2,3-Dimethylpentane	0.94	1.00	2.34	2.51	3.47	2.81
3-Methylhexane	1.94	1.21	4.27	6.36	9.40	7.41
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	3.22	1.80	7.38	7.81	9.74	9.80
n-Heptane	1.82	0.96	3.93	5.47	7.34	6.09
Methylcyclohexane	1.12	0.78	2.17	2.64	2.74	2.55
2,2,3-Trimethylpentane	0.73	0.24	1.49	1.98	2.32	2.31
2,3,4-Trimethylpentane	1.26	0.74	2.61	2.75	3.47	3.41
Toluene	12.82	6.93	17.99	30.40	36.84	34.09
2-Methylheptane	0.89	0.51	1.22	1.60	1.97	1.97
3-Methylheptane	0.84	0.57	1.22	1.76	1.91	2.02
1-Octene	ND	ND	0.07	0.11	0.10	0.15
n-Octane	1.09	0.60	1.78	2.33	2.66	2.45
Ethylbenzene	2.76	1.39	3.13	5.47	5.94	6.39
m-Xylene/p-Xylene	8.92	4.23	11.02	19.13	20.53	21.61
Styrene	0.98	0.84	1.30	2.03	1.86	1.26
o-Xylene	2.98	1.61	3.54	6.35	6.76	7.28
1-Nonene	0.11	ND	0.20	0.17	0.28	0.22
n-Nonane	1.00	0.62	1.13	1.56	1.78	1.50
Isopropylbenzene	0.51	0.44	0.50	0.63	0.69	0.72
a-Pinene	0.58	0.25	0.70	1.24	0.83	0.27
n-Propylbenzene	0.90	0.61	1.09	1.61	1.90	1.80
m-Ethyltoluene	2.38	1.34	2.53	4.92	5.62	5.70
p-Ethyltoluene	1.50	0.96	1.59	2.70	3.15	3.09
1,3,5-Trimethylbenzene	1.45	0.81	1.25	2.26	2.80	2.72
o-Ethyltoluene	1.13	0.65	0.93	2.16	2.08	2.33
b-Pinene	0.60	0.70	1.01	1.67	0.75	0.46
1,2,4-Trimethylbenzene	3.70	2.00	3.50	6.66	7.82	7.79
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.28	0.57	0.71	1.06	1.63	1.04
1,2,3-Trimethylbenzene	1.17	0.54	0.73	1.59	1.99	1.91
m-Diethylbenzene	0.46	0.50	0.56	0.72	0.64	0.71
p-Diethylbenzene	0.51	0.39	0.59	0.59	0.69	0.59
1-Undecene	0.08	ND	0.05	0.10	0.08	0.10
n-Undecane	1.10	0.56	0.61	0.96	1.75	0.93
1-Dodecene	ND	0.08	0.21	0.26	0.21	0.13
n-Dodecane	0.33	0.19	0.18	0.49	0.96	0.40
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.14	0.09	0.08	0.14	0.25	0.16
TNMOC (w/ unknowns)	198.60	117.88	382.27	523.94	636.59	510.68
TNMOC (speciated)	163.51	90.45	326.17	445.28	551.37	446.75

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**14233R1**	**14234D2**	**14234R2**	**14217**	**14223**	**14236**
Sampling Date:	**8/14/98**	**8/14/98**	**8/14/98**	**8/17/98**	**8/18/98**	**8/20/98**
Analysis Date:	**9/11/98**	**9/11/98**	**9/11/98**	**9/10/98**	**9/10/98**	**10/19/98**
Compound						
Ethylene	7.79	7.58	7.81	5.03	4.65	5.92
Acetylene	8.10	7.92	8.03	4.52	4.31	4.94
Ethane	12.62	12.44	12.69	8.40	11.30	34.32
Propylene	3.73	3.66	3.74	2.70	2.27	2.88
Propane	9.95	9.78	9.90	5.20	13.25	26.80
Propyne	0.40	0.30	0.28	0.19	0.15	0.18
Isobutane	2.77	2.77	2.87	2.69	3.66	12.85
Isobutene/1-Butene	4.34	4.28	4.38	3.48	2.72	5.48
1,3-Butadiene	0.78	0.79	0.88	0.50	0.44	0.70
n-Butane	13.12	13.19	13.30	15.16	12.94	53.24
trans-2-Butene	1.46	1.37	1.37	1.63	1.11	5.42
cis-2-Butene	1.52	1.53	1.59	1.94	1.25	5.20
3-Methyl-1-butene	0.93	0.92	0.94	1.21	0.66	3.26
Isopentane	49.97	48.77	50.04	64.65	39.60	136.35
1-Pentene	2.72	2.74	2.75	3.71	2.20	8.35
2-Methyl-1-butene	4.18	4.00	4.23	5.52	3.13	10.28
n-Pentane	20.73	20.68	20.95	25.81	16.06	64.36
Isoprene	0.94	0.95	0.96	0.87	0.81	1.17
trans-2-Pentene	5.43	5.51	5.53	7.99	4.75	13.89
cis-2-Pentene	3.03	3.00	3.04	4.31	2.50	7.13
2-Methyl-2-butene	7.26	7.23	7.29	10.52	6.29	16.56
2,2-Dimethylbutane	3.13	3.09	3.10	3.73	2.42	10.00
Cyclopentene	1.29	1.24	1.25	2.17	1.46	3.45
4-Methyl-1-pentene	0.39	0.37	0.34	0.48	0.26	0.84
Cyclopentane	3.50	3.46	3.54	4.57	2.82	6.36
2,3-Dimethylbutane	43.70	43.62	44.12	59.50	32.89	77.65
2-Methylpentane	23.30	23.19	23.62	30.63	17.99	40.48
3-Methylpentane	15.39	15.33	15.53	20.35	11.68	24.30
2-Methyl-1-pentene	1.49	1.37	1.48	2.04	1.13	2.39
1-Hexene	0.77	0.88	0.82	1.03	0.65	1.41
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	18.24	18.60	18.68	24.34	14.60	27.27
trans-2-Hexene	1.27	1.39	1.27	1.92	1.22	2.26
cis-2-Hexene	0.81	0.84	0.80	1.08	0.63	1.23
Methylcyclopentane	8.01	7.99	8.03	9.74	6.16	11.81
2,4-Dimethylpentane	3.00	2.92	2.92	3.42	2.34	5.01
Benzene	11.73	10.67	11.07	13.17	8.10	12.14
Cyclohexane	2.39	2.50	2.58	2.71	2.52	3.09
2-Methylhexane	6.63	6.80	6.69	7.59	5.25	8.71
2,3-Dimethylpentane	3.16	2.82	2.82	3.08	2.45	4.81
3-Methylhexane	7.49	7.36	7.37	8.28	5.50	9.27
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	9.98	10.00	10.10	9.77	6.41	16.34
n-Heptane	6.11	6.08	6.09	7.08	4.79	7.60
Methylcyclohexane	2.59	2.55	2.65	2.93	2.28	3.25
2,2,3-Trimethylpentane	2.34	2.36	2.38	2.37	1.60	3.21
2,3,4-Trimethylpentane	3.49	3.54	3.55	3.48	2.37	5.54
Toluene	34.66	34.46	35.00	36.75	25.73	45.84
2-Methylheptane	2.11	2.01	2.09	2.11	1.52	2.20
3-Methylheptane	1.93	1.98	2.10	2.06	1.53	2.15
1-Octene	0.13	0.18	0.21	0.13	0.10	0.11
n-Octane	2.40	2.45	2.44	2.76	1.92	2.72
Ethylbenzene	6.42	6.44	6.52	6.22	4.52	5.78
m-Xylene/p-Xylene	22.09	21.93	22.21	22.20	15.30	19.35
Styrene	1.29	3.23	3.04	2.17	1.28	1.31
o-Xylene	7.46	7.32	7.53	7.13	5.05	6.42
1-Nonene	0.20	0.40	0.37	0.20	0.14	0.37
n-Nonane	1.51	1.57	1.52	1.79	1.41	1.94
Isopropylbenzene	0.83	0.88	0.84	0.70	0.56	0.63
a-Pinene	0.27	0.19	0.26	0.30	0.47	1.23
n-Propylbenzene	1.86	1.80	1.88	1.89	1.39	1.49
m-Ethyltoluene	5.82	5.71	5.87	5.57	4.03	4.52
p-Ethyltoluene	3.26	3.22	3.40	3.15	2.35	2.65
1,3,5-Trimethylbenzene	2.95	2.74	2.86	2.58	2.02	2.43
o-Ethyltoluene	2.43	2.20	2.45	2.22	1.76	1.75
b-Pinene	0.50	1.97	2.28	1.10	0.89	0.66
1,2,4-Trimethylbenzene	7.95	8.61	8.86	7.42	5.61	6.40
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.06	1.01	1.03	1.02	1.39	2.14
1,2,3-Trimethylbenzene	1.86	1.59	1.80	1.67	1.35	1.54
m-Diethylbenzene	0.70	0.67	0.67	0.71	0.59	0.72
p-Diethylbenzene	0.74	0.66	0.60	0.63	0.51	0.62
1-Undecene	0.08	3.33	3.46	0.17	0.09	0.08
n-Undecane	0.95	5.34	5.32	0.97	0.92	1.58
1-Dodecene	0.10	8.61	8.52	0.83	0.47	0.22
n-Dodecane	0.47	9.56	9.55	0.92	0.67	0.60
1-Tridecene	ND	10.55	10.35	0.37	0.38	0.09
n-Tridecane	0.17	9.62	9.49	0.54	0.51	0.28
TNMOC (w/ unknowns)	519.65	568.81	577.04	606.19	426.39	918.61
TNMOC (speciated)	454.20	498.63	505.84	517.73	356.01	825.55

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**14350**	**14838D1**	**14383R1**	**14384D2**	**14384R2**	**14486**
Sampling Date:	**8/21/98**	**8/24/98**	**8/24/98**	**8/24/98**	**8/24/98**	**8/25/98**
Analysis Date:	**9/22/98**	**9/23/98**	**9/24/98**	**9/23/98**	**9/24/98**	**9/24/98**
Compound						
Ethylene	7.50	5.64	7.12	5.87	7.05	12.69
Acetylene	7.92	5.55	7.27	5.76	6.92	12.03
Ethane	53.72	9.89	9.45	10.17	11.83	19.33
Propylene	3.52	2.48	3.20	2.88	3.16	6.40
Propane	18.96	9.19	11.87	10.05	11.59	17.95
Propyne	0.28	0.19	0.18	0.24	0.20	0.55
Isobutane	7.35	3.13	4.09	3.41	3.93	6.28
Isobutene/1-Butene	5.19	2.89	3.70	3.16	3.60	6.86
1,3-Butadiene	0.79	0.52	0.67	0.57	0.64	1.29
n-Butane	32.49	9.42	12.29	9.92	11.81	27.21
trans-2-Butene	3.13	0.93	1.14	1.00	1.04	3.21
cis-2-Butene	3.55	1.08	1.32	1.08	1.27	2.94
3-Methyl-1-butene	2.26	0.56	0.66	0.53	0.44	4.05
Isopentane	95.08	29.78	38.38	34.30	39.63	101.24
1-Pentene	6.81	1.74	2.17	1.70	1.93	5.67
2-Methyl-1-butene	9.12	2.50	3.29	2.59	3.14	9.12
n-Pentane	46.97	12.59	16.51	13.29	15.64	43.76
Isoprene	1.24	0.86	0.99	0.83	0.96	1.59
trans-2-Pentene	11.07	3.57	4.61	3.73	4.41	12.78
cis-2-Pentene	5.95	1.98	2.58	2.11	2.43	6.83
2-Methyl-2-butene	14.25	4.62	6.02	4.92	5.70	17.48
2,2-Dimethylbutane	6.12	2.12	2.75	2.19	2.79	6.24
Cyclopentene	4.97	1.28	1.66	1.56	1.81	3.95
4-Methyl-1-pentene	0.74	0.20	0.31	0.24	0.23	0.86
Cyclopentane	5.81	2.29	2.84	2.40	2.81	7.40
2,3-Dimethylbutane	73.78	26.50	33.99	28.23	32.62	97.60
2-Methylpentane	36.98	14.68	19.26	15.61	18.46	52.49
3-Methylpentane	23.64	9.75	12.77	10.33	12.27	34.60
2-Methyl-1-pentene	2.25	0.93	1.25	0.96	1.22	3.27
1-Hexene	1.49	0.55	0.66	0.64	0.65	2.01
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	28.22	12.10	15.48	12.50	15.25	41.99
trans-2-Hexene	2.18	0.92	1.09	0.87	1.24	3.45
cis-2-Hexene	1.18	0.53	0.70	0.56	0.66	1.87
Methylcyclopentane	11.89	5.21	6.80	5.51	6.49	17.09
2,4-Dimethylpentane	4.30	2.04	2.53	2.10	2.42	5.93
Benzene	13.99	7.87	9.93	8.46	9.81	23.43
Cyclohexane	3.09	1.74	2.24	1.90	2.26	5.07
2-Methylhexane	9.04	4.90	6.16	5.05	5.92	13.99
2,3-Dimethylpentane	3.96	2.07	2.52	2.33	2.77	5.59
3-Methylhexane	9.92	4.86	6.38	5.35	6.30	15.51
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	11.69	6.06	7.88	6.46	7.76	18.47
n-Heptane	8.13	4.19	5.42	4.52	5.23	12.99
Methylcyclohexane	3.20	1.76	2.32	2.05	2.30	5.14
2,2,3-Trimethylpentane	2.88	1.52	2.02	1.60	1.88	5.02
2,3,4-Trimethylpentane	4.12	2.12	2.73	2.33	2.77	6.56
Toluene	43.68	25.14	33.04	27.16	31.93	75.99
2-Methylheptane	2.49	1.42	1.91	1.59	1.81	3.99
3-Methylheptane	2.49	1.47	1.48	1.55	1.88	3.90
1-Octene	0.14	0.08	0.17	0.11	0.15	0.29
n-Octane	3.11	1.81	2.27	1.90	2.22	4.94
Ethylbenzene	7.25	4.27	5.37	4.77	5.53	12.33
m-Xylene/p-Xylene	24.60	13.74	17.51	15.20	17.74	41.63
Styrene	1.44	0.96	0.90	1.19	1.19	1.85
o-Xylene	8.03	4.75	5.98	5.40	6.27	13.66
1-Nonene	0.39	0.16	0.23	0.24	0.16	0.39
n-Nonane	3.01	1.12	1.39	1.22	1.37	3.24
Isopropylbenzene	0.82	0.58	0.64	0.56	0.69	1.12
a-Pinene	0.95	0.19	0.22	0.14	0.21	0.55
n-Propylbenzene	1.96	1.23	1.43	1.38	1.51	3.22
m-Ethyltoluene	5.68	3.64	4.40	3.89	4.36	10.16
p-Ethyltoluene	3.53	2.09	2.46	2.21	2.53	5.53
1,3,5-Trimethylbenzene	3.61	1.86	2.25	2.00	2.29	4.90
o-Ethyltoluene	2.07	1.65	1.99	1.75	1.74	4.23
b-Pinene	0.71	0.45	0.20	0.52	0.24	0.64
1,2,4-Trimethylbenzene	8.07	4.95	5.68	5.25	5.75	13.62
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	3.89	0.89	1.01	1.68	1.81	2.24
1,2,3-Trimethylbenzene	1.83	1.16	1.35	1.13	1.39	3.06
m-Diethylbenzene	0.86	0.47	0.48	0.56	0.51	1.03
p-Diethylbenzene	0.79	0.41	0.45	0.51	0.41	0.94
1-Undecene	0.11	0.09	0.05	0.08	0.05	0.11
n-Undecane	1.70	0.64	0.59	0.67	0.62	1.12
1-Dodecene	0.19	0.11	0.02	0.06	0.03	0.18
n-Dodecane	0.56	0.32	0.16	0.33	0.16	0.49
1-Tridecene	0.05	0.09	ND	ND	0.02	ND
n-Tridecane	0.21	0.10	0.04	0.07	0.02	0.09
TNMOC (w/ unknowns)	846.84	348.76	430.52	435.83	477.70	1059.09
TNMOC (speciated)	744.90	301.13	380.86	325.00	377.88	925.21

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**14495**	**14494**	**14516**	**14540**	**14561D1**	**14561R1**
Sampling Date:	**8/26/98**	**8/27/98**	**8/28/98**	**8/31/98**	**9/1/98**	**9/1/98**
Analysis Date:	**9/24/98**	**10/19/98**	**10/16/98**	**10/16/98**	**10/16/98**	**10/22/98**
Compound						
Ethylene	5.50	7.14	4.85	7.25	5.50	8.51
Acetylene	5.03	5.90	1.86	5.85	6.50	6.69
Ethane	12.05	10.61	7.82	17.17	15.40	15.59
Propylene	2.56	3.25	2.71	4.30	4.21	4.33
Propane	11.63	10.72	6.51	43.50	45.47	46.81
Propyne	0.26	0.31	0.18	0.27	0.27	0.33
Isobutane	3.72	3.05	1.67	4.21	4.14	4.27
Isobutene/1-Butene	2.99	3.86	2.10	3.87	3.68	3.93
1,3-Butadiene	0.49	0.79	0.45	0.74	0.76	0.84
n-Butane	14.82	11.13	8.23	14.43	11.03	11.43
trans-2-Butene	1.18	1.09	1.23	1.18	0.93	0.99
cis-2-Butene	1.43	1.20	0.96	1.37	1.07	1.17
3-Methyl-1-butene	0.71	0.70	0.51	0.70	0.55	0.52
Isopentane	53.50	43.09	35.02	55.69	47.13	48.85
1-Pentene	2.53	2.08	1.82	2.55	1.65	2.27
2-Methyl-1-butene	4.05	3.30	2.53	3.31	2.40	2.46
n-Pentane	20.12	16.28	12.03	19.66	47.25	48.70
Isoprene	0.98	0.87	0.66	0.83	0.71	0.76
trans-2-Pentene	5.40	4.38	3.38	4.88	3.37	3.39
cis-2-Pentene	2.99	2.41	1.96	2.59	1.79	1.89
2-Methyl-2-butene	6.78	5.44	4.63	5.82	4.32	4.37
2,2-Dimethylbutane	3.16	2.67	1.86	3.15	2.40	2.50
Cyclopentene	2.11	1.46	1.29	1.98	1.62	1.51
4-Methyl-1-pentene	0.34	0.29	0.24	0.34	0.24	0.22
Cyclopentane	3.60	2.92	2.29	3.20	2.89	3.02
2,3-Dimethylbutane	45.46	34.05	27.38	38.07	26.15	26.68
2-Methylpentane	24.73	19.40	15.68	21.12	15.38	16.09
3-Methylpentane	16.36	12.76	10.07	14.00	9.78	10.14
2-Methyl-1-pentene	1.49	1.29	0.99	1.30	0.80	0.83
1-Hexene	0.87	0.71	0.59	0.76	0.61	0.59
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	19.97	15.04	12.21	16.97	11.63	12.01
trans-2-Hexene	1.53	1.07	0.78	1.26	0.75	0.77
cis-2-Hexene	0.90	0.68	0.49	0.75	0.47	0.49
Methylcyclopentane	8.18	6.66	5.01	7.43	5.33	5.52
2,4-Dimethylpentane	2.94	2.28	1.79	2.60	2.11	2.18
Benzene	11.19	10.19	7.67	11.79	9.09	9.56
Cyclohexane	2.64	2.41	1.38	2.32	1.94	1.91
2-Methylhexane	6.96	5.84	3.83	6.48	4.97	4.93
2,3-Dimethylpentane	3.22	2.46	1.70	0.10	2.48	2.27
3-Methylhexane	7.56	6.41	4.23	7.03	5.36	5.42
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	8.79	7.57	4.82	8.27	7.56	7.73
n-Heptane	6.23	5.29	3.66	5.80	4.39	4.50
Methylcyclohexane	2.62	2.28	1.64	2.60	2.19	2.25
2,2,3-Trimethylpentane	2.17	1.99	1.27	2.11	1.87	1.88
2,3,4-Trimethylpentane	2.94	2.70	1.70	2.90	2.67	2.82
Toluene	35.39	34.60	19.58	35.70	32.65	33.17
2-Methylheptane	1.91	1.82	1.10	1.99	1.65	1.70
3-Methylheptane	1.98	1.82	1.08	2.03	1.62	1.76
1-Octene	0.22	0.15	0.14	0.24	0.10	0.15
n-Octane	2.60	2.20	1.60	2.51	1.98	2.11
Ethylbenzene	6.00	5.61	3.49	5.99	6.51	6.66
m-Xylene/p-Xylene	19.74	18.44	12.11	19.71	21.51	22.30
Styrene	1.38	1.25	1.16	1.80	1.84	2.06
o-Xylene	6.47	6.31	3.97	6.77	7.47	7.60
1-Nonene	0.25	0.28	0.16	0.21	0.22	0.23
n-Nonane	1.61	1.40	1.06	1.81	1.59	1.63
Isopropylbenzene	0.62	0.66	0.51	0.67	0.67	0.70
a-Pinene	0.17	0.26	0.23	0.34	1.54	1.59
n-Propylbenzene	1.63	1.56	1.09	1.68	1.49	1.57
m-Ethyltoluene	4.68	4.89	2.93	5.10	4.87	5.01
p-Ethyltoluene	2.70	2.70	1.75	2.79	2.66	2.74
1,3,5-Trimethylbenzene	2.17	2.38	1.34	2.52	2.63	2.70
o-Ethyltoluene	1.90	2.11	1.10	2.26	2.13	2.22
b-Pinene	0.37	0.73	0.92	0.87	0.99	1.13
1,2,4-Trimethylbenzene	6.02	6.84	4.01	7.10	6.70	7.05
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.94	1.01	0.48	1.39	1.73	1.89
1,2,3-Trimethylbenzene	1.37	1.68	0.91	1.96	1.43	1.82
m-Diethylbenzene	0.45	0.76	0.51	0.82	0.77	0.73
p-Diethylbenzene	0.50	0.72	0.48	0.84	0.57	0.81
1-Undecene	0.08	0.10	0.09	0.13	0.09	0.14
n-Undecane	0.59	0.86	0.50	1.07	1.44	1.43
1-Dodecene	0.04	0.42	0.27	0.29	0.13	0.24
n-Dodecane	0.18	0.51	0.35	0.64	0.67	0.70
1-Tridecene	ND	0.09	ND	ND	0.04	0.10
n-Tridecane	0.03	0.17	0.07	0.20	0.26	0.37
TNMOC (w/ unknowns)	519.41	453.32	331.65	562.94	503.30	523.23
TNMOC (speciated)	446.69	388.35	276.72	471.91	438.77	440.63

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**14562D2**	**14562R2**	**14666**	**14673**	**14679**	**14701**
Sampling Date:	**9/1/98**	**9/1/98**	**9/2/98**	**9/3/98**	**9/4/98**	**9/8/98**
Analysis Date:	**10/16/98**	**10/22/98**	**10/2/98**	**10/3/98**	**10/4/98**	**10/9/98**
Compound						
Ethylene	8.45	8.60	5.08	19.51	9.08	11.34
Acetylene	6.49	6.73	3.33	14.51	6.57	9.59
Ethane	15.54	16.03	10.43	25.47	17.51	16.66
Propylene	4.29	4.30	2.36	9.75	4.61	5.88
Propane	45.53	46.81	13.34	21.36	19.75	19.46
Propyne	0.26	0.33	0.16	0.89	0.44	0.34
Isobutane	4.14	4.29	3.21	10.15	7.68	8.72
Isobutene/1-Butene	3.69	3.93	1.91	10.35	5.45	7.10
1,3-Butadiene	0.81	0.87	0.33	2.04	0.97	1.20
n-Butane	11.19	11.52	6.50	38.78	29.41	36.64
trans-2-Butene	1.10	1.00	0.40	2.74	1.79	2.47
cis-2-Butene	1.11	1.15	0.46	2.75	1.86	2.54
3-Methyl-1-butene	0.61	0.56	0.17	1.10	0.90	1.20
Isopentane	45.04	47.54	23.15	120.06	83.64	119.83
1-Pentene	1.93	1.89	0.61	3.45	1.99	3.70
2-Methyl-1-butene	2.44	2.50	0.28	4.74	2.83	4.97
n-Pentane	47.59	49.00	8.59	51.21	33.67	48.88
Isoprene	0.73	0.85	0.51	1.39	0.80	1.12
trans-2-Pentene	3.38	3.55	0.59	9.74	6.40	11.42
cis-2-Pentene	1.86	1.93	0.43	4.56	2.99	5.31
2-Methyl-2-butene	4.46	4.63	0.34	9.10	5.59	11.07
2,2-Dimethylbutane	2.40	2.55	1.31	4.43	2.73	4.11
Cyclopentene	1.73	1.53	0.85	2.74	1.81	3.51
4-Methyl-1-pentene	0.20	0.24	ND	0.53	0.37	0.61
Cyclopentane	2.92	3.08	0.96	6.47	4.20	6.23
2,3-Dimethylbutane	26.07	27.39	6.13	50.32	31.31	58.22
2-Methylpentane	15.42	16.07	5.06	36.34	23.53	38.53
3-Methylpentane	9.97	10.29	3.13	22.15	14.03	22.63
2-Methyl-1-pentene	0.89	0.87	0.12	2.29	1.36	2.73
1-Hexene	0.55	0.64	0.16	1.07	0.74	1.13
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	11.83	12.42	3.66	24.20	14.79	25.09
trans-2-Hexene	0.79	0.94	0.07	2.35	1.31	2.82
cis-2-Hexene	0.47	0.52	0.07	1.27	0.84	1.56
Methylcyclopentane	5.35	5.64	1.94	13.90	8.96	14.16
2,4-Dimethylpentane	2.15	2.37	0.98	3.97	2.43	3.90
Benzene	9.40	9.48	3.26	15.82	8.69	16.06
Cyclohexane	2.01	2.10	1.00	4.97	3.37	5.19
2-Methylhexane	4.81	5.26	1.75	10.39	6.00	10.06
2,3-Dimethylpentane	2.19	2.57	1.18	3.95	2.36	3.74
3-Methylhexane	5.34	5.65	2.04	11.69	6.40	10.89
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	7.64	7.87	3.39	14.02	7.71	14.18
n-Heptane	4.47	4.64	1.50	8.85	5.25	8.89
Methylcyclohexane	2.20	2.26	1.14	4.56	2.88	4.52
2,2,3-Trimethylpentane	1.91	1.91	0.78	3.60	1.93	3.56
2,3,4-Trimethylpentane	2.72	2.85	1.25	4.78	2.91	4.87
Toluene	32.83	33.87	11.12	60.50	31.11	58.99
2-Methylheptane	1.68	1.67	0.74	3.14	1.89	3.05
3-Methylheptane	1.68	1.75	0.75	3.29	1.78	3.12
1-Octene	0.12	0.13	0.05	0.17	0.13	0.16
n-Octane	1.99	2.07	0.94	3.19	1.96	3.33
Ethylbenzene	6.57	6.74	1.99	8.96	4.51	8.74
m-Xylene/p-Xylene	21.86	22.80	5.85	28.75	15.11	28.52
Styrene	1.96	2.09	0.72	1.67	1.20	2.18
o-Xylene	7.47	7.73	2.18	10.24	5.53	9.76
1-Nonene	0.24	0.24	0.10	0.30	0.20	0.28
n-Nonane	1.57	1.65	0.76	1.92	1.20	1.97
Isopropylbenzene	0.63	0.66	0.38	0.79	0.55	0.82
a-Pinene	1.58	1.67	0.79	0.56	0.21	0.53
n-Propylbenzene	1.45	1.59	0.60	2.16	1.22	2.27
m-Ethyltoluene	4.84	5.03	1.70	7.12	3.92	7.28
p-Ethyltoluene	2.63	2.75	1.05	3.70	2.02	3.74
1,3,5-Trimethylbenzene	2.64	2.77	0.96	3.84	2.06	3.51
o-Ethyltoluene	1.86	2.20	0.73	2.82	1.84	3.10
b-Pinene	0.72	1.11	0.80	0.62	0.85	1.28
1,2,4-Trimethylbenzene	6.76	7.36	2.31	9.82	5.80	10.01
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.77	1.92	0.84	1.52	0.76	1.51
1,2,3-Trimethylbenzene	1.30	1.69	0.56	2.31	1.37	2.29
m-Diethylbenzene	0.78	0.84	0.35	0.72	0.42	0.84
p-Diethylbenzene	0.75	0.70	0.37	0.76	0.45	0.92
1-Undecene	0.13	0.15	ND	0.10	0.09	0.11
n-Undecane	1.34	1.42	0.67	1.11	0.73	1.23
1-Dodecene	0.14	0.29	0.19	0.34	0.16	0.17
n-Dodecane	0.64	0.67	0.33	0.71	0.45	0.60
1-Tridecene	0.09	0.10	ND	ND	ND	ND
n-Tridecane	0.16	0.28	0.16	0.24	0.17	0.30
TNMOC (w/ unknowns)	508.71	534.08	197.41	885.00	555.63	881.90
TNMOC (speciated)	442.25	461.07	161.92	779.69	487.52	757.23

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**14775D1**	**14775R1**	**14776D2**	**14776R2**	**14786**	**14797**
Sampling Date:	**9/9/98**	**9/9/98**	**9/9/98**	**9/9/98**	**9/10/98**	**9/11/98**
Analysis Date:	**10/9/98**	**10/26/98**	**10/9/98**	**10/26/98**	**10/17/98**	**10/12/98**
Compound						
Ethylene	5.39	4.76	4.91	4.61	3.23	1.58
Acetylene	4.12	3.47	3.64	3.30	3.39	1.71
Ethane	14.36	13.11	12.82	12.85	30.32	14.29
Propylene	2.64	2.32	2.41	2.18	1.62	0.90
Propane	16.06	14.32	14.87	13.94	10.53	6.10
Propyne	0.23	0.17	0.08	0.07	0.12	ND
Isobutane	10.78	9.71	9.81	9.34	4.66	3.07
Isobutene/1-Butene	3.47	2.98	3.22	2.98	2.06	1.27
1,3-Butadiene	0.36	0.34	0.36	0.36	0.24	0.09
n-Butane	34.93	31.73	33.23	31.39	20.38	12.27
trans-2-Butene	2.38	2.08	2.21	2.08	1.21	1.07
cis-2-Butene	2.86	2.51	2.65	2.47	1.32	0.87
3-Methyl-1-butene	1.34	1.26	1.26	1.24	0.72	0.35
Isopentane	116.04	106.26	108.10	104.74	59.60	38.55
1-Pentene	3.18	2.85	2.88	2.72	1.77	1.08
2-Methyl-1-butene	4.54	4.05	4.24	3.94	2.33	1.35
n-Pentane	33.01	29.94	31.24	29.67	31.24	16.70
Isoprene	0.90	0.62	0.68	0.66	0.47	0.38
trans-2-Pentene	6.88	6.00	6.30	5.84	5.54	3.29
cis-2-Pentene	3.65	3.07	3.21	3.02	2.65	1.60
2-Methyl-2-butene	7.19	6.45	6.58	6.21	4.99	2.70
2,2-Dimethylbutane	3.28	2.83	3.04	2.83	2.02	1.36
Cyclopentene	3.05	2.83	2.72	2.62	1.58	1.08
4-Methyl-1-pentene	0.34	0.31	0.34	0.35	0.30	0.18
Cyclopentane	3.51	3.16	3.33	3.19	3.14	1.91
2,3-Dimethylbutane	35.12	31.22	32.24	30.70	27.52	16.24
2-Methylpentane	23.24	20.94	21.66	20.35	18.08	10.78
3-Methylpentane	13.57	12.09	12.86	11.91	10.57	6.32
2-Methyl-1-pentene	1.30	1.08	1.18	1.12	1.27	0.76
1-Hexene	0.65	0.63	0.58	0.50	0.60	0.35
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	14.99	12.90	14.04	12.70	11.81	6.99
trans-2-Hexene	1.32	0.96	1.21	0.96	1.18	0.65
cis-2-Hexene	0.64	0.57	0.62	0.58	0.73	0.50
Methylcyclopentane	7.15	6.41	6.67	6.36	6.74	4.15
2,4-Dimethylpentane	2.57	2.22	2.14	2.24	1.85	1.27
Benzene	8.58	8.40	7.74	8.25	6.74	4.08
Cyclohexane	3.55	3.07	2.44	2.79	2.70	1.70
2-Methylhexane	5.19	4.59	4.31	4.91	4.53	2.66
2,3-Dimethylpentane	2.41	1.98	1.94	1.93	1.99	1.14
3-Methylhexane	5.52	4.85	4.95	4.65	4.47	2.67
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	7.02	6.30	6.59	6.22	5.24	3.13
n-Heptane	4.63	4.05	4.17	3.96	3.79	2.54
Methylcyclohexane	2.80	2.26	2.40	2.25	2.07	1.67
2,2,3-Trimethylpentane	1.65	1.46	1.44	1.39	1.20	0.81
2,3,4-Trimethylpentane	2.36	2.02	2.11	2.07	1.85	1.13
Toluene	28.34	25.69	25.20	24.36	22.12	19.50
2-Methylheptane	1.72	1.40	1.50	1.35	1.29	0.92
3-Methylheptane	1.65	1.41	1.46	1.35	1.00	0.91
1-Octene	0.19	0.13	0.12	0.11	ND	0.06
n-Octane	2.05	1.79	1.81	1.73	1.60	1.21
Ethylbenzene	3.64	3.44	3.28	3.35	3.41	2.74
m-Xylene/p-Xylene	11.55	11.00	10.43	10.74	11.98	9.35
Styrene	1.97	2.05	1.53	1.77	1.14	1.19
o-Xylene	4.02	3.90	3.64	3.80	3.90	3.07
1-Nonene	0.29	0.21	0.19	0.15	0.21	0.11
n-Nonane	1.48	1.31	1.26	1.32	1.62	0.96
Isopropylbenzene	0.57	0.48	0.47	0.47	0.58	0.43
a-Pinene	0.88	0.81	0.78	0.77	0.40	0.13
n-Propylbenzene	1.08	1.08	0.90	1.04	1.08	0.75
m-Ethyltoluene	2.82	2.82	2.51	2.77	2.75	1.90
p-Ethyltoluene	1.76	1.74	1.47	1.71	1.84	1.27
1,3,5-Trimethylbenzene	1.73	1.62	1.40	1.55	1.67	1.06
o-Ethyltoluene	1.12	1.16	1.01	1.17	1.18	1.05
b-Pinene	0.86	1.03	0.94	0.77	0.56	0.76
1,2,4-Trimethylbenzene	4.07	4.15	3.62	4.04	4.07	2.72
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.68	1.66	1.44	1.57	1.88	1.28
1,2,3-Trimethylbenzene	1.13	1.19	0.99	0.81	0.89	0.60
m-Diethylbenzene	0.55	0.51	0.53	0.62	0.53	0.39
p-Diethylbenzene	0.54	0.51	0.47	0.53	0.42	0.37
1-Undecene	0.10	0.13	0.07	0.08	0.05	ND
n-Undecane	1.33	1.26	1.13	1.26	0.86	0.63
1-Dodecene	0.16	0.22	0.08	0.09	ND	0.06
n-Dodecane	0.60	0.68	0.54	0.65	0.28	0.17
1-Tridecene	ND	ND	ND	ND	ND	0.01
n-Tridecane	0.10	0.18	0.09	0.15	0.07	0.04
TNMOC (w/ unknowns)	568.95	515.03	517.86	500.43	432.92	275.20
TNMOC (speciated)	506.75	458.65	464.26	435.69	377.69	236.92

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**14796**	**14806**	**14828**	**14906D1**	**14906R1**	**14907D2**
Sampling Date:	**9/14/98**	**9/15/98**	**9/16/98**	**9/17/98**	**9/17/98**	**9/17/98**
Analysis Date:	**10/17/98**	**10/17/98**	**10/23/98**	**10/20/98**	**10/26/98**	**10/20/98**
Compound						
Ethylene	6.04	2.08	3.66	2.42	2.52	2.29
Acetylene	7.04	1.27	2.98	2.03	1.96	1.98
Ethane	9.15	7.67	5.80	5.30	5.16	5.25
Propylene	3.01	1.34	2.04	1.39	1.40	1.35
Propane	9.26	11.61	6.80	9.22	9.32	8.97
Propyne	0.23	ND	0.09	ND	0.08	0.05
Isobutane	5.55	7.19	5.63	5.88	5.85	5.70
Isobutene/1-Butene	3.66	1.84	2.57	2.41	2.64	2.60
1,3-Butadiene	0.60	0.12	0.36	0.27	0.25	0.29
n-Butane	23.07	28.93	22.81	29.14	29.16	28.40
trans-2-Butene	1.62	2.01	1.76	2.03	2.01	2.05
cis-2-Butene	1.66	1.78	1.63	2.25	2.23	2.24
3-Methyl-1-butene	0.84	0.94	0.85	1.17	1.14	1.23
Isopentane	68.96	77.48	66.38	102.92	106.08	91.85
1-Pentene	2.05	2.31	1.98	3.39	3.31	3.36
2-Methyl-1-butene	3.14	3.20	2.85	4.05	3.92	4.06
n-Pentane	30.09	34.58	28.09	34.03	33.80	33.12
Isoprene	0.87	0.56	0.58	1.08	0.99	0.96
trans-2-Pentene	7.63	8.25	6.83	7.68	7.46	7.78
cis-2-Pentene	3.51	3.80	3.15	3.71	3.55	3.70
2-Methyl-2-butene	7.47	8.06	6.55	7.50	7.22	7.49
2,2-Dimethylbutane	2.46	2.54	2.32	2.81	2.82	2.82
Cyclopentene	1.83	2.07	1.58	1.90	1.86	1.94
4-Methyl-1-pentene	0.40	0.45	0.35	0.42	0.39	0.43
Cyclopentane	3.91	4.26	3.59	4.02	3.92	3.95
2,3-Dimethylbutane	37.00	38.84	32.64	39.27	38.83	32.97
2-Methylpentane	23.99	25.27	21.69	22.87	22.98	22.53
3-Methylpentane	14.31	14.83	12.69	13.83	13.65	13.49
2-Methyl-1-pentene	1.88	1.69	1.47	1.68	1.65	1.65
1-Hexene	0.85	0.94	0.67	0.73	0.75	0.76
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	15.85	16.75	13.56	15.29	15.32	14.91
trans-2-Hexene	1.83	1.90	1.53	1.47	1.45	1.51
cis-2-Hexene	1.12	1.16	0.93	0.87	0.82	0.89
Methylcyclopentane	9.23	9.43	7.88	8.13	8.07	7.98
2,4-Dimethylpentane	2.79	3.20	2.33	2.35	2.34	2.28
Benzene	9.27	7.97	7.76	6.81	6.80	6.71
Cyclohexane	3.36	3.60	2.97	34.74	34.07	32.28
2-Methylhexane	6.27	5.24	4.80	5.22	4.78	5.18
2,3-Dimethylpentane	2.31	2.41	1.84	2.29	1.87	2.28
3-Methylhexane	6.78	5.74	5.12	5.39	5.14	5.31
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	8.02	11.12	6.23	5.89	5.71	5.73
n-Heptane	5.72	4.95	4.35	4.18	4.14	4.10
Methylcyclohexane	2.93	2.54	2.41	2.19	2.22	2.19
2,2,3-Trimethylpentane	2.00	2.25	1.50	1.35	1.37	1.46
2,3,4-Trimethylpentane	3.00	3.82	2.29	1.99	2.10	1.99
Toluene	32.41	26.89	24.69	21.75	22.07	21.34
2-Methylheptane	2.03	1.48	1.37	1.24	1.29	1.24
3-Methylheptane	2.17	1.49	1.46	1.25	1.27	1.26
1-Octene	0.10	0.11	0.08	0.08	0.09	0.09
n-Octane	2.14	1.87	1.69	1.46	1.60	1.40
Ethylbenzene	5.50	4.09	3.89	3.12	4.08	3.09
m-Xylene/p-Xylene	18.52	14.88	13.64	10.01	11.62	9.84
Styrene	1.14	0.89	1.06	1.37	4.25	1.19
o-Xylene	6.40	4.74	4.58	3.41	4.45	3.22
1-Nonene	0.15	0.09	0.15	0.15	0.09	0.10
n-Nonane	1.22	1.13	1.10	0.91	1.07	0.87
Isopropylbenzene	0.65	0.50	0.49	0.55	1.79	0.50
a-Pinene	0.30	2.34	0.42	0.54	0.42	0.53
n-Propylbenzene	1.61	1.22	1.21	0.95	2.19	0.91
m-Ethyltoluene	5.19	3.58	3.52	2.86	3.76	2.60
p-Ethyltoluene	2.77	2.06	2.04	1.60	2.88	1.47
1,3,5-Trimethylbenzene	2.44	1.66	1.74	1.28	2.21	1.24
o-Ethyltoluene	2.04	1.41	1.45	1.26	2.25	1.10
b-Pinene	0.60	1.00	0.38	0.74	0.76	0.71
1,2,4-Trimethylbenzene	7.04	4.87	5.01	3.95	5.20	3.40
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.85	0.85	0.88	0.85	1.10	0.68
1,2,3-Trimethylbenzene	1.73	1.06	1.17	0.91	1.67	0.83
m-Diethylbenzene	0.68	0.54	0.55	0.50	1.21	0.45
p-Diethylbenzene	0.64	0.49	0.48	0.42	0.97	0.43
1-Undecene	0.09	0.07	0.06	0.11	0.10	0.06
n-Undecane	0.73	0.71	0.66	1.32	1.64	0.99
1-Dodecene	0.21	0.04	0.04	0.06	0.04	0.08
n-Dodecane	0.49	0.32	0.31	1.03	1.11	0.28
1-Tridecene	0.06	0.02	ND	ND	0.07	ND
n-Tridecane	0.16	0.08	0.05	0.27	0.38	0.03
TNMOC (w/ unknowns)	538.41	520.27	440.30	531.94	550.03	504.48
TNMOC (speciated)	462.62	458.49	390.07	477.52	494.74	449.96

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**14907R2**	**14898**	**14901**	**14982**	**14980**	**14995**
Sampling Date:	**9/17/98**	**9/18/98**	**9/21/98**	**9/22/98**	**9/23/98**	**9/24/98**
Analysis Date:	**10/26/98**	**10/21/98**	**10/21/98**	**10/21/98**	**10/21/98**	**10/22/98**
Compound						
Ethylene	2.49	3.22	3.16	6.34	1.56	4.43
Acetylene	2.09	2.41	2.85	5.62	1.18	3.83
Ethane	5.24	76.21	7.77	14.81	9.10	11.31
Propylene	1.43	1.92	1.68	3.14	0.89	2.25
Propane	9.10	74.41	7.57	16.03	13.70	11.98
Propyne	0.06	0.07	0.09	0.30	ND	0.17
Isobutane	5.74	20.71	4.55	6.17	4.92	5.74
Isobutene/1-Butene	2.66	2.02	2.15	20.42	1.27	2.62
1,3-Butadiene	0.28	0.23	0.30	0.60	0.09	0.38
n-Butane	28.69	54.25	16.47	22.31	17.41	19.29
trans-2-Butene	2.04	1.62	1.31	1.53	0.90	1.13
cis-2-Butene	2.26	1.64	1.14	1.58	0.93	1.23
3-Methyl-1-butene	1.17	0.87	0.49	0.67	0.39	0.58
Isopentane	92.10	88.84	47.76	60.20	36.67	52.10
1-Pentene	3.26	2.09	1.49	2.06	1.09	1.63
2-Methyl-1-butene	4.06	2.88	1.88	1.78	1.32	2.13
n-Pentane	33.35	49.53	20.94	29.25	16.35	22.87
Isoprene	0.96	0.68	0.56	0.78	0.96	0.59
trans-2-Pentene	7.56	7.83	4.57	6.01	3.38	4.88
cis-2-Pentene	3.72	3.62	2.20	4.94	1.65	2.36
2-Methyl-2-butene	7.44	7.45	4.17	12.75	3.07	4.65
2,2-Dimethylbutane	2.76	2.79	1.72	2.21	1.33	2.00
Cyclopentene	1.90	1.69	1.26	1.98	0.88	1.86
4-Methyl-1-pentene	0.40	0.39	0.27	0.36	0.19	0.25
Cyclopentane	3.99	4.74	2.67	3.72	2.11	2.83
2,3-Dimethylbutane	32.91	37.81	23.59	7.58	16.90	25.14
2-Methylpentane	22.46	29.00	15.82	20.64	11.82	17.39
3-Methylpentane	13.55	17.35	9.45	12.32	7.18	10.49
2-Methyl-1-pentene	1.54	1.60	1.14	0.95	0.81	1.14
1-Hexene	0.83	0.51	0.45	0.80	0.44	0.59
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	14.99	22.67	10.42	13.78	8.47	12.46
trans-2-Hexene	1.48	1.84	1.10	1.40	0.79	1.19
cis-2-Hexene	0.80	1.07	0.70	0.83	0.50	0.71
Methylcyclopentane	7.96	11.89	6.14	8.25	4.83	7.02
2,4-Dimethylpentane	2.31	3.08	1.87	2.61	1.67	2.06
Benzene	7.72	9.73	7.15	9.88	4.96	8.40
Cyclohexane	32.31	52.49	6.54	3.41	20.22	13.73
2-Methylhexane	4.86	6.49	3.90	5.81	3.55	5.01
2,3-Dimethylpentane	1.95	2.33	1.60	2.61	1.81	2.14
3-Methylhexane	5.04	7.21	4.25	6.08	3.32	5.07
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	5.68	8.45	5.31	7.43	5.32	5.67
n-Heptane	4.09	7.38	3.60	5.14	2.83	4.38
Methylcyclohexane	2.18	7.38	1.95	2.86	1.82	2.40
2,2,3-Trimethylpentane	1.45	2.08	1.25	1.71	1.04	1.58
2,3,4-Trimethylpentane	2.06	2.83	1.95	2.82	1.83	2.16
Toluene	21.18	26.94	20.44	29.29	14.93	28.43
2-Methylheptane	1.28	2.21	1.18	1.72	0.94	1.45
3-Methylheptane	1.28	1.52	1.20	1.76	0.90	1.41
1-Octene	0.09	0.19	0.06	0.08	0.09	0.10
n-Octane	1.47	2.93	1.42	2.77	1.25	1.82
Ethylbenzene	3.00	4.24	3.48	4.95	2.30	3.68
m-Xylene/p-Xylene	9.63	14.83	12.07	17.14	7.73	12.69
Styrene	1.97	1.30	0.89	1.28	0.78	1.13
o-Xylene	3.35	4.81	4.02	5.89	2.61	4.23
1-Nonene	0.12	0.20	0.10	0.17	0.12	0.14
n-Nonane	0.84	1.41	0.90	1.34	0.79	1.28
Isopropylbenzene	0.73	0.54	0.48	0.60	0.48	0.57
a-Pinene	0.60	0.69	0.10	ND	0.50	0.23
n-Propylbenzene	1.60	1.23	1.10	1.50	0.80	1.19
m-Ethyltoluene	3.36	3.56	3.10	4.57	1.99	3.43
p-Ethyltoluene	2.63	2.06	1.84	2.56	1.28	2.02
1,3,5-Trimethylbenzene	2.28	1.79	1.57	2.30	1.03	1.78
o-Ethyltoluene	2.21	1.53	1.34	1.93	0.91	1.53
b-Pinene	0.78	0.47	0.49	0.29	0.48	0.56
1,2,4-Trimethylbenzene	5.26	4.98	4.44	6.34	2.80	4.89
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.81	1.16	0.68	1.15	0.62	1.24
1,2,3-Trimethylbenzene	2.01	1.20	1.12	1.73	0.59	1.27
m-Diethylbenzene	2.22	0.52	0.51	0.69	0.48	0.66
p-Diethylbenzene	1.39	0.51	0.53	0.64	0.38	0.60
1-Undecene	0.06	0.18	ND	0.11	ND	0.07
n-Undecane	1.25	1.31	0.69	0.87	0.60	1.06
1-Dodecene	0.07	0.15	0.12	0.16	0.28	0.25
n-Dodecane	0.31	0.69	0.35	0.47	0.31	0.87
1-Tridecene	0.04	0.05	ND	ND	0.04	0.05
n-Tridecane	0.10	0.10	0.07	0.21	0.12	0.34
TNMOC (w/ unknowns)	519.00	808.26	370.42	492.81	311.73	436.77
TNMOC (speciated)	457.62	728.59	311.52	434.99	267.61	366.92

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**15018D1**	**15018R1**	**15019D2**	**15019R2**	**15032**	**15030**
Sampling Date:	**9/25/98**	**9/25/98**	**9/25/98**	**9/25/98**	**9/28/98**	**9/29/98**
Analysis Date:	**10/23/98**	**10/27/98**	**10/23/98**	**10/27/98**	**10/24/98**	**10/27/98**
Compound						
Ethylene	3.24	3.19	3.21	3.33	9.57	6.56
Acetylene	2.78	2.84	2.81	2.76	8.43	4.46
Ethane	8.01	8.03	8.10	8.05	35.49	11.38
Propylene	1.53	1.49	1.55	1.56	6.13	3.29
Propane	8.94	8.81	8.80	8.93	19.46	13.91
Propyne	0.08	0.07	0.14	0.11	0.46	0.25
Isobutane	4.61	4.67	4.69	4.74	9.36	7.64
Isobutene/1-Butene	1.59	1.63	1.74	1.77	9.57	3.19
1,3-Butadiene	0.25	0.23	0.28	0.26	1.27	0.62
n-Butane	15.16	15.14	15.18	15.41	37.08	30.46
trans-2-Butene	0.92	0.85	0.96	1.02	2.30	1.96
cis-2-Butene	0.87	0.85	0.94	0.93	2.40	1.83
3-Methyl-1-butene	0.42	0.32	0.47	0.40	0.91	0.97
Isopentane	42.22	42.86	42.43	43.12	94.52	76.30
1-Pentene	1.04	1.04	1.21	1.15	3.25	2.61
2-Methyl-1-butene	1.33	1.30	1.47	1.50	3.96	3.13
n-Pentane	15.99	15.85	16.05	16.23	52.27	32.85
Isoprene	0.55	0.51	0.57	0.60	1.25	0.81
trans-2-Pentene	3.00	3.06	3.33	3.31	9.53	7.25
cis-2-Pentene	1.51	1.51	1.67	1.66	4.58	3.39
2-Methyl-2-butene	2.51	2.46	2.77	2.81	13.64	6.88
2,2-Dimethylbutane	1.52	1.62	1.60	1.52	3.62	2.80
Cyclopentene	1.10	1.04	1.07	1.02	2.25	1.78
4-Methyl-1-pentene	0.18	0.22	0.18	0.21	0.56	0.43
Cyclopentane	2.16	2.00	2.16	2.21	5.57	4.31
2,3-Dimethylbutane	18.57	18.04	20.71	20.92	39.37	40.27
2-Methylpentane	12.90	12.50	13.13	13.24	32.05	26.19
3-Methylpentane	7.85	7.84	7.92	7.95	19.46	15.92
2-Methyl-1-pentene	0.72	0.71	0.81	0.85	1.96	1.72
1-Hexene	0.38	0.37	0.37	0.44	1.33	0.82
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	8.91	8.71	8.77	8.84	21.24	18.24
trans-2-Hexene	0.86	0.71	0.83	0.78	2.32	2.15
cis-2-Hexene	0.46	0.48	0.54	0.56	1.38	1.11
Methylcyclopentane	5.10	5.15	5.20	5.23	12.95	10.31
2,4-Dimethylpentane	1.42	1.50	1.52	1.50	4.45	3.20
Benzene	5.84	5.91	6.02	6.29	15.95	10.49
Cyclohexane	4.21	4.26	4.29	4.13	4.65	4.22
2-Methylhexane	3.67	3.47	3.76	3.78	9.43	7.40
2,3-Dimethylpentane	1.71	1.48	1.74	1.41	4.33	3.19
3-Methylhexane	3.84	3.70	3.83	3.83	9.84	7.73
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	4.67	4.62	4.71	4.87	16.98	10.44
n-Heptane	3.05	3.02	3.08	3.12	8.19	6.24
Methylcyclohexane	1.72	1.68	1.71	1.81	4.20	3.28
2,2,3-Trimethylpentane	1.07	1.14	1.15	1.12	3.68	2.62
2,3,4-Trimethylpentane	1.63	1.65	1.74	1.72	6.62	3.64
Toluene	16.64	16.70	17.10	17.16	52.02	37.22
2-Methylheptane	1.10	1.11	0.97	1.14	2.80	2.13
3-Methylheptane	1.13	1.15	1.15	1.16	2.85	2.12
1-Octene	0.09	0.11	0.16	0.16	0.24	0.11
n-Octane	1.36	1.35	1.35	1.39	3.52	2.39
Ethylbenzene	2.89	2.91	3.03	3.05	8.04	6.00
m-Xylene/p-Xylene	9.35	9.28	10.06	10.35	27.79	20.64
Styrene	0.92	0.74	1.06	1.16	1.71	0.99
o-Xylene	3.35	3.35	3.57	3.67	9.83	7.08
1-Nonene	0.11	0.12	0.12	0.14	0.43	0.21
n-Nonane	0.86	0.88	0.89	0.95	2.87	1.58
Isopropylbenzene	0.49	0.45	0.51	0.48	0.99	0.67
a-Pinene	ND	ND	ND	ND	0.25	1.22
n-Propylbenzene	0.94	0.86	1.07	1.08	2.48	1.78
m-Ethyltoluene	2.52	2.41	2.93	2.95	8.41	5.49
p-Ethyltoluene	1.51	1.44	1.75	1.66	4.41	3.02
1,3,5-Trimethylbenzene	1.27	1.21	1.55	1.62	4.39	2.73
o-Ethyltoluene	1.19	0.96	1.28	1.32	2.95	2.38
b-Pinene	0.56	0.44	0.81	0.82	0.90	1.68
1,2,4-Trimethylbenzene	3.64	3.50	4.50	4.62	11.84	7.65
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.76	0.59	0.75	0.64	3.93	1.33
1,2,3-Trimethylbenzene	0.81	0.75	1.19	0.99	3.12	1.71
m-Diethylbenzene	0.41	0.46	0.49	0.51	1.14	0.75
p-Diethylbenzene	0.46	0.40	0.50	0.55	1.14	0.68
1-Undecene	ND	ND	0.10	0.09	0.59	0.12
n-Undecane	0.60	0.51	0.67	0.61	2.13	1.07
1-Dodecene	0.17	0.07	0.33	0.28	0.28	0.19
n-Dodecane	0.31	0.24	0.46	0.38	1.17	0.60
1-Tridecene	ND	ND	ND	0.06	0.05	0.07
n-Tridecane	0.09	0.05	0.13	0.15	0.36	0.23
TNMOC (w/ unknowns)	303.19	297.64	322.95	324.90	836.20	640.48
TNMOC (speciated)	263.65	260.61	273.69	276.14	720.46	522.08

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SITE CODE: CAMS 13
All concentrations reported in ppbC

Sample No.:	**15049D1**	**15049R1**	**15050D2**	**15050R2**
Sampling Date:	**9/30/98**	**9/30/98**	**9/30/98**	**9/30/98**
Analysis Date:	**10/28/98**	**10/28/98**	**10/28/98**	**10/28/98**
Compound				
Ethylene	18.55	18.62	18.63	19.00
Acetylene	15.44	15.27	14.98	15.26
Ethane	45.81	44.68	45.24	45.36
Propylene	8.96	8.98	9.06	9.10
Propane	25.01	25.01	24.95	25.39
Propyne	0.80	0.72	0.74	0.80
Isobutane	17.75	17.78	17.70	17.96
Isobutene/1-Butene	11.56	11.64	11.48	11.68
1,3-Butadiene	2.35	2.33	2.29	2.32
n-Butane	86.04	85.41	85.55	86.58
trans-2-Butene	5.71	5.06	5.68	5.01
cis-2-Butene	5.41	5.49	5.33	5.44
3-Methyl-1-butene	2.83	2.97	2.98	2.76
Isopentane	152.75	151.76	167.90	170.97
1-Pentene	7.26	7.38	7.13	7.61
2-Methyl-1-butene	9.02	9.06	8.71	9.09
n-Pentane	72.40	71.91	72.08	72.90
Isoprene	1.83	1.91	1.83	1.91
trans-2-Pentene	12.87	12.89	12.45	12.89
cis-2-Pentene	6.49	6.49	6.26	6.59
2-Methyl-2-butene	13.09	13.00	12.55	13.16
2,2-Dimethylbutane	6.99	6.91	6.85	7.13
Cyclopentene	2.79	2.74	2.75	2.90
4-Methyl-1-pentene	0.68	0.71	0.73	0.70
Cyclopentane	6.65	6.64	6.56	6.70
2,3-Dimethylbutane	62.99	63.21	62.24	64.72
2-Methylpentane	37.39	37.34	37.92	39.18
3-Methylpentane	22.49	22.33	22.12	22.80
2-Methyl-1-pentene	2.21	2.28	2.22	2.31
1-Hexene	1.43	1.40	1.45	1.45
2-Ethyl-1-butene	ND	ND	ND	ND
n-Hexane	23.34	23.15	22.18	23.54
trans-2-Hexene	2.49	2.29	2.01	2.31
cis-2-Hexene	1.28	1.27	1.22	1.24
Methylcyclopentane	12.34	12.32	12.16	12.50
2,4-Dimethylpentane	4.52	4.62	4.31	4.46
Benzene	16.15	16.49	17.58	18.39
Cyclohexane	4.00	4.12	3.58	4.05
2-Methylhexane	9.69	10.27	9.52	9.97
2,3-Dimethylpentane	4.14	4.72	3.97	4.24
3-Methylhexane	10.68	11.04	10.72	11.14
1-Heptene	ND	ND	ND	ND
2,2,4-Trimethylpentane	16.23	16.04	15.96	16.32
n-Heptane	8.71	8.64	8.53	8.88
Methylcyclohexane	4.63	4.49	4.61	4.51
2,2,3-Trimethylpentane	3.80	4.21	3.76	3.88
2,3,4-Trimethylpentane	5.75	5.59	5.74	5.86
Toluene	58.00	58.06	56.61	58.32
2-Methylheptane	3.25	3.30	3.31	3.32
3-Methylheptane	3.29	3.30	3.24	3.38
1-Octene	0.25	0.23	0.32	0.25
n-Octane	3.52	3.44	3.41	3.42
Ethylbenzene	9.35	9.41	9.21	9.57
m-Xylene/p-Xylene	30.36	30.55	29.91	31.12
Styrene	2.54	2.78	3.57	3.50
o-Xylene	10.86	10.99	10.77	11.34
1-Nonene	0.45	0.45	0.54	0.80
n-Nonane	3.12	3.22	3.04	3.41
Isopropylbenzene	1.02	1.18	1.11	1.21
a-Pinene	1.74	1.74	2.06	1.72
n-Propylbenzene	2.69	2.83	2.61	2.71
m-Ethyltoluene	8.61	8.92	8.55	9.02
p-Ethyltoluene	4.84	4.96	4.83	4.96
1,3,5-Trimethylbenzene	5.32	5.53	5.24	5.48
o-Ethyltoluene	3.38	3.31	3.30	3.35
b-Pinene	1.65	1.73	2.27	2.56
1,2,4-Trimethylbenzene	12.77	13.14	12.44	13.23
1-Decene	ND	ND	ND	ND
n-Decane	4.69	4.71	4.57	4.78
1,2,3-Trimethylbenzene	3.02	3.28	3.07	3.19
m-Diethylbenzene	1.31	1.39	1.38	1.42
p-Diethylbenzene	1.14	1.22	1.11	1.35
1-Undecene	0.30	0.33	0.30	0.32
n-Undecane	2.77	2.83	2.70	2.82
1-Dodecene	0.26	0.37	0.30	0.52
n-Dodecane	1.23	1.41	1.10	1.24
1-Tridecene	0.08	0.06	0.10	0.07
n-Tridecane	0.41	0.48	0.36	0.39
TNMOC (w/ unknowns)	1105.03	1110.96	1129.62	1169.89
TNMOC (speciated)	975.52	976.35	983.55	1009.73

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**12967**	**12968**	**13015**	**13023D1**	**13023R1**	**13024D2**
Sampling Date:	**6/15/98**	**6/16/98**	**6/23/98**	**6/24/98**	**6/24/98**	**6/24/98**
Analysis Date:	**VOID**	**VOID**	**7/9/98**	**7/8/98**	**7/9/98**	**7/8/98**
Compound						
Ethylene			2.16	2.04	1.77	2.09
Acetylene			1.56	2.21	2.11	2.28
Ethane			3.12	5.81	5.71	5.56
Propylene			1.13	0.94	0.93	0.96
Propane			2.46	5.87	5.79	5.70
Propyne			0.15	0.10	0.10	0.11
Isobutane			0.83	1.60	1.58	1.55
Isobutene/1-Butene			3.27	3.73	3.77	2.71
1,3-Butadiene			0.12	0.13	0.14	0.13
n-Butane			3.36	4.90	5.07	4.90
trans-2-Butene			0.10	0.07	0.08	0.10
cis-2-Butene			0.12	0.11	0.10	0.11
3-Methyl-1-butene			1.03	0.57	0.60	0.64
Isopentane			17.56	15.08	15.30	14.10
1-Pentene			0.25	0.31	0.32	0.32
2-Methyl-1-butene			0.41	0.71	0.73	0.59
n-Pentane			2.34	4.65	4.52	4.29
Isoprene			2.52	2.01	1.93	1.96
trans-2-Pentene			0.45	0.64	0.64	0.60
cis-2-Pentene			0.21	0.32	0.33	0.30
2-Methyl-2-butene			0.51	0.97	0.94	0.72
2,2-Dimethylbutane			0.25	0.52	0.55	0.49
Cyclopentene			0.47	0.44	0.48	0.35
4-Methyl-1-pentene			0.05	0.11	0.13	0.10
Cyclopentane			0.26	0.39	0.38	0.38
2,3-Dimethylbutane			6.00	10.22	10.02	8.98
2-Methylpentane			3.95	5.98	6.74	5.40
3-Methylpentane			1.90	3.79	3.48	3.48
2-Methyl-1-pentene			0.21	0.45	0.42	0.39
1-Hexene			0.26	0.35	0.36	0.35
2-Ethyl-1-butene			ND	ND	ND	ND
n-Hexane			2.54	5.27	5.07	4.78
trans-2-Hexene			0.19	0.43	0.39	0.35
cis-2-Hexene			0.13	0.28	0.25	0.25
Methylcyclopentane			1.34	2.71	2.61	2.40
2,4-Dimethylpentane			0.56	1.08	1.05	0.91
Benzene			2.03	2.62	2.50	2.51
Cyclohexane			0.46	0.93	0.89	0.85
2-Methylhexane			2.33	3.78	3.52	3.55
2,3-Dimethylpentane			0.78	1.42	1.34	1.32
3-Methylhexane			1.75	3.44	3.29	3.14
1-Heptene			0.27	ND	ND	ND
2,2,4-Trimethylpentane			2.74	4.91	4.80	4.46
n-Heptane			1.66	3.14	3.04	2.87
Methylcyclohexane			0.82	1.64	1.60	1.53
2,2,3-Trimethylpentane			0.78	1.70	1.67	1.21
2,3,4-Trimethylpentane			1.23	1.87	1.81	1.73
Toluene			7.65	12.14	12.10	11.20
2-Methylheptane			0.65	1.03	1.03	0.95
3-Methylheptane			0.46	0.83	0.81	0.95
1-Octene			0.14	0.12	0.11	0.14
n-Octane			0.78	1.28	1.28	1.18
Ethylbenzene			1.63	2.85	2.80	2.52
m-Xylene/p-Xylene			5.16	9.48	9.31	8.40
Styrene			1.19	1.08	1.06	1.28
o-Xylene			2.05	3.74	3.68	3.23
1-Nonene			0.17	0.20	0.18	0.20
n-Nonane			0.41	0.64	0.59	0.57
Isopropylbenzene			0.08	0.15	0.14	0.12
a-Pinene			0.29	0.36	0.33	0.32
n-Propylbenzene			0.52	0.89	0.84	0.71
m-Ethyltoluene			1.97	3.06	3.06	2.50
p-Ethyltoluene			1.10	1.43	1.38	1.16
1,3,5-Trimethylbenzene			0.99	1.36	1.43	1.10
o-Ethyltoluene			0.70	1.26	1.35	0.99
b-Pinene			1.27	0.64	0.97	1.08
1,2,4-Trimethylbenzene			2.41	4.39	4.42	3.45
1-Decene			ND	ND	ND	ND
n-Decane			0.68	0.62	0.56	0.58
1,2,3-Trimethylbenzene			0.44	0.98	0.80	0.66
m-Diethylbenzene			0.23	0.35	0.34	0.21
p-Diethylbenzene			0.18	0.36	0.40	0.20
1-Undecene			0.05	ND	ND	ND
n-Undecane			0.77	0.75	0.77	0.61
1-Dodecene			ND	ND	ND	ND
n-Dodecane			2.62	1.71	1.24	3.64
1-Tridecene			0.08	ND	ND	ND
n-Tridecane			2.92	ND	0.10	0.07
TNMOC (w/ unknowns)			186.84	230.19	218.67	208.51
TNMOC (speciated)			114.25	161.93	159.95	149.50

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**13024R2**	**13053**	**13084**	**13092**	**13211**	**13206**
Sampling Date:	**6/24/98**	**6/25/98**	**6/26/98**	**6/29/98**	**6/30/98**	**7/1/98**
Analysis Date:	**7/9/98**	**7/10/98**	**7/10/98**	**7/10/98**	**7/10/98**	**7/11/98**
Compound						
Ethylene	1.88	1.90	2.38	3.61	1.67	1.23
Acetylene	2.14	1.48	1.63	2.12	1.30	1.72
Ethane	5.70	5.40	6.14	8.09	3.88	4.93
Propylene	0.97	1.02	0.96	1.42	1.02	1.31
Propane	5.87	4.62	5.53	6.77	3.18	4.11
Propyne	0.10	0.09	0.14	0.11	0.08	0.15
Isobutane	1.60	1.31	2.54	3.01	0.93	1.45
Isobutene/1-Butene	2.77	2.10	2.27	2.73	1.94	2.47
1,3-Butadiene	0.13	0.16	0.11	0.13	0.14	0.19
n-Butane	4.77	3.45	5.84	4.85	2.89	3.65
trans-2-Butene	0.10	0.10	0.07	0.06	0.07	0.14
cis-2-Butene	0.12	0.11	0.09	0.10	0.09	0.14
3-Methyl-1-butene	0.75	1.00	1.05	0.70	0.21	1.04
Isopentane	14.47	11.75	15.13	14.31	9.84	16.66
1-Pentene	0.33	0.20	0.30	0.20	0.17	0.38
2-Methyl-1-butene	0.64	0.38	0.47	0.34	0.33	0.58
n-Pentane	4.53	3.20	2.96	3.19	2.18	3.28
Isoprene	1.93	2.11	2.35	1.33	1.07	1.33
trans-2-Pentene	0.64	0.39	0.33	0.27	0.32	0.55
cis-2-Pentene	0.31	0.16	0.14	0.12	0.16	0.24
2-Methyl-2-butene	0.66	0.40	0.28	0.20	0.34	0.50
2,2-Dimethylbutane	0.49	0.25	0.40	0.26	0.23	0.46
Cyclopentene	0.36	0.32	0.93	0.91	0.44	0.83
4-Methyl-1-pentene	0.10	ND	ND	ND	0.04	0.05
Cyclopentane	0.40	0.29	0.28	0.28	0.20	0.36
2,3-Dimethylbutane	9.23	4.84	4.21	3.98	3.69	5.62
2-Methylpentane	5.56	3.45	3.38	3.26	2.94	4.44
3-Methylpentane	3.48	1.64	1.68	1.50	1.35	1.97
2-Methyl-1-pentene	0.37	0.14	0.15	0.14	0.14	0.20
1-Hexene	0.40	0.22	0.16	0.19	0.16	0.22
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	5.11	2.44	2.26	2.48	1.86	2.79
trans-2-Hexene	0.48	0.19	0.11	0.13	0.16	0.23
cis-2-Hexene	0.24	0.09	0.07	0.08	0.08	0.12
Methylcyclopentane	2.44	1.21	1.14	1.18	0.97	1.30
2,4-Dimethylpentane	0.91	0.44	0.37	0.36	0.36	0.49
Benzene	2.43	1.77	2.13	2.34	1.97	2.52
Cyclohexane	0.81	10.14	0.53	0.72	0.33	1.07
2-Methylhexane	3.00	2.35	1.81	1.38	1.16	2.11
2,3-Dimethylpentane	0.91	0.75	0.57	0.33	0.31	0.77
3-Methylhexane	3.10	1.53	1.16	1.20	1.02	1.65
1-Heptene	ND	0.22	0.36	0.20	0.27	0.40
2,2,4-Trimethylpentane	4.40	2.02	1.59	1.69	1.60	2.30
n-Heptane	2.98	1.17	1.13	1.21	1.10	1.46
Methylcyclohexane	1.57	0.83	0.75	0.90	0.57	0.77
2,2,3-Trimethylpentane	1.37	0.58	0.56	0.50	0.48	0.68
2,3,4-Trimethylpentane	1.77	0.79	0.68	0.63	0.68	0.95
Toluene	11.44	6.56	6.10	5.89	5.51	8.93
2-Methylheptane	0.96	0.42	0.48	0.41	0.35	0.50
3-Methylheptane	0.76	0.44	0.32	0.43	0.29	0.40
1-Octene	0.14	0.13	0.13	0.11	0.06	0.06
n-Octane	1.24	0.59	0.64	0.67	0.50	0.62
Ethylbenzene	2.60	1.32	1.14	1.18	1.14	1.67
m-Xylene/p-Xylene	8.72	4.11	3.49	3.64	3.68	5.36
Styrene	1.32	0.87	1.35	1.07	0.75	1.24
o-Xylene	3.40	1.61	1.41	1.41	1.42	2.08
1-Nonene	0.26	0.18	0.18	0.15	0.08	0.18
n-Nonane	0.60	0.43	0.39	0.38	0.30	0.50
Isopropylbenzene	0.12	0.06	0.05	0.09	0.06	0.10
a-Pinene	0.32	0.23	0.09	0.17	0.14	0.36
n-Propylbenzene	0.74	0.40	0.32	0.31	0.31	0.53
m-Ethyltoluene	2.66	1.45	1.16	1.09	1.22	1.85
p-Ethyltoluene	1.26	0.73	0.58	0.53	0.56	0.89
1,3,5-Trimethylbenzene	1.14	0.56	0.36	0.44	0.55	0.79
o-Ethyltoluene	1.04	0.60	0.51	0.42	0.47	0.76
b-Pinene	1.15	0.86	1.61	0.70	0.35	1.04
1,2,4-Trimethylbenzene	3.45	1.83	1.61	1.39	1.64	2.46
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.54	0.95	0.35	0.26	0.31	0.81
1,2,3-Trimethylbenzene	0.69	0.33	0.27	0.25	0.27	0.44
m-Diethylbenzene	0.23	0.18	0.15	0.07	0.09	0.21
p-Diethylbenzene	0.21	0.13	0.15	0.12	0.14	0.21
1-Undecene	ND	0.25	ND	ND	ND	ND
n-Undecane	0.57	2.80	0.28	0.46	0.27	0.69
1-Dodecene	ND	0.51	ND	ND	ND	ND
n-Dodecane	4.35	7.17	0.79	ND	ND	0.55
1-Tridecene	ND	0.06	0.04	ND	ND	ND
n-Tridecane	0.04	0.26	0.05	0.03	0.04	0.21
TNMOC (w/ unknowns)	206.39	159.68	143.86	150.39	115.25	164.41
TNMOC (speciated)	152.28	115.06	101.12	101.18	74.38	113.25

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**13193D1**	**13193R1**	**13208D2**	**13208R2**	**13212**	**13248**
Sampling Date:	**7/2/98**	**7/2/98**	**7/2/98**	**7/2/98**	**7/3/98**	**7/6/98**
Analysis Date:	**7/8/98**	**7/8/98**	**7/10/98**	**7/10/98**	**7/11/98**	**7/11/98**
Compound						
Ethylene	0.82	2.11	0.87	2.31	1.95	1.75
Acetylene	1.51	1.54	1.56	1.58	1.05	1.92
Ethane	7.90	8.09	8.15	8.34	9.41	5.65
Propylene	1.07	1.11	1.05	1.10	0.89	1.08
Propane	7.11	7.33	7.44	7.46	7.99	5.49
Propyne	0.13	0.10	0.08	0.12	0.09	0.11
Isobutane	2.06	2.10	2.10	2.13	2.96	1.68
Isobutene/1-Butene	1.85	1.94	1.77	1.87	1.71	2.67
1,3-Butadiene	0.13	0.16	0.15	0.16	0.10	0.18
n-Butane	5.62	5.99	5.33	5.39	7.24	7.54
trans-2-Butene	0.13	0.13	0.10	0.11	0.20	0.28
cis-2-Butene	0.14	0.15	0.12	0.10	0.23	0.30
3-Methyl-1-butene	0.86	1.10	0.71	1.06	0.83	1.70
Isopentane	12.46	12.87	13.30	13.83	18.72	19.24
1-Pentene	0.18	0.25	0.22	0.21	0.40	0.60
2-Methyl-1-butene	0.37	0.42	0.43	0.48	0.69	0.80
n-Pentane	3.52	3.58	3.66	3.75	4.99	4.70
Isoprene	1.95	2.08	1.66	1.52	1.05	0.84
trans-2-Pentene	0.41	0.45	0.41	0.43	0.79	1.00
cis-2-Pentene	0.17	0.19	0.17	0.17	0.38	0.45
2-Methyl-2-butene	0.38	0.39	0.20	0.25	0.83	1.02
2,2-Dimethylbutane	0.27	0.32	0.34	0.36	0.51	0.48
Cyclopentene	1.01	1.01	0.99	1.04	1.63	1.24
4-Methyl-1-pentene	ND	ND	ND	ND	0.05	0.03
Cyclopentane	0.32	0.31	0.32	0.32	0.51	0.55
2,3-Dimethylbutane	3.75	3.81	3.73	3.88	5.69	6.32
2-Methylpentane	3.46	3.55	3.49	3.63	5.25	5.12
3-Methylpentane	1.50	1.53	1.52	1.56	2.55	2.40
2-Methyl-1-pentene	0.13	0.12	0.13	0.14	0.15	0.27
1-Hexene	0.12	0.12	0.14	0.15	0.26	0.25
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	1.91	1.96	2.15	2.14	3.70	3.72
trans-2-Hexene	0.09	0.11	0.18	0.11	0.22	0.31
cis-2-Hexene	0.07	0.07	0.07	0.07	0.11	0.14
Methylcyclopentane	1.07	1.09	1.08	1.12	1.46	1.56
2,4-Dimethylpentane	0.34	0.37	0.35	0.37	0.44	0.49
Benzene	1.92	2.08	2.15	2.35	3.14	2.98
Cyclohexane	0.58	0.61	0.46	0.52	0.66	0.50
2-Methylhexane	1.22	1.20	1.32	1.67	2.07	2.07
2,3-Dimethylpentane	0.35	0.35	0.34	0.57	0.74	0.76
3-Methylhexane	1.15	1.17	1.11	1.23	1.69	1.60
1-Heptene	ND	ND	0.23	ND	0.21	0.25
2,2,4-Trimethylpentane	1.88	2.01	1.73	2.04	1.64	2.07
n-Heptane	0.98	1.02	1.06	1.09	1.56	1.33
Methylcyclohexane	0.78	0.82	0.81	0.82	1.01	0.76
2,2,3-Trimethylpentane	0.50	0.52	0.47	0.53	0.58	0.58
2,3,4-Trimethylpentane	0.70	0.73	0.69	0.73	0.61	0.73
Toluene	7.15	7.21	7.12	7.40	8.08	9.10
2-Methylheptane	0.39	0.43	0.42	0.45	0.59	0.50
3-Methylheptane	0.30	0.39	0.30	0.31	0.39	0.33
1-Octene	0.05	0.06	0.05	0.06	0.08	0.08
n-Octane	0.59	0.60	0.64	0.65	0.84	0.65
Ethylbenzene	1.05	1.05	1.06	1.14	1.42	1.77
m-Xylene/p-Xylene	3.38	3.34	3.31	3.48	5.00	6.51
Styrene	2.89	2.88	3.07	3.31	1.45	1.19
o-Xylene	1.35	1.38	1.35	1.44	1.71	2.19
1-Nonene	0.09	0.09	0.09	0.11	0.11	0.16
n-Nonane	0.40	0.41	0.42	0.42	0.53	0.45
Isopropylbenzene	0.10	0.10	0.10	0.10	0.07	0.09
a-Pinene	0.38	0.37	0.39	0.42	0.16	0.22
n-Propylbenzene	0.45	0.43	0.41	0.46	0.41	0.49
m-Ethyltoluene	1.64	1.67	1.52	1.58	1.28	1.63
p-Ethyltoluene	0.77	0.81	0.72	0.76	0.72	0.86
1,3,5-Trimethylbenzene	0.78	0.80	0.78	0.69	0.52	0.73
o-Ethyltoluene	0.60	0.63	0.70	0.70	0.55	0.63
b-Pinene	0.79	0.81	0.77	0.96	1.31	0.88
1,2,4-Trimethylbenzene	2.22	2.34	2.19	2.32	1.83	2.35
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.53	0.47	0.47	0.50	0.46	0.40
1,2,3-Trimethylbenzene	0.45	0.46	0.35	0.47	0.38	0.40
m-Diethylbenzene	0.11	0.09	0.10	0.14	0.14	0.11
p-Diethylbenzene	0.11	0.12	0.13	0.15	0.14	0.16
1-Undecene	ND	ND	ND	0.10	ND	0.04
n-Undecane	0.50	0.42	0.33	0.36	0.39	0.33
1-Dodecene	ND	ND	ND	ND	ND	ND
n-Dodecane	ND	0.31	ND	0.41	ND	0.31
1-Tridecene	0.26	ND	0.10	0.17	ND	ND
n-Tridecane	0.22	0.10	0.29	0.07	0.05	0.07
TNMOC (w/ unknowns)	142.63	141.01	148.16	145.00	176.29	182.84
TNMOC (speciated)	100.40	104.77	101.50	107.93	127.53	128.14

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**13325**	**13327**	**13367**	**13373**	**13370**	**13526**
Sampling Date:	**7/7/98**	**7/8/98**	**7/9/98**	**7/10/98**	**7/13/98**	**7/14/98**
Analysis Date:	**7/11/98**	**7/16/98**	**8/7/98**	**7/16/98**	**7/16/98**	**8/7/98**
Compound						
Ethylene	1.76	1.52	2.71	1.44	1.86	5.93
Acetylene	2.13	2.65	1.32	2.19	1.29	1.16
Ethane	4.24	4.23	5.78	4.14	33.98	20.07
Propylene	0.94	1.71	1.47	1.55	0.92	1.34
Propane	4.18	5.05	4.60	6.32	38.32	17.80
Propyne	0.10	0.26	0.06	0.19	0.16	ND
Isobutane	1.31	3.41	2.84	2.22	9.35	6.22
Isobutene/1-Butene	1.87	2.70	2.29	2.12	1.64	5.46
1,3-Butadiene	0.13	0.31	0.24	0.29	ND	0.13
n-Butane	5.47	24.62	16.09	4.08	30.74	11.97
trans-2-Butene	0.25	1.77	1.51	0.19	1.08	0.44
cis-2-Butene	0.24	1.94	1.76	0.18	1.21	0.60
3-Methyl-1-butene	0.95	1.29	0.79	0.42	1.65	1.30
Isopentane	15.51	55.97	38.56	15.03	49.63	26.33
1-Pentene	0.41	3.20	2.24	0.32	2.09	0.71
2-Methyl-1-butene	0.88	4.84	3.14	0.59	3.16	0.13
n-Pentane	3.87	20.97	14.39	2.86	21.52	7.66
Isoprene	0.58	1.01	1.26	1.84	0.59	0.86
trans-2-Pentene	0.83	6.17	4.45	0.48	3.82	1.02
cis-2-Pentene	0.37	3.19	2.45	0.21	1.93	0.99
2-Methyl-2-butene	0.85	8.16	5.69	0.57	4.95	1.52
2,2-Dimethylbutane	0.39	2.64	2.25	0.34	1.93	1.03
Cyclopentene	1.01	2.32	1.46	0.92	1.61	2.48
4-Methyl-1-pentene	ND	0.40	0.20	ND	0.30	ND
Cyclopentane	0.44	3.18	2.18	0.28	2.62	0.99
2,3-Dimethylbutane	5.18	44.66	27.81	3.46	30.25	3.16
2-Methylpentane	4.22	23.16	14.56	3.50	18.84	6.05
3-Methylpentane	2.08	14.95	9.38	2.04	11.21	3.25
2-Methyl-1-pentene	0.17	1.44	1.08	0.12	0.88	0.07
1-Hexene	0.24	0.90	0.53	0.13	0.64	0.51
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	2.92	18.34	11.52	5.19	15.69	6.98
trans-2-Hexene	0.25	1.59	0.89	0.10	0.99	0.23
cis-2-Hexene	0.11	0.85	0.47	0.06	0.52	ND
Methylcyclopentane	1.25	7.14	4.60	1.57	6.22	2.40
2,4-Dimethylpentane	0.40	2.32	1.92	0.34	1.62	1.01
Benzene	2.48	9.55	6.10	2.88	6.24	4.37
Cyclohexane	0.40	1.44	1.28	2.26	3.13	1.14
2-Methylhexane	1.77	5.17	3.60	1.81	5.22	1.99
2,3-Dimethylpentane	0.62	2.01	1.64	0.59	1.96	1.23
3-Methylhexane	1.23	6.63	3.92	2.45	5.53	2.04
1-Heptene	0.25	0.42	0.12	0.09	0.94	0.02
2,2,4-Trimethylpentane	1.65	7.39	4.98	1.55	4.89	2.07
n-Heptane	1.14	5.50	3.64	2.79	5.60	2.20
Methylcyclohexane	0.68	2.17	1.44	1.83	4.03	1.56
2,2,3-Trimethylpentane	0.50	2.01	1.25	0.53	1.59	0.62
2,3,4-Trimethylpentane	0.64	2.50	1.84	0.58	1.70	0.85
Toluene	7.48	29.69	18.37	8.81	18.64	8.58
2-Methylheptane	0.42	1.59	1.23	0.49	1.65	0.90
3-Methylheptane	0.28	1.52	1.28	0.41	1.25	0.71
1-Octene	0.10	0.18	0.06	0.07	0.30	0.10
n-Octane	0.55	2.10	1.68	0.67	2.37	2.38
Ethylbenzene	1.44	5.29	3.57	1.44	3.20	1.86
m-Xylene/p-Xylene	5.18	19.20	11.99	4.54	11.93	6.17
Styrene	1.13	0.91	1.25	1.05	2.59	1.84
o-Xylene	1.77	6.38	4.10	1.58	3.80	2.07
1-Nonene	0.17	0.25	0.14	0.08	0.21	0.22
n-Nonane	0.39	1.30	1.10	0.34	1.22	0.90
Isopropylbenzene	0.05	0.32	0.69	0.06	0.18	0.54
a-Pinene	0.15	0.40	0.24	0.72	0.34	ND
n-Propylbenzene	0.39	1.43	1.21	0.29	0.92	0.92
m-Ethyltoluene	1.36	4.80	3.40	1.11	2.98	1.75
p-Ethyltoluene	0.72	2.51	2.10	0.53	1.62	1.22
1,3,5-Trimethylbenzene	0.59	2.21	1.62	0.56	1.38	0.86
o-Ethyltoluene	0.53	2.01	1.48	0.55	1.10	0.72
b-Pinene	0.90	0.69	1.30	1.40	1.32	2.54
1,2,4-Trimethylbenzene	1.95	6.46	4.69	1.55	4.21	2.62
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.35	0.78	0.80	0.37	0.57	0.87
1,2,3-Trimethylbenzene	0.33	1.10	1.15	0.26	0.66	0.73
m-Diethylbenzene	0.10	0.31	0.57	0.09	0.22	0.58
p-Diethylbenzene	0.13	0.36	0.60	0.11	0.25	0.60
1-Undecene	ND	0.04	ND	ND	ND	ND
n-Undecane	0.25	0.25	0.75	0.19	0.45	0.87
1-Dodecene	ND	ND	0.48	ND	ND	1.38
n-Dodecane	0.24	ND	0.22	0.07	ND	0.29
1-Tridecene	ND	ND	ND	0.02	ND	ND
n-Tridecane	0.03	ND	0.09	ND	ND	0.08
TNMOC (w/ unknowns)	138.14	481.96	335.23	144.91	482.34	241.80
TNMOC (speciated)	103.85	415.74	288.48	109.99	407.42	200.21

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**13525**	**13586**	**13614**	**13615**	**13752**	**13753**
Sampling Date:	**7/15/98**	**7/16/98**	**7/17/98**	**7/20/98**	**7/21/98**	**7/22/98**
Analysis Date:	**8/8/98**	**8/7/98**	**8/8/98**	**8/8/98**	**8/20/98**	**8/20/98**
Compound						
Ethylene	4.59	5.77	4.15	3.06	2.12	1.52
Acetylene	2.64	3.25	1.36	1.38	1.41	1.04
Ethane	11.05	28.09	22.70	11.70	7.88	5.39
Propylene	2.16	2.16	1.31	1.39	1.18	1.02
Propane	10.14	23.12	19.63	11.48	6.34	4.36
Propyne	0.15	0.22	0.10	0.02	0.09	ND
Isobutane	9.53	6.42	7.63	3.15	2.09	1.49
Isobutene/1-Butene	3.06	2.98	1.83	2.60	1.78	1.47
1,3-Butadiene	0.36	0.30	0.09	0.25	0.21	0.12
n-Butane	20.52	20.62	21.00	7.44	5.02	4.47
trans-2-Butene	1.92	2.23	1.46	0.53	0.44	0.39
cis-2-Butene	2.17	1.79	1.48	0.71	0.52	0.54
3-Methyl-1-butene	1.36	1.51	0.68	0.03	0.17	0.09
Isopentane	69.60	62.31	46.56	19.03	16.34	11.09
1-Pentene	3.68	3.13	2.22	0.64	0.58	0.66
2-Methyl-1-butene	4.80	3.44	2.66	0.60	0.56	0.45
n-Pentane	24.01	22.23	18.54	5.47	4.24	3.36
Isoprene	1.21	1.31	0.69	0.81	0.99	0.64
trans-2-Pentene	6.46	5.67	4.42	1.16	1.08	0.95
cis-2-Pentene	3.47	3.17	2.34	0.71	0.63	0.63
2-Methyl-2-butene	8.22	6.87	5.26	0.99	0.93	0.85
2,2-Dimethylbutane	2.95	2.19	1.88	0.69	0.65	0.65
Cyclopentene	1.82	2.10	2.64	0.79	0.88	0.50
4-Methyl-1-pentene	0.36	0.31	0.12	0.01	0.09	0.05
Cyclopentane	3.28	2.74	2.14	0.63	0.55	0.61
2,3-Dimethylbutane	39.55	35.16	25.93	6.39	4.19	4.49
2-Methylpentane	20.30	19.15	14.79	3.87	3.05	3.03
3-Methylpentane	13.06	12.61	10.01	2.60	2.20	1.77
2-Methyl-1-pentene	1.24	1.35	0.97	0.20	0.22	0.26
1-Hexene	0.72	1.03	0.70	0.21	0.26	0.15
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	17.52	18.78	15.98	3.56	2.93	2.27
trans-2-Hexene	1.13	1.36	1.10	0.19	0.20	0.16
cis-2-Hexene	0.68	0.97	0.61	0.14	0.09	0.16
Methylcyclopentane	6.49	7.15	5.57	1.68	1.33	4.10
2,4-Dimethylpentane	2.31	2.67	2.08	0.91	0.78	1.70
Benzene	8.51	11.66	9.51	3.07	2.76	5.79
Cyclohexane	25.20	2.29	2.03	4.04	2.13	1.21
2-Methylhexane	4.94	6.83	5.34	1.55	1.62	0.76
2,3-Dimethylpentane	2.21	2.97	2.30	1.00	1.05	0.69
3-Methylhexane	5.70	7.34	5.58	1.55	1.41	1.18
1-Heptene	ND	ND	ND	0.12	0.14	0.11
2,2,4-Trimethylpentane	6.98	9.38	6.01	2.09	1.93	1.41
n-Heptane	5.12	7.79	6.32	1.55	1.26	1.07
Methylcyclohexane	2.19	3.12	2.88	1.10	0.89	0.71
2,2,3-Trimethylpentane	1.83	2.61	1.77	0.54	0.45	0.13
2,3,4-Trimethylpentane	2.39	3.66	2.51	0.89	0.78	0.64
Toluene	34.27	44.78	31.45	8.58	7.77	6.20
2-Methylheptane	1.93	2.90	1.96	0.51	0.34	0.58
3-Methylheptane	1.59	2.59	1.83	0.68	0.61	0.58
1-Octene	0.07	0.14	0.07	0.20	0.06	0.08
n-Octane	2.49	4.34	2.87	1.04	0.89	0.69
Ethylbenzene	5.29	8.77	5.99	1.81	1.87	1.41
m-Xylene/p-Xylene	18.32	30.43	22.17	5.99	5.80	4.55
Styrene	1.80	1.62	1.92	1.44	1.32	1.17
o-Xylene	6.55	10.42	7.19	2.23	2.00	1.65
1-Nonene	0.40	0.43	0.21	0.14	0.09	0.16
n-Nonane	1.89	3.57	1.83	0.76	0.76	0.66
Isopropylbenzene	0.79	1.55	0.70	0.58	0.48	0.52
a-Pinene	0.23	1.06	0.15	0.16	0.43	0.21
n-Propylbenzene	1.81	3.11	1.75	0.76	0.79	0.68
m-Ethyltoluene	5.52	8.45	5.48	1.87	1.69	1.41
p-Ethyltoluene	3.20	5.32	3.18	1.34	1.14	1.05
1,3,5-Trimethylbenzene	3.23	4.76	3.16	1.14	0.99	0.85
o-Ethyltoluene	2.24	3.42	2.28	0.83	0.83	0.57
b-Pinene	0.88	1.90	2.47	1.76	0.99	1.04
1,2,4-Trimethylbenzene	8.05	12.67	7.90	2.75	2.56	2.23
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.89	3.65	1.25	0.80	0.79	0.62
1,2,3-Trimethylbenzene	1.95	3.02	1.84	0.69	0.62	0.64
m-Diethylbenzene	0.71	1.98	0.73	0.50	0.50	0.40
p-Diethylbenzene	0.70	1.80	1.05	0.37	0.37	0.39
1-Undecene	0.10	0.20	0.11	ND	0.09	0.06
n-Undecane	1.71	3.46	1.26	1.01	0.98	0.71
1-Dodecene	0.27	0.31	1.21	0.56	ND	0.41
n-Dodecane	1.02	1.17	0.79	0.37	0.36	0.25
1-Tridecene	ND	ND	0.05	0.03	ND	0.05
n-Tridecane	0.33	0.31	0.17	0.36	0.13	0.13
TNMOC (w/ unknowns)	564.13	645.14	476.87	192.16	159.48	119.65
TNMOC (speciated)	476.78	539.96	407.85	151.75	121.72	104.01

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**13754**	**13735**	**13779**	**13892D1**	**13892R1**	**13893D2**
Sampling Date:	**7/23/98**	**7/24/98**	**7/27/98**	**7/28/98**	**7/28/98**	**7/28/98**
Analysis Date:	**8/20/98**	**8/21/98**	**8/21/98**	**8/28/98**	**9/14/98**	**8/28/98**
Compound						
Ethylene	2.83	2.19	2.74	2.63	2.60	2.57
Acetylene	1.11	0.80	1.04	1.72	1.60	1.77
Ethane	4.93	4.55	3.24	3.40	3.40	3.56
Propylene	1.26	1.02	1.50	1.19	1.20	1.16
Propane	4.25	3.94	3.75	3.81	4.05	3.92
Propyne	0.11	0.06	0.05	0.05	0.03	0.06
Isobutane	1.38	1.31	1.22	1.09	1.21	1.16
Isobutene/1-Butene	1.96	1.61	2.02	1.51	1.54	1.53
1,3-Butadiene	0.32	0.17	0.20	0.18	0.15	0.20
n-Butane	3.45	3.11	3.22	2.93	3.00	3.06
trans-2-Butene	0.43	0.41	0.42	0.37	0.38	0.45
cis-2-Butene	0.62	0.53	0.61	0.55	0.54	0.50
3-Methyl-1-butene	0.11	ND	0.16	0.14	0.15	0.12
Isopentane	21.05	12.33	19.05	14.77	16.37	14.20
1-Pentene	0.62	0.64	0.72	0.64	0.66	0.61
2-Methyl-1-butene	0.49	0.52	0.52	0.50	0.49	0.44
n-Pentane	3.66	3.24	3.74	3.35	3.42	3.43
Isoprene	0.96	0.61	2.20	2.38	2.52	2.38
trans-2-Pentene	1.10	0.95	1.04	0.89	0.93	0.96
cis-2-Pentene	0.65	0.70	0.59	0.67	0.69	0.61
2-Methyl-2-butene	0.96	0.81	0.95	0.86	0.93	0.88
2,2-Dimethylbutane	0.58	0.55	0.86	0.68	0.72	0.67
Cyclopentene	0.89	0.66	0.98	0.72	0.75	0.72
4-Methyl-1-pentene	ND	ND	ND	0.04	0.03	ND
Cyclopentane	0.59	0.49	0.58	0.56	0.62	0.56
2,3-Dimethylbutane	4.66	4.69	4.95	4.84	5.16	4.90
2-Methylpentane	2.93	3.05	3.68	3.22	3.54	3.51
3-Methylpentane	2.10	1.97	2.23	1.92	2.20	2.03
2-Methyl-1-pentene	0.26	0.25	0.26	0.19	0.19	0.22
1-Hexene	0.23	0.15	0.18	0.16	0.17	0.18
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	3.16	3.17	2.99	2.60	2.51	2.90
trans-2-Hexene	0.16	0.26	0.20	0.15	0.18	0.16
cis-2-Hexene	0.12	0.10	0.11	0.06	0.13	0.11
Methylcyclopentane	1.14	1.20	1.45	1.13	1.32	1.16
2,4-Dimethylpentane	0.71	0.78	0.77	0.74	0.78	0.69
Benzene	2.22	2.12	3.00	2.37	2.33	2.39
Cyclohexane	0.62	1.14	0.95	1.00	1.21	0.87
2-Methylhexane	1.36	1.51	1.50	1.44	1.51	1.43
2,3-Dimethylpentane	1.01	0.83	1.08	0.95	1.03	0.82
3-Methylhexane	2.24	1.21	2.02	1.32	1.45	1.34
1-Heptene	0.10	0.06	ND	0.20	0.17	0.05
2,2,4-Trimethylpentane	1.67	1.62	1.93	1.66	1.80	1.72
n-Heptane	1.24	1.16	1.26	1.10	1.31	1.19
Methylcyclohexane	0.92	0.87	0.85	0.83	0.87	0.78
2,2,3-Trimethylpentane	0.51	0.32	0.55	0.40	0.40	0.41
2,3,4-Trimethylpentane	0.70	0.68	0.80	0.71	0.89	0.76
Toluene	6.82	6.69	8.58	7.11	7.66	7.40
2-Methylheptane	0.57	0.57	0.61	0.56	0.52	0.61
3-Methylheptane	0.54	0.61	0.72	0.54	0.49	0.56
1-Octene	0.13	0.86	ND	0.08	0.09	0.04
n-Octane	0.79	0.88	0.91	0.76	0.76	0.75
Ethylbenzene	1.66	1.83	1.61	1.45	1.50	1.43
m-Xylene/p-Xylene	5.43	6.31	5.07	4.42	4.63	4.60
Styrene	2.15	1.19	2.47	1.07	1.10	0.93
o-Xylene	1.87	2.08	1.91	1.64	1.68	1.67
1-Nonene	0.13	0.06	ND	0.05	0.10	0.05
n-Nonane	0.75	0.82	0.72	0.59	0.65	0.65
Isopropylbenzene	0.55	0.47	0.46	0.46	0.42	0.49
a-Pinene	0.46	ND	0.23	0.23	0.28	0.32
n-Propylbenzene	0.77	0.78	0.75	0.62	0.60	0.62
m-Ethyltoluene	1.60	1.73	1.64	1.40	1.42	1.41
p-Ethyltoluene	1.20	1.10	1.12	0.93	0.97	0.97
1,3,5-Trimethylbenzene	0.94	1.07	0.87	0.80	0.80	0.85
o-Ethyltoluene	0.58	0.77	0.89	0.85	0.82	0.82
b-Pinene	1.71	1.17	2.03	0.84	0.86	0.70
1,2,4-Trimethylbenzene	2.53	2.57	2.35	2.02	2.06	2.12
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.63	0.85	0.70	0.62	0.66	0.65
1,2,3-Trimethylbenzene	0.61	0.65	0.68	0.59	0.55	0.67
m-Diethylbenzene	0.60	0.51	0.69	0.41	0.44	0.35
p-Diethylbenzene	0.61	0.52	0.48	0.38	0.34	0.35
1-Undecene	0.06	ND	0.12	0.06	0.05	ND
n-Undecane	0.79	0.80	0.70	0.72	0.73	0.62
1-Dodecene	0.47	0.34	0.71	0.09	0.03	0.07
n-Dodecane	0.26	0.23	0.19	0.33	0.30	0.16
1-Tridecene	0.06	ND	ND	ND	ND	ND
n-Tridecane	0.12	0.04	0.11	0.10	0.09	0.06
TNMOC (w/ unknowns)	172.52	133.95	158.32	124.50	132.15	124.23
TNMOC (speciated)	117.77	103.82	119.49	102.33	107.72	103.01

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**13893R2**	**13901**	**13896**	**13911**	**13948**	**13970**
Sampling Date:	**7/28/98**	**7/29/98**	**7/30/98**	**7/31/98**	**8/3/98**	**8/4/98**
Analysis Date:	**9/14/98**	**8/18/98**	**8/18/98**	**8/19/98**	**8/19/98**	**8/28/98**
Compound						
Ethylene	2.57	2.50	1.78	2.35	4.31	4.52
Acetylene	1.65	1.39	0.93	1.61	2.38	3.24
Ethane	ND	3.25	2.95	3.83	17.22	11.63
Propylene	1.23	1.29	1.03	1.23	2.14	1.77
Propane	4.20	3.38	3.38	3.90	16.10	11.33
Propyne	ND	ND	ND	ND	0.64	0.14
Isobutane	1.19	1.04	1.24	1.45	5.65	3.97
Isobutene/1-Butene	1.52	2.15	1.68	2.23	3.27	2.41
1,3-Butadiene	0.18	0.24	0.23	0.18	0.38	0.29
n-Butane	3.10	3.28	3.23	4.90	11.81	7.57
trans-2-Butene	0.44	0.48	0.41	0.58	1.53	0.43
cis-2-Butene	0.53	0.62	0.62	0.66	0.85	0.54
3-Methyl-1-butene	0.13	ND	ND	0.11	ND	0.10
Isopentane	15.29	25.41	14.43	17.54	34.91	26.53
1-Pentene	0.61	0.72	0.68	0.78	1.18	0.73
2-Methyl-1-butene	0.53	0.48	0.43	0.88	1.41	0.65
n-Pentane	3.55	3.59	3.45	5.02	10.88	6.41
Isoprene	2.52	2.75	2.74	2.71	7.15	2.06
trans-2-Pentene	1.02	1.01	1.05	1.42	2.11	1.02
cis-2-Pentene	0.69	0.83	0.70	0.83	1.29	0.68
2-Methyl-2-butene	0.91	0.93	0.95	1.51	2.19	0.86
2,2-Dimethylbutane	0.77	0.72	0.65	0.87	1.55	0.85
Cyclopentene	0.80	0.52	0.36	0.84	3.71	1.27
4-Methyl-1-pentene	ND	ND	ND	0.18	ND	0.07
Cyclopentane	0.64	0.53	0.40	0.85	1.61	0.83
2,3-Dimethylbutane	5.60	4.82	4.70	8.88	16.71	7.12
2-Methylpentane	3.80	3.20	3.01	5.23	9.77	5.43
3-Methylpentane	2.37	1.95	2.11	3.17	5.82	3.08
2-Methyl-1-pentene	0.18	0.23	0.19	0.28	0.49	0.24
1-Hexene	0.16	0.26	0.15	0.24	0.34	0.17
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	2.62	2.67	2.88	4.48	8.04	4.26
trans-2-Hexene	0.19	0.21	0.18	0.28	0.78	0.15
cis-2-Hexene	0.13	0.11	ND	ND	ND	0.17
Methylcyclopentane	1.37	1.34	1.23	2.04	3.22	1.91
2,4-Dimethylpentane	0.82	0.78	0.76	0.97	1.45	0.91
Benzene	2.49	2.44	2.34	3.48	7.35	4.61
Cyclohexane	1.00	0.85	0.88	7.92	1.39	1.40
2-Methylhexane	1.52	1.58	1.61	1.39	3.54	2.02
2,3-Dimethylpentane	0.94	1.01	1.12	0.91	1.57	1.08
3-Methylhexane	1.45	1.39	1.42	1.94	3.57	2.05
1-Heptene	0.15	0.49	0.08	0.13	ND	0.20
2,2,4-Trimethylpentane	1.91	1.70	1.67	2.55	4.84	2.58
n-Heptane	1.33	1.22	1.29	1.75	3.30	1.91
Methylcyclohexane	0.90	0.92	0.91	1.06	1.90	1.14
2,2,3-Trimethylpentane	0.48	0.27	0.35	0.49	1.28	0.66
2,3,4-Trimethylpentane	0.82	0.74	0.78	1.07	1.84	1.10
Toluene	7.82	7.47	7.62	11.02	18.92	12.10
2-Methylheptane	0.61	0.60	0.63	0.85	1.36	0.90
3-Methylheptane	0.63	0.52	0.65	0.75	1.41	0.86
1-Octene	0.04	0.22	0.14	ND	0.18	0.15
n-Octane	0.84	0.87	0.99	1.01	1.97	1.37
Ethylbenzene	1.53	1.83	2.01	2.16	3.68	2.41
m-Xylene/p-Xylene	4.66	6.23	6.43	6.90	12.26	7.30
Styrene	0.93	1.59	1.34	1.00	1.39	1.20
o-Xylene	1.71	2.10	2.09	2.49	4.46	2.69
1-Nonene	0.06	ND	ND	ND	ND	0.26
n-Nonane	0.67	0.73	0.92	0.81	1.34	1.10
Isopropylbenzene	0.42	0.49	0.51	0.59	0.63	0.60
a-Pinene	0.25	0.36	0.33	0.34	0.52	0.29
n-Propylbenzene	0.65	0.83	0.75	0.77	1.27	0.79
m-Ethyltoluene	1.40	1.66	1.65	1.79	3.76	2.23
p-Ethyltoluene	0.96	1.15	1.06	1.19	2.16	1.43
1,3,5-Trimethylbenzene	0.83	0.94	1.00	0.97	1.81	1.23
o-Ethyltoluene	0.80	0.90	0.70	0.91	1.71	1.00
b-Pinene	0.85	1.71	1.92	0.83	1.11	0.77
1,2,4-Trimethylbenzene	2.01	2.65	2.56	2.62	5.21	3.07
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.58	0.71	0.85	0.69	1.18	1.10
1,2,3-Trimethylbenzene	0.65	0.81	0.65	0.72	1.43	0.96
m-Diethylbenzene	0.42	0.58	0.63	0.60	0.81	0.62
p-Diethylbenzene	0.39	0.45	0.44	0.45	0.81	0.53
1-Undecene	ND	0.04	ND	ND	ND	0.07
n-Undecane	0.63	0.81	0.83	0.98	1.15	0.85
1-Dodecene	0.04	ND	ND	ND	ND	0.32
n-Dodecane	0.19	0.49	0.29	1.02	0.53	0.36
1-Tridecene	ND	ND	ND	ND	ND	0.16
n-Tridecane	0.06	0.27	0.11	0.31	0.24	61.56
TNMOC (w/ unknowns)	132.35	154.85	135.94	171.09	337.08	278.29
TNMOC (speciated)	104.94	122.29	108.07	146.47	282.79	240.41

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**13973D1**	**13973R1**	**13974D2**	**13974R2**	**14051**	**14053**
Sampling Date:	**8/5/98**	**8/5/98**	**8/5/98**	**8/5/98**	**8/6/98**	**8/7/98**
Analysis Date:	**8/28/98**	**9/16/98**	**8/28/98**	**10/20/98**	**8/28/98**	**8/28/98**
Compound						
Ethylene	5.99	5.67	5.82	4.88	5.02	7.55
Acetylene	4.67	4.64	4.73	3.47	5.34	18.45
Ethane	13.02	12.82	12.85	10.58	16.13	9.30
Propylene	2.52	2.54	2.41	2.26	2.45	3.96
Propane	14.04	14.64	13.88	12.30	20.27	11.88
Propyne	0.26	0.19	0.26	0.17	0.20	0.27
Isobutane	3.66	3.67	3.65	3.12	4.13	2.43
Isobutene/1-Butene	2.81	2.70	2.57	2.32	3.02	3.94
1,3-Butadiene	0.38	0.44	0.49	0.35	0.59	0.81
n-Butane	6.40	6.48	6.40	5.53	15.81	5.42
trans-2-Butene	0.66	0.57	0.56	0.45	1.45	0.59
cis-2-Butene	0.77	0.65	0.63	0.53	1.73	0.65
3-Methyl-1-butene	0.32	0.19	0.17	0.23	0.96	0.51
Isopentane	28.62	31.25	29.20	28.83	53.74	23.81
1-Pentene	0.84	0.88	0.91	0.76	2.90	0.69
2-Methyl-1-butene	0.74	0.84	0.79	0.67	4.45	0.90
n-Pentane	7.40	7.52	7.43	6.39	21.36	7.32
Isoprene	2.04	2.08	2.02	1.69	0.90	0.94
trans-2-Pentene	1.22	1.26	1.26	1.02	6.29	1.24
cis-2-Pentene	0.83	0.78	0.75	0.65	3.35	0.80
2-Methyl-2-butene	1.15	1.26	1.27	1.04	8.31	1.30
2,2-Dimethylbutane	1.47	1.37	0.95	1.06	3.08	1.14
Cyclopentene	0.70	0.89	0.77	0.61	1.37	0.47
4-Methyl-1-pentene	0.06	0.08	0.06	0.07	0.39	0.06
Cyclopentane	1.02	1.02	0.92	0.89	3.57	0.82
2,3-Dimethylbutane	9.41	10.09	9.65	8.43	42.12	8.77
2-Methylpentane	6.16	6.68	6.24	5.90	22.50	6.42
3-Methylpentane	3.76	3.89	3.71	3.29	14.32	3.77
2-Methyl-1-pentene	0.27	0.30	0.27	0.23	1.45	0.29
1-Hexene	0.36	0.22	0.24	0.22	0.82	0.26
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	5.10	4.96	5.27	4.38	17.37	4.26
trans-2-Hexene	0.21	0.23	0.22	0.25	1.25	0.20
cis-2-Hexene	0.13	0.13	0.10	0.14	0.81	0.15
Methylcyclopentane	2.33	2.46	2.33	2.08	6.83	2.38
2,4-Dimethylpentane	1.11	1.12	1.13	0.96	2.61	1.18
Benzene	5.12	5.33	5.16	4.54	9.33	5.72
Cyclohexane	6.85	7.74	1.17	1.14	2.03	1.04
2-Methylhexane	2.25	2.38	2.35	2.08	5.95	2.63
2,3-Dimethylpentane	1.15	1.32	1.29	1.10	2.73	1.23
3-Methylhexane	2.31	2.61	2.50	2.28	6.19	2.81
1-Heptene	ND	0.78	ND	ND	ND	ND
2,2,4-Trimethylpentane	3.70	4.07	3.78	3.31	8.35	4.36
n-Heptane	2.17	2.08	2.16	1.86	5.32	2.71
Methylcyclohexane	1.22	1.36	1.31	1.19	1.96	2.06
2,2,3-Trimethylpentane	0.88	0.99	1.01	0.80	2.09	1.06
2,3,4-Trimethylpentane	1.48	1.62	1.54	1.34	2.97	1.67
Toluene	17.69	18.57	18.16	15.56	29.91	18.02
2-Methylheptane	1.06	1.16	1.08	0.92	1.73	1.35
3-Methylheptane	1.01	0.88	1.00	0.88	1.37	1.15
1-Octene	0.06	0.07	0.14	0.08	0.11	0.16
n-Octane	1.42	1.49	1.41	1.29	2.18	1.43
Ethylbenzene	2.87	3.01	2.95	2.51	5.33	6.88
m-Xylene/p-Xylene	8.77	9.14	8.95	7.72	18.21	23.38
Styrene	1.15	1.26	1.12	1.27	1.14	2.85
o-Xylene	3.30	3.47	3.36	2.78	6.31	7.33
1-Nonene	0.14	0.34	0.14	0.17	0.21	0.14
n-Nonane	1.10	1.14	1.13	0.95	1.54	1.09
Isopropylbenzene	0.55	0.57	0.52	0.48	0.62	0.60
a-Pinene	0.43	0.41	0.32	0.27	1.51	0.95
n-Propylbenzene	1.01	1.07	1.00	0.85	1.67	1.07
m-Ethyltoluene	2.70	2.88	2.94	2.38	5.22	3.46
p-Ethyltoluene	1.74	1.79	1.72	1.37	3.01	2.03
1,3,5-Trimethylbenzene	1.59	1.65	1.65	1.26	2.62	2.11
o-Ethyltoluene	1.39	1.60	1.32	1.13	1.99	1.53
b-Pinene	0.59	0.89	0.67	0.77	1.76	1.15
1,2,4-Trimethylbenzene	3.90	4.17	4.06	3.29	7.35	5.32
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.26	1.39	1.20	1.03	1.18	1.40
1,2,3-Trimethylbenzene	1.11	1.09	1.03	0.95	1.89	1.42
m-Diethylbenzene	0.54	0.63	0.62	0.50	0.70	0.70
p-Diethylbenzene	0.52	0.51	0.60	0.54	0.65	0.61
1-Undecene	0.07	0.08	ND	0.09	0.11	0.10
n-Undecane	1.19	1.27	1.16	1.03	0.99	1.23
1-Dodecene	0.10	0.20	ND	0.17	ND	0.20
n-Dodecane	0.44	0.57	0.53	0.47	0.41	0.55
1-Tridecene	0.06	0.07	ND	0.02	ND	ND
n-Tridecane	0.23	0.24	0.20	0.14	0.10	0.20
TNMOC (w/ unknowns)	255.93	270.21	253.02	226.92	515.66	313.23
TNMOC (speciated)	215.52	226.40	211.14	186.26	443.59	246.66

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**14092**	**14176**	**14216**	**14229**	**14242D1**	**14242R1**
Sampling Date:	**8/10/98**	**8/11/98**	**8/12/98**	**8/13/98**	**8/14/98**	**8/14/98**
Analysis Date:	**9/21/98**	**9/2/98**	**9/2/98**	**9/2/98**	**9/10/98**	**9/11/98**
Compound						
Ethylene	2.54	4.02	10.51	2.96	5.12	5.00
Acetylene	1.99	3.35	9.75	2.31	4.18	4.22
Ethane	3.98	9.76	19.95	11.78	15.52	15.50
Propylene	1.44	1.71	4.43	1.23	2.21	2.25
Propane	4.95	12.87	13.47	11.14	15.60	15.47
Propyne	ND	0.15	0.37	0.08	0.18	0.11
Isobutane	1.34	2.97	4.61	3.46	3.45	3.48
Isobutene/1-Butene	2.25	2.38	4.68	1.79	2.40	2.49
1,3-Butadiene	0.25	0.27	0.87	0.25	0.38	0.44
n-Butane	3.21	7.53	8.42	6.71	7.18	7.14
trans-2-Butene	0.43	0.53	0.85	0.39	0.47	0.55
cis-2-Butene	0.53	0.64	0.90	0.48	0.62	0.56
3-Methyl-1-butene	0.15	0.23	0.75	0.14	0.20	0.20
Isopentane	15.03	24.38	35.52	19.34	24.38	23.82
1-Pentene	0.58	0.70	1.26	0.55	0.72	0.75
2-Methyl-1-butene	0.54	0.75	1.45	0.44	0.62	0.73
n-Pentane	3.54	8.32	11.31	5.36	7.30	7.26
Isoprene	2.17	1.17	3.25	1.11	2.06	2.09
trans-2-Pentene	0.93	1.39	2.29	0.89	1.01	1.04
cis-2-Pentene	0.64	0.88	1.30	0.67	0.74	0.70
2-Methyl-2-butene	0.84	1.33	2.43	0.77	0.93	0.97
2,2-Dimethylbutane	0.79	0.92	1.71	0.87	1.07	1.02
Cyclopentene	0.58	0.63	0.74	0.75	0.41	0.46
4-Methyl-1-pentene	ND	ND	0.12	ND	ND	ND
Cyclopentane	0.63	1.07	1.48	0.68	1.00	1.01
2,3-Dimethylbutane	5.23	9.28	17.06	6.04	8.94	8.79
2-Methylpentane	3.62	5.98	10.66	4.32	5.71	5.79
3-Methylpentane	2.27	3.94	6.67	2.77	3.76	3.66
2-Methyl-1-pentene	0.27	0.29	0.50	0.20	0.27	0.26
1-Hexene	0.18	0.36	0.47	0.17	0.24	0.23
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	2.73	5.26	7.95	3.89	4.66	4.77
trans-2-Hexene	0.17	0.29	0.46	0.17	0.18	0.25
cis-2-Hexene	0.15	0.18	0.23	0.16	0.13	0.12
Methylcyclopentane	1.55	2.48	4.14	1.67	2.46	2.32
2,4-Dimethylpentane	0.83	1.18	1.83	0.86	1.16	1.03
Benzene	2.75	4.16	8.04	3.57	4.31	4.25
Cyclohexane	0.78	3.80	1.79	1.89	1.19	1.23
2-Methylhexane	1.46	2.40	3.76	1.90	2.03	2.12
2,3-Dimethylpentane	0.95	1.40	1.76	1.12	1.03	1.30
3-Methylhexane	1.45	2.61	4.06	1.82	2.36	2.39
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	2.06	3.28	6.91	2.12	3.43	3.27
n-Heptane	1.20	2.37	3.62	1.62	1.85	1.92
Methylcyclohexane	0.93	1.35	2.40	1.22	1.24	1.19
2,2,3-Trimethylpentane	0.42	0.90	1.61	0.55	0.78	0.77
2,3,4-Trimethylpentane	0.84	1.26	2.69	0.91	1.31	1.36
Toluene	8.77	14.79	27.86	8.46	15.51	15.52
2-Methylheptane	0.56	0.97	1.60	0.72	0.89	0.87
3-Methylheptane	0.63	0.86	1.67	0.78	0.91	0.87
1-Octene	ND	0.09	0.14	ND	0.05	0.03
n-Octane	0.77	1.20	2.05	1.02	1.21	1.17
Ethylbenzene	1.55	2.39	4.76	1.55	2.52	2.57
m-Xylene/p-Xylene	5.03	7.24	15.08	4.82	7.77	7.81
Styrene	0.97	0.82	3.19	0.87	1.33	1.20
o-Xylene	1.79	2.58	5.38	1.71	2.86	2.87
1-Nonene	ND	0.11	0.30	0.06	0.15	0.12
n-Nonane	0.66	0.91	1.85	0.73	0.93	0.93
Isopropylbenzene	0.36	0.44	0.58	0.41	0.52	0.54
a-Pinene	0.32	0.38	2.29	0.18	0.29	0.33
n-Propylbenzene	0.62	0.71	1.31	0.67	0.86	0.86
m-Ethyltoluene	1.42	2.02	4.29	1.44	2.19	2.22
p-Ethyltoluene	0.95	1.24	2.59	0.94	1.36	1.44
1,3,5-Trimethylbenzene	0.81	1.00	2.64	0.77	1.17	1.23
o-Ethyltoluene	0.88	0.88	1.92	0.67	1.04	1.20
b-Pinene	0.69	0.54	1.49	0.50	0.77	0.78
1,2,4-Trimethylbenzene	1.99	2.81	6.28	2.06	3.11	3.09
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.67	0.98	2.50	0.66	1.14	1.11
1,2,3-Trimethylbenzene	0.51	0.72	1.77	0.41	0.74	0.79
m-Diethylbenzene	0.35	0.48	0.73	0.43	0.51	0.52
p-Diethylbenzene	0.27	0.39	0.90	0.42	0.43	0.43
1-Undecene	ND	0.06	0.16	0.04	0.05	0.03
n-Undecane	0.54	1.02	2.30	0.67	1.07	1.07
1-Dodecene	ND	0.14	0.21	0.13	0.19	0.11
n-Dodecane	0.18	0.70	0.94	0.27	0.37	0.35
1-Tridecene	ND	0.05	ND	ND	ND	ND
n-Tridecane	0.04	0.28	0.33	0.11	0.13	0.15
TNMOC (w/ unknowns)	140.63	223.11	393.37	169.34	228.33	228.48
TNMOC (speciated)	110.47	187.53	326.11	142.56	194.86	194.45

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**14245D2**	**14245R2**	**14220**	**14225**	**14248**	**14243**
Sampling Date:	**8/14/98**	**8/14/98**	**8/17/98**	**8/18/98**	**8/19/98**	**8/20/98**
Analysis Date:	**9/2/98**	**9/21/98**	**9/11/98**	**10/19/98**	**9/22/98**	**10/19/98**
Compound						
Ethylene	5.17	5.18	3.20	3.19	7.11	4.23
Acetylene	4.32	4.12	2.64	2.89	6.00	2.65
Ethane	15.46	15.45	5.49	11.02	13.08	10.35
Propylene	2.22	2.25	1.58	1.45	3.40	1.86
Propane	14.59	15.20	4.75	8.60	10.26	9.76
Propyne	0.24	0.16	0.11	0.07	0.22	0.09
Isobutane	3.43	3.43	1.46	2.40	4.02	3.60
Isobutene/1-Butene	2.49	2.45	2.36	2.09	4.15	2.18
1,3-Butadiene	0.38	0.37	0.26	0.27	0.61	0.28
n-Butane	7.02	7.11	4.17	5.62	12.13	6.18
trans-2-Butene	0.46	0.48	0.43	0.35	1.12	0.41
cis-2-Butene	0.58	0.57	0.56	0.51	1.33	0.51
3-Methyl-1-butene	0.17	0.26	0.08	0.17	0.65	0.18
Isopentane	26.22	27.68	16.93	12.94	41.02	21.45
1-Pentene	0.77	0.71	0.62	0.52	2.05	0.77
2-Methyl-1-butene	0.56	0.70	0.63	0.58	2.94	0.50
n-Pentane	7.01	7.19	4.33	4.57	16.57	5.85
Isoprene	1.95	1.97	1.80	2.18	3.32	1.65
trans-2-Pentene	1.03	1.00	1.01	0.90	4.12	0.91
cis-2-Pentene	0.72	0.70	0.70	0.58	2.26	0.63
2-Methyl-2-butene	0.82	0.83	0.94	0.78	5.53	0.80
2,2-Dimethylbutane	0.97	1.13	0.80	0.66	2.09	0.94
Cyclopentene	0.58	0.55	0.39	0.53	1.65	2.02
4-Methyl-1-pentene	ND	ND	ND	0.05	0.23	ND
Cyclopentane	0.90	0.99	0.69	0.61	2.22	0.72
2,3-Dimethylbutane	8.54	8.60	5.86	5.32	27.68	6.81
2-Methylpentane	5.89	6.22	4.11	3.72	15.71	5.90
3-Methylpentane	3.57	3.64	2.51	2.28	10.01	3.09
2-Methyl-1-pentene	0.26	0.31	0.24	0.20	1.10	0.30
1-Hexene	0.21	0.23	0.19	0.15	0.73	0.19
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	4.45	4.30	2.94	2.88	14.16	4.16
trans-2-Hexene	0.16	0.14	0.19	0.16	1.19	0.20
cis-2-Hexene	0.09	0.09	0.13	0.10	0.62	0.08
Methylcyclopentane	2.38	2.40	1.64	1.54	5.98	1.92
2,4-Dimethylpentane	1.07	1.01	0.81	0.74	2.48	0.95
Benzene	4.21	4.26	3.11	2.83	10.68	4.06
Cyclohexane	1.27	1.36	1.43	0.90	1.99	3.49
2-Methylhexane	2.17	2.54	1.60	1.54	5.24	2.06
2,3-Dimethylpentane	1.22	1.32	0.98	0.92	2.28	1.14
3-Methylhexane	2.29	2.55	1.63	1.48	5.99	2.25
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	3.13	3.38	2.60	2.14	7.83	2.63
n-Heptane	1.79	1.84	1.34	1.25	5.77	1.81
Methylcyclohexane	1.30	1.25	0.88	1.00	2.70	1.19
2,2,3-Trimethylpentane	0.76	0.71	0.57	0.50	2.15	0.68
2,3,4-Trimethylpentane	1.21	1.28	1.00	0.88	3.06	1.04
Toluene	14.10	15.15	9.63	8.69	37.50	15.80
2-Methylheptane	0.81	0.82	0.68	0.63	2.25	0.74
3-Methylheptane	0.87	0.83	0.65	0.68	2.02	0.76
1-Octene	0.09	0.10	0.04	ND	0.17	0.07
n-Octane	1.16	1.22	0.86	0.87	2.96	1.22
Ethylbenzene	2.31	2.48	1.84	1.62	6.44	3.20
m-Xylene/p-Xylene	6.89	7.35	5.71	5.09	22.74	10.07
Styrene	1.41	1.64	1.22	0.95	1.54	2.40
o-Xylene	2.54	2.77	2.10	1.91	7.52	3.26
1-Nonene	0.10	0.15	0.07	0.08	0.31	0.07
n-Nonane	0.87	0.90	0.67	0.65	1.75	0.75
Isopropylbenzene	0.46	0.44	0.43	0.41	0.78	0.46
a-Pinene	0.28	0.19	0.35	0.27	0.49	0.18
n-Propylbenzene	0.89	0.82	0.73	0.66	1.77	0.80
m-Ethyltoluene	2.04	1.98	1.69	1.58	5.48	2.00
p-Ethyltoluene	1.23	1.27	1.11	1.04	3.10	1.22
1,3,5-Trimethylbenzene	0.92	1.10	0.95	0.92	2.78	1.05
o-Ethyltoluene	0.92	1.10	0.84	0.92	2.21	1.06
b-Pinene	0.78	0.81	0.73	0.48	0.85	1.81
1,2,4-Trimethylbenzene	2.80	2.76	2.40	2.35	7.69	2.76
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.97	1.07	0.77	0.86	1.53	0.94
1,2,3-Trimethylbenzene	0.74	0.66	0.57	0.54	1.84	0.74
m-Diethylbenzene	0.55	0.44	0.45	0.36	0.82	0.57
p-Diethylbenzene	0.53	0.32	0.37	0.34	0.64	0.59
1-Undecene	0.06	0.09	ND	0.03	0.11	0.08
n-Undecane	0.91	0.80	1.07	0.85	1.26	0.95
1-Dodecene	0.23	0.03	ND	ND	0.09	0.47
n-Dodecane	0.25	0.23	0.60	0.36	0.49	0.56
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.08	0.07	0.13	0.09	0.10	0.18
TNMOC (w/ unknowns)	226.27	232.63	158.90	150.81	464.43	240.22
TNMOC (speciated)	189.77	195.50	126.34	127.31	392.65	177.28

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**14354**	**14381D1**	**14381R1**	**14382D2**	**14382R2**	**14474**
Sampling Date:	**8/21/98**	**8/24/98**	**8/24/98**	**8/24/98**	**8/24/98**	**8/25/98**
Analysis Date:	**9/22/98**	**9/23/98**	**9/24/98**	**9/23/98**	**9/24/98**	**9/23/98**
Compound						
Ethylene	3.99	4.31	5.32	4.31	5.64	3.87
Acetylene	3.14	3.41	4.42	3.56	4.58	2.62
Ethane	6.57	8.92	11.07	9.06	11.51	13.15
Propylene	1.97	1.94	2.34	1.93	2.40	1.61
Propane	6.20	8.75	10.84	8.60	11.11	10.63
Propyne	0.18	0.12	0.13	0.11	0.14	0.11
Isobutane	2.27	4.79	5.97	4.53	5.85	3.93
Isobutene/1-Butene	2.52	2.37	2.90	2.29	2.88	2.20
1,3-Butadiene	0.34	0.38	0.47	0.42	0.46	0.27
n-Butane	4.76	7.11	8.89	7.33	9.42	5.94
trans-2-Butene	0.46	0.53	0.78	0.45	0.77	0.42
cis-2-Butene	0.55	0.55	0.73	0.61	0.72	0.52
3-Methyl-1-butene	0.22	0.18	0.29	0.09	0.80	0.17
Isopentane	21.72	23.12	28.29	22.59	29.11	18.08
1-Pentene	0.71	0.73	0.88	0.89	0.91	0.07
2-Methyl-1-butene	0.71	0.80	0.99	0.78	1.00	0.55
n-Pentane	5.05	7.97	9.90	7.58	9.96	5.86
Isoprene	1.78	2.03	2.56	2.07	2.64	2.78
trans-2-Pentene	0.97	1.19	1.46	1.24	1.56	0.94
cis-2-Pentene	0.71	0.72	0.98	0.82	1.00	0.61
2-Methyl-2-butene	0.90	1.19	1.55	1.21	1.70	0.76
2,2-Dimethylbutane	1.07	0.99	1.31	1.07	1.33	1.01
Cyclopentene	2.34	0.69	0.88	0.61	0.92	1.18
4-Methyl-1-pentene	0.03	0.05	0.07	0.08	0.08	ND
Cyclopentane	0.80	1.18	1.47	1.08	1.44	0.76
2,3-Dimethylbutane	6.40	7.72	9.51	7.63	9.87	6.09
2-Methylpentane	4.62	4.44	5.70	4.83	6.23	4.83
3-Methylpentane	2.82	2.99	3.70	3.06	3.96	2.82
2-Methyl-1-pentene	0.22	0.32	0.36	0.28	0.34	0.20
1-Hexene	0.19	0.22	0.25	0.24	0.34	0.15
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	3.45	3.94	4.97	3.98	5.38	3.61
trans-2-Hexene	0.18	0.19	0.27	0.25	0.39	0.16
cis-2-Hexene	0.14	0.11	0.18	0.20	0.20	0.14
Methylcyclopentane	1.62	1.97	2.41	2.01	2.59	1.75
2,4-Dimethylpentane	0.89	0.98	1.17	0.98	1.16	0.86
Benzene	4.12	4.08	5.02	4.22	5.29	4.19
Cyclohexane	0.89	15.09	18.85	13.23	17.15	1.13
2-Methylhexane	2.13	2.12	2.57	1.92	2.84	1.99
2,3-Dimethylpentane	1.15	1.12	1.33	1.26	1.50	1.04
3-Methylhexane	1.80	1.93	2.44	2.00	2.61	1.90
1-Heptene	ND	ND	ND	ND	ND	0.41
2,2,4-Trimethylpentane	2.51	2.84	3.64	2.96	3.86	2.61
n-Heptane	1.85	1.71	2.14	1.57	2.24	1.58
Methylcyclohexane	0.98	1.12	1.43	1.14	1.46	1.19
2,2,3-Trimethylpentane	0.55	0.76	0.90	0.67	0.96	0.55
2,3,4-Trimethylpentane	1.02	1.21	1.54	1.21	1.55	0.97
Toluene	10.01	15.02	19.02	14.41	18.86	10.57
2-Methylheptane	0.73	1.21	1.28	1.01	1.29	0.79
3-Methylheptane	0.76	0.91	1.09	0.91	1.18	0.72
1-Octene	0.05	0.06	0.13	0.07	0.15	ND
n-Octane	0.99	1.41	1.81	1.53	1.86	1.03
Ethylbenzene	1.93	4.47	5.56	3.81	4.82	1.92
m-Xylene/p-Xylene	5.85	14.47	18.26	11.95	15.35	5.64
Styrene	0.86	1.83	2.25	1.15	1.08	2.38
o-Xylene	2.17	5.62	6.96	4.38	5.55	2.08
1-Nonene	0.11	0.29	0.26	0.19	0.24	0.08
n-Nonane	0.69	1.54	1.92	1.45	1.82	0.78
Isopropylbenzene	0.40	0.70	0.75	0.60	0.62	0.45
a-Pinene	0.17	0.47	0.59	0.45	0.68	0.20
n-Propylbenzene	0.68	1.89	2.38	1.18	1.40	0.67
m-Ethyltoluene	1.65	6.43	8.08	3.29	4.09	1.65
p-Ethyltoluene	1.07	3.33	4.14	1.92	2.30	1.15
1,3,5-Trimethylbenzene	0.93	3.54	4.43	1.86	2.20	0.98
o-Ethyltoluene	0.80	3.05	3.32	1.49	1.73	0.93
b-Pinene	0.29	0.64	0.72	0.41	0.54	0.44
1,2,4-Trimethylbenzene	2.33	11.70	14.49	4.89	5.95	2.38
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.68	1.93	2.73	1.25	1.82	0.79
1,2,3-Trimethylbenzene	0.61	2.95	3.42	1.14	1.38	0.52
m-Diethylbenzene	0.38	1.64	1.92	0.50	0.62	0.43
p-Diethylbenzene	0.29	1.48	2.48	0.44	0.48	0.33
1-Undecene	ND	0.25	0.31	0.09	0.09	ND
n-Undecane	0.52	2.70	3.09	0.77	0.88	0.57
1-Dodecene	ND	0.37	0.39	0.03	0.03	0.03
n-Dodecane	0.11	1.55	1.82	0.23	0.22	0.21
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.08	0.27	0.24	0.04	ND	0.04
TNMOC (w/ unknowns)	169.08	299.22	371.92	231.56	295.49	183.34
TNMOC (speciated)	142.68	230.60	286.70	198.40	255.07	140.78

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**14492**	**14493**	**14515**	**14543**	**14565D1**	**14565R1**
Sampling Date:	**8/26/98**	**8/27/98**	**8/28/98**	**8/31/98**	**9/1/98**	**9/1/98**
Analysis Date:	**VOID**	**10/19/98**	**10/15/98**	**10/15/98**	**10/16/98**	**10/22/98**
Compound						
Ethylene		4.69	7.12	4.74	7.46	7.43
Acetylene		3.61	4.27	3.27	4.91	5.01
Ethane		8.73	8.17	12.62	11.51	11.66
Propylene		2.17	3.19	2.22	3.36	3.45
Propane		8.50	11.19	9.83	11.72	11.96
Propyne		0.10	0.17	0.18	0.19	0.28
Isobutane		2.58	4.23	3.60	3.53	3.57
Isobutene/1-Butene		2.49	3.35	3.08	4.06	4.21
1,3-Butadiene		0.41	0.60	0.37	0.79	0.72
n-Butane		7.51	6.02	6.52	7.68	7.77
trans-2-Butene		0.80	0.55	0.44	0.59	0.61
cis-2-Butene		0.82	0.60	0.58	0.67	0.70
3-Methyl-1-butene		0.32	0.25	0.15	0.25	0.31
Isopentane		25.61	24.87	27.87	25.44	25.99
1-Pentene		1.19	0.84	0.65	0.85	0.96
2-Methyl-1-butene		1.54	0.93	0.76	1.09	1.16
n-Pentane		9.02	7.52	6.17	7.61	7.77
Isoprene		2.02	1.70	1.77	2.48	2.51
trans-2-Pentene		2.25	1.28	1.01	1.44	1.45
cis-2-Pentene		1.35	0.78	0.65	0.92	0.91
2-Methyl-2-butene		2.62	1.36	0.88	1.52	1.56
2,2-Dimethylbutane		1.44	1.42	1.13	1.33	1.30
Cyclopentene		1.11	0.70	0.64	1.77	1.72
4-Methyl-1-pentene		0.16	0.03	0.06	0.08	0.08
Cyclopentane		1.41	1.02	0.73	0.90	0.99
2,3-Dimethylbutane		15.18	9.54	7.62	10.82	12.06
2-Methylpentane		9.19	6.59	5.18	6.76	7.15
3-Methylpentane		5.88	3.93	3.21	4.26	4.29
2-Methyl-1-pentene		0.53	0.28	0.23	0.25	0.31
1-Hexene		0.41	0.24	0.24	0.24	0.24
2-Ethyl-1-butene		ND	ND	ND	ND	ND
n-Hexane		7.86	4.81	3.96	5.16	5.29
trans-2-Hexene		0.53	0.31	0.16	0.36	0.34
cis-2-Hexene		0.35	0.17	0.16	0.21	0.20
Methylcyclopentane		3.60	2.50	1.98	2.55	2.54
2,4-Dimethylpentane		1.49	1.11	0.94	1.18	1.24
Benzene		6.52	5.13	4.56	6.45	6.52
Cyclohexane		1.34	1.15	1.24	1.78	1.91
2-Methylhexane		3.20	2.81	2.25	3.06	3.02
2,3-Dimethylpentane		1.51	1.37	1.29	1.51	1.45
3-Methylhexane		3.46	2.55	2.34	3.00	2.98
1-Heptene		ND	ND	ND	ND	ND
2,2,4-Trimethylpentane		4.59	3.69	3.12	4.50	4.57
n-Heptane		3.22	1.87	1.94	2.41	2.50
Methylcyclohexane		1.53	1.35	1.28	1.33	1.42
2,2,3-Trimethylpentane		1.04	0.95	0.73	1.13	1.06
2,3,4-Trimethylpentane		1.83	1.53	1.28	1.79	1.85
Toluene		23.28	19.82	12.76	16.99	17.37
2-Methylheptane		1.13	0.96	0.80	0.97	1.03
3-Methylheptane		1.17	0.93	0.83	1.06	1.12
1-Octene		0.09	0.15	0.07	0.03	0.03
n-Octane		1.57	1.27	1.15	1.24	1.35
Ethylbenzene		4.05	2.98	2.29	3.02	3.09
m-Xylene/p-Xylene		13.26	9.24	6.92	9.18	9.35
Styrene		1.25	1.03	0.84	1.11	1.18
o-Xylene		4.65	3.38	2.68	3.48	3.61
1-Nonene		0.20	0.16	0.16	0.11	0.15
n-Nonane		1.07	0.97	0.90	0.90	0.95
Isopropylbenzene		0.53	0.44	0.43	0.42	0.52
a-Pinene		0.38	0.44	0.25	0.28	0.27
n-Propylbenzene		1.17	0.91	0.88	0.97	0.99
m-Ethyltoluene		3.51	2.74	2.17	2.75	2.87
p-Ethyltoluene		2.02	1.73	1.34	1.56	1.65
1,3,5-Trimethylbenzene		1.84	1.62	1.19	1.52	1.71
o-Ethyltoluene		1.83	1.18	1.11	1.34	1.43
b-Pinene		0.69	0.64	0.45	0.38	0.47
1,2,4-Trimethylbenzene		5.03	3.9392	3.15	4.21	4.35
1-Decene		ND	ND	ND	ND	ND
n-Decane		1.06	1.27	1.06	0.91	0.93
1,2,3-Trimethylbenzene		1.21	0.98	0.70	0.96	1.07
m-Diethylbenzene		0.64	0.40	0.50	0.61	0.66
p-Diethylbenzene		0.55	0.53	0.43	0.50	0.49
1-Undecene		0.07	0.07	0.07	0.08	0.07
n-Undecane		0.89	1.20	0.98	0.95	1.03
1-Dodecene		0.23	0.24	0.12	0.09	0.20
n-Dodecane		0.41	0.68	0.40	0.45	0.51
1-Tridecene		ND	0.04	0.05	0.04	0.06
n-Tridecane		0.12	0.17	0.10	0.10	0.22
TNMOC (w/ unknowns)		282.43	250.18	210.92	253.87	261.11
TNMOC (speciated)		239.65	204.20	178.35	217.12	223.76

SNMOC 1998 REPORT
SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**14566D2**	**14566R2**	**14670**	**14672**	**14700**	**14764**
Sampling Date:	**9/1/98**	**9/1/98**	**9/2/98**	**9/3/98**	**9/4/98**	**9/7/98**
Analysis Date:	**10/16/98**	**10/22/98**	**10/2/98**	**10/3/98**	**10/4/98**	**VOID**
Compound						
Ethylene	7.51	7.59	8.41	5.87	6.39	
Acetylene	4.89	5.01	6.21	4.27	5.74	
Ethane	11.46	11.75	13.37	15.50	12.68	
Propylene	3.27	3.49	3.92	2.87	3.07	
Propane	11.71	11.91	12.12	12.33	14.73	
Propyne	0.25	0.14	0.29	0.23	0.19	
Isobutane	3.46	3.54	3.93	3.82	3.97	
Isobutene/1-Butene	3.84	4.10	4.45	3.08	3.84	
1,3-Butadiene	0.72	0.73	0.67	0.48	0.55	
n-Butane	7.52	7.66	7.66	7.65	14.46	
trans-2-Butene	0.60	0.58	0.58	0.44	1.15	
cis-2-Butene	0.67	0.70	0.73	0.56	1.24	
3-Methyl-1-butene	0.27	0.27	ND	0.16	0.86	
Isopentane	25.47	26.22	25.28	28.13	47.29	
1-Pentene	0.86	0.96	2.22	0.84	2.16	
2-Methyl-1-butene	1.04	1.08	0.97	0.66	2.66	
n-Pentane	7.16	7.39	8.08	7.80	17.62	
Isoprene	2.43	2.50	1.60	2.26	1.65	
trans-2-Pentene	1.33	1.40	1.36	0.96	3.91	
cis-2-Pentene	0.88	0.89	0.85	0.62	2.13	
2-Methyl-2-butene	1.45	1.50	1.38	0.82	4.66	
2,2-Dimethylbutane	1.32	1.37	1.33	1.12	2.33	
Cyclopentene	1.77	1.78	1.38	1.78	1.62	
4-Methyl-1-pentene	0.06	0.05	0.03	ND	0.28	
Cyclopentane	0.95	0.91	1.07	1.05	2.74	
2,3-Dimethylbutane	10.54	11.69	9.50	8.49	28.07	
2-Methylpentane	6.54	6.83	6.96	6.54	18.51	
3-Methylpentane	4.06	4.17	4.32	3.95	11.91	
2-Methyl-1-pentene	0.27	0.32	0.30	0.24	1.08	
1-Hexene	0.22	0.24	0.24	0.23	0.71	
2-Ethyl-1-butene	ND	ND	ND	ND	ND	
n-Hexane	4.83	4.99	5.07	4.76	15.50	
trans-2-Hexene	0.23	0.26	0.26	0.15	1.01	
cis-2-Hexene	0.18	0.19	0.19	0.13	0.62	
Methylcyclopentane	2.37	2.47	2.61	2.45	7.20	
2,4-Dimethylpentane	1.16	1.21	1.18	1.11	2.56	
Benzene	6.45	6.57	5.42	4.36	9.02	
Cyclohexane	1.18	1.34	1.30	4.37	2.56	
2-Methylhexane	2.91	3.19	2.77	2.74	7.24	
2,3-Dimethylpentane	1.35	1.57	1.36	1.39	3.02	
3-Methylhexane	2.89	2.98	2.79	2.53	7.14	
1-Heptene	ND	ND	ND	ND	ND	
2,2,4-Trimethylpentane	4.30	4.50	4.20	3.67	10.66	
n-Heptane	2.37	2.48	2.19	2.02	6.42	
Methylcyclohexane	1.30	1.36	1.43	1.21	3.19	
2,2,3-Trimethylpentane	1.14	1.15	1.06	0.91	2.80	
2,3,4-Trimethylpentane	1.75	1.82	1.72	1.42	4.22	
Toluene	16.37	16.86	16.63	13.39	34.85	
2-Methylheptane	1.01	1.11	1.33	0.91	2.47	
3-Methylheptane	0.97	1.11	1.21	0.93	2.37	
1-Octene	0.06	0.06	0.10	0.04	0.14	
n-Octane	1.16	1.22	1.56	1.18	2.72	
Ethylbenzene	2.87	2.92	2.76	2.33	5.97	
m-Xylene/p-Xylene	8.50	8.77	8.68	7.18	20.75	
Styrene	0.90	1.11	1.06	1.03	0.65	
o-Xylene	3.35	3.48	3.21	2.72	7.71	
1-Nonene	0.09	0.18	0.12	0.12	0.33	
n-Nonane	0.85	0.90	0.99	0.87	1.93	
Isopropylbenzene	0.49	0.53	0.44	0.44	0.71	
a-Pinene	0.25	0.22	0.28	0.41	0.44	
n-Propylbenzene	0.91	0.96	0.79	0.76	1.68	
m-Ethyltoluene	2.71	2.77	2.28	1.94	5.55	
p-Ethyltoluene	1.59	1.57	1.34	1.12	2.85	
1,3,5-Trimethylbenzene	1.47	1.40	1.32	1.13	3.23	
o-Ethyltoluene	1.31	1.24	1.06	0.95	2.34	
b-Pinene	0.39	0.45	0.48	0.54	0.51	
1,2,4-Trimethylbenzene	3.86	4.09	3.40	2.76	8.16	
1-Decene	ND	ND	ND	ND	ND	
n-Decane	0.75	0.94	1.15	0.99	1.68	
1,2,3-Trimethylbenzene	0.93	1.04	0.79	0.55	1.60	
m-Diethylbenzene	0.51	0.59	0.37	0.37	0.80	
p-Diethylbenzene	0.50	0.50	0.44	0.31	0.64	
1-Undecene	0.07	0.09	0.04	ND	0.14	
n-Undecane	0.84	0.89	1.51	0.79	1.41	
1-Dodecene	0.09	0.19	0.17	0.19	0.17	
n-Dodecane	0.39	0.43	1.23	0.35	0.58	
1-Tridecene	0.02	0.08	ND	ND	ND	
n-Tridecane	0.13	0.20	0.27	0.13	0.18	
TNMOC (w/ unknowns)	242.34	252.80	257.37	234.03	484.16	
TNMOC (speciated)	210.28	218.77	217.71	200.46	413.90	

SNMOC 1998 REPORT
SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**14704**	**14773D1**	**14773R1**	**14774D2**	**14774R2**	**14782**
Sampling Date:	**9/8/98**	**9/9/98**	**9/9/98**	**9/9/98**	**9/9/98**	**9/10/98**
Analysis Date:	**10/9/98**	**10/12/98**	**10/24/98**	**10/12/98**	**10/24/98**	**10/12/98**
Compound						
Ethylene	4.35	2.44	2.46	2.45	2.35	2.92
Acetylene	3.31	1.86	1.70	1.97	1.73	2.07
Ethane	8.91	5.41	5.45	5.56	5.36	3.63
Propylene	2.06	0.98	1.01	1.00	0.97	1.13
Propane	6.60	4.80	4.89	5.13	4.96	2.80
Propyne	0.12	ND	ND	ND	ND	0.08
Isobutane	2.34	4.57	4.54	4.13	4.09	1.05
Isobutene/1-Butene	3.33	1.44	1.32	1.49	1.32	2.15
1,3-Butadiene	0.38	0.09	0.11	0.12	0.11	0.20
n-Butane	5.20	3.27	3.23	3.51	3.49	4.83
trans-2-Butene	0.48	0.31	0.32	0.30	0.30	0.66
cis-2-Butene	0.53	0.40	0.36	0.39	0.43	0.70
3-Methyl-1-butene	0.16	0.06	0.08	0.09	0.08	0.28
Isopentane	16.54	28.50	28.68	25.00	25.53	19.96
1-Pentene	0.59	0.37	0.34	0.49	0.39	1.12
2-Methyl-1-butene	0.68	0.39	0.36	0.47	0.38	1.20
n-Pentane	4.54	3.49	3.38	3.74	3.53	6.61
Isoprene	2.09	0.88	0.85	0.85	0.91	0.70
trans-2-Pentene	0.97	0.59	0.54	0.57	0.63	1.89
cis-2-Pentene	0.62	0.46	0.41	0.54	0.50	1.16
2-Methyl-2-butene	0.82	0.51	0.50	0.60	0.57	2.25
2,2-Dimethylbutane	0.94	0.76	0.66	0.65	0.78	0.98
Cyclopentene	1.17	0.13	1.14	1.13	1.18	0.84
4-Methyl-1-pentene	0.04	ND	ND	ND	ND	0.11
Cyclopentane	0.75	0.58	0.47	0.56	0.55	1.05
2,3-Dimethylbutane	5.92	3.12	2.90	3.60	3.55	12.13
2-Methylpentane	4.04	2.87	2.92	2.87	3.06	7.07
3-Methylpentane	2.59	1.63	1.56	1.83	1.75	4.56
2-Methyl-1-pentene	0.19	0.11	0.14	0.13	0.14	0.49
1-Hexene	0.24	0.13	0.12	0.12	0.12	0.38
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	3.23	2.64	2.51	2.67	2.58	6.41
trans-2-Hexene	0.21	0.07	0.08	0.10	0.09	0.46
cis-2-Hexene	0.13	0.16	0.07	0.07	0.06	0.29
Methylcyclopentane	1.59	1.17	1.11	1.12	1.07	2.79
2,4-Dimethylpentane	0.81	0.65	0.60	0.65	0.67	1.18
Benzene	3.61	2.67	2.59	2.85	2.81	5.35
Cyclohexane	0.85	4.46	4.39	3.98	4.04	1.59
2-Methylhexane	2.00	1.55	1.52	1.52	1.96	3.01
2,3-Dimethylpentane	1.08	0.99	1.00	0.88	1.08	1.38
3-Methylhexane	1.79	1.79	1.68	1.72	1.73	2.67
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	2.53	1.58	1.42	1.56	1.53	3.35
n-Heptane	1.31	1.90	1.75	1.74	1.67	2.61
Methylcyclohexane	1.10	1.37	1.35	1.27	1.22	1.17
2,2,3-Trimethylpentane	0.61	0.42	0.47	0.46	0.51	0.85
2,3,4-Trimethylpentane	0.98	0.59	0.55	0.73	0.65	1.31
Toluene	9.71	16.04	15.45	14.30	14.10	14.55
2-Methylheptane	0.72	0.69	0.55	0.58	0.51	0.87
3-Methylheptane	0.74	0.64	0.55	0.49	0.63	0.88
1-Octene	0.05	0.06	0.08	0.08	0.04	0.13
n-Octane	0.97	0.82	0.79	0.80	0.82	1.19
Ethylbenzene	2.24	1.61	1.59	1.61	1.57	2.87
m-Xylene/p-Xylene	7.16	4.41	4.21	4.42	4.36	9.74
Styrene	1.14	1.68	1.69	1.04	1.14	1.04
o-Xylene	2.31	1.61	1.52	1.60	1.61	3.31
1-Nonene	0.12	0.15	0.12	0.14	0.14	0.17
n-Nonane	0.69	0.57	0.51	0.61	0.58	0.85
Isopropylbenzene	0.34	0.43	0.38	0.42	0.41	0.47
a-Pinene	0.22	0.08	0.07	0.07	0.10	0.09
n-Propylbenzene	0.61	0.56	0.52	0.56	0.53	0.85
m-Ethyltoluene	1.60	1.16	1.12	1.21	1.21	2.46
p-Ethyltoluene	0.94	0.87	0.82	0.84	0.90	1.49
1,3,5-Trimethylbenzene	0.91	0.68	0.62	0.64	0.69	1.21
o-Ethyltoluene	0.93	0.62	0.59	0.66	0.63	1.03
b-Pinene	0.34	0.87	0.87	0.77	0.83	0.54
1,2,4-Trimethylbenzene	2.40	1.68	1.69	1.65	1.69	3.42
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.72	0.79	0.63	0.68	0.54	0.63
1,2,3-Trimethylbenzene	0.51	0.42	0.37	0.44	0.35	0.66
m-Diethylbenzene	0.42	0.45	0.39	0.41	0.43	0.50
p-Diethylbenzene	0.29	0.39	0.26	0.37	0.37	0.43
1-Undecene	0.06	0.04	0.06	ND	ND	0.07
n-Undecane	0.65	1.09	1.00	0.74	0.69	0.53
1-Dodecene	0.09	0.31	0.26	0.35	0.29	0.13
n-Dodecane	0.32	0.35	0.35	0.22	0.24	0.29
1-Tridecene	ND	0.04	ND	ND	ND	ND
n-Tridecane	0.05	0.07	0.05	0.04	0.06	0.02
TNMOC (w/ unknowns)	166.91	164.63	161.99	153.00	152.19	198.47
TNMOC (speciated)	139.58	131.36	128.63	126.32	125.90	169.83

SNMOC 1998 REPORT
SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**14794**	**14795**	**14803**	**14827**	**14904D1**	**14904R1**
Sampling Date:	**9/11/98**	**9/14/98**	**9/15/98**	**9/16/98**	**9/17/98**	**9/17/98**
Analysis Date:	**12/7/98**	**10/20/98**	**10/17/98**	**VOID**	**10/20/98**	**10/26/98**
Compound						
Ethylene	2.65	3.82	3.46		3.28	3.34
Acetylene	1.84	2.43	2.08		2.27	2.25
Ethane	4.83	14.55	5.68		3.66	3.57
Propylene	1.29	1.92	1.60		1.56	1.60
Propane	4.03	12.23	5.98		3.59	3.56
Propyne	ND	0.08	0.08		0.06	0.06
Isobutane	1.30	3.05	2.24		1.48	1.43
Isobutene/1-Butene	2.02	2.86	2.05		2.27	2.33
1,3-Butadiene	0.19	0.36	0.31		0.29	0.34
n-Butane	2.71	7.06	4.27		6.26	6.27
trans-2-Butene	0.44	0.48	0.33		0.72	0.72
cis-2-Butene	0.50	0.54	0.50		0.93	0.88
3-Methyl-1-butene	ND	0.20	0.11		0.37	0.37
Isopentane	15.97	14.92	11.72		23.91	24.24
1-Pentene	0.51	0.65	0.47		1.32	1.29
2-Methyl-1-butene	0.40	0.68	0.52		1.92	1.85
n-Pentane	2.53	5.45	3.59		13.44	13.37
Isoprene	0.60	1.05	0.93		1.21	1.17
trans-2-Pentene	0.66	1.03	0.81		2.83	2.78
cis-2-Pentene	0.54	0.65	0.57		1.58	1.52
2-Methyl-2-butene	0.41	1.01	0.80		3.53	3.47
2,2-Dimethylbutane	0.84	0.87	0.81		1.44	1.41
Cyclopentene	0.62	0.56	0.34		1.12	1.17
4-Methyl-1-pentene	ND	0.05	ND		0.14	0.14
Cyclopentane	0.54	0.74	0.61		1.43	1.49
2,3-Dimethylbutane	3.03	5.46	4.44		16.31	16.38
2-Methylpentane	3.01	4.01	3.28		9.46	9.52
3-Methylpentane	1.53	2.47	2.03		6.22	6.10
2-Methyl-1-pentene	0.14	0.20	0.20		0.72	0.74
1-Hexene	0.13	0.16	0.15		0.47	0.43
2-Ethyl-1-butene	ND	ND	ND		ND	ND
n-Hexane	2.00	3.15	2.44		8.72	8.68
trans-2-Hexene	0.07	0.19	0.14		0.71	0.71
cis-2-Hexene	0.04	0.09	0.07		0.46	0.44
Methylcyclopentane	1.10	1.61	1.37		3.61	3.62
2,4-Dimethylpentane	0.70	0.88	0.65		1.56	1.52
Benzene	2.53	3.50	3.17		6.66	6.16
Cyclohexane	0.81	1.14	0.80		15.08	15.33
2-Methylhexane	1.62	1.93	1.69		3.28	3.36
2,3-Dimethylpentane	0.97	1.01	0.88		1.41	1.47
3-Methylhexane	1.13	1.64	1.34		3.55	3.50
1-Heptene	ND	ND	ND		ND	ND
2,2,4-Trimethylpentane	1.43	2.41	1.89		4.42	4.39
n-Heptane	1.01	1.42	1.10		3.61	3.56
Methylcyclohexane	0.70	1.07	0.79		1.58	1.56
2,2,3-Trimethylpentane	0.24	0.57	0.48		1.19	1.17
2,3,4-Trimethylpentane	0.72	1.02	0.79		1.85	1.76
Toluene	5.82	9.74	7.71		21.73	21.59
2-Methylheptane	0.54	0.73	0.60		1.14	1.24
3-Methylheptane	0.46	0.55	0.62		1.20	1.24
1-Octene	0.05	0.05	0.05		0.08	0.06
n-Octane	0.68	0.86	0.71		1.59	1.59
Ethylbenzene	1.37	1.86	1.55		4.09	4.02
m-Xylene/p-Xylene	3.84	5.58	4.84		14.07	13.87
Styrene	1.22	1.02	0.88		0.89	0.96
o-Xylene	1.53	2.14	1.81		4.80	4.75
1-Nonene	ND	0.10	ND		0.13	0.14
n-Nonane	0.58	0.65	0.52		1.06	1.06
Isopropylbenzene	0.52	0.48	0.38		0.54	0.46
a-Pinene	0.64	0.80	0.41		0.35	0.38
n-Propylbenzene	0.66	0.71	0.58		1.13	1.08
m-Ethyltoluene	1.35	2.08	1.59		3.41	3.45
p-Ethyltoluene	1.00	1.16	1.03		2.02	2.00
1,3,5-Trimethylbenzene	0.80	0.94	0.89		1.64	1.72
o-Ethyltoluene	0.74	0.98	0.78		1.39	1.44
b-Pinene	0.58	0.51	0.41		0.27	0.32
1,2,4-Trimethylbenzene	1.54	2.68	2.20		4.59	4.91
1-Decene	ND	ND	ND		ND	ND
n-Decane	0.43	0.70	0.48		0.90	0.90
1,2,3-Trimethylbenzene	0.38	0.71	0.56		1.04	1.27
m-Diethylbenzene	0.41	0.48	0.43		0.52	0.85
p-Diethylbenzene	0.64	0.44	0.29		0.50	0.74
1-Undecene	0.10	0.06	0.02		0.08	0.06
n-Undecane	0.60	0.67	0.56		0.92	1.06
1-Dodecene	0.23	0.10	0.10		0.10	0.04
n-Dodecane	0.20	0.33	0.22		0.28	0.29
1-Tridecene	ND	0.02	ND		ND	ND
n-Tridecane	0.08	0.13	0.08		0.05	0.06
TNMOC (w/ unknowns)	120.63	174.50	128.72		272.21	273.96
TNMOC (speciated)	95.26	148.45	107.86		241.98	242.58

SNMOC 1998 REPORT
SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**14905D2**	**14905R2**	**14902**	**14972**	**14973**	**14998**
Sampling Date:	**9/17/98**	**9/17/98**	**9/18/98**	**9/21/98**	**9/23/98**	**9/24/98**
Analysis Date:	**10/21/98**	**10/26/98**	**10/15/98**	**10/21/98**	**10/21/98**	**10/21/98**
Compound						
Ethylene	3.41	3.34	7.82	4.43	3.11	3.30
Acetylene	2.30	2.27	5.51	3.03	1.99	2.29
Ethane	3.64	3.61	8.25	16.59	5.93	11.19
Propylene	1.63	1.70	3.69	2.12	1.40	1.43
Propane	3.62	3.65	6.91	12.66	5.94	10.67
Propyne	0.11	0.11	0.32	0.08	0.06	0.11
Isobutane	1.48	1.52	2.92	3.65	1.53	3.83
Isobutene/1-Butene	2.26	2.25	4.38	2.85	2.25	2.26
1,3-Butadiene	0.31	0.31	0.79	0.39	0.23	0.24
n-Butane	6.20	6.25	5.79	6.88	4.58	13.17
trans-2-Butene	0.80	0.72	0.69	0.41	0.47	1.12
cis-2-Butene	0.87	0.88	0.80	0.48	0.56	1.16
3-Methyl-1-butene	0.39	0.38	0.28	0.15	0.20	0.61
Isopentane	25.88	25.89	27.09	19.23	19.10	38.34
1-Pentene	1.21	1.35	0.95	0.61	0.81	2.02
2-Methyl-1-butene	1.84	1.81	1.21	0.63	0.80	2.73
n-Pentane	14.87	14.79	7.23	5.78	5.41	15.44
Isoprene	1.21	1.16	1.05	1.50	0.77	1.00
trans-2-Pentene	2.72	2.65	1.75	0.95	1.27	4.13
cis-2-Pentene	1.53	1.51	1.02	0.64	0.80	2.28
2-Methyl-2-butene	3.40	3.36	1.78	0.84	1.38	5.19
2,2-Dimethylbutane	1.24	1.28	1.15	0.97	1.03	1.82
Cyclopentene	1.08	1.05	0.67	0.76	0.68	1.69
4-Methyl-1-pentene	0.14	0.14	0.09	ND	ND	0.25
Cyclopentane	1.50	1.47	1.00	0.78	0.71	2.33
2,3-Dimethylbutane	16.02	15.86	11.17	6.10	7.45	27.55
2-Methylpentane	9.46	9.39	6.61	4.45	4.73	15.78
3-Methylpentane	6.07	6.02	4.19	2.70	3.03	10.14
2-Methyl-1-pentene	0.63	0.63	0.36	0.19	0.23	1.18
1-Hexene	0.43	0.43	0.30	0.18	0.21	0.79
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	8.57	8.88	4.78	3.36	3.90	14.98
trans-2-Hexene	0.70	0.85	0.34	0.14	0.27	1.13
cis-2-Hexene	0.44	0.44	0.21	0.11	0.19	0.71
Methylcyclopentane	3.63	3.71	2.61	1.85	1.84	5.98
2,4-Dimethylpentane	1.40	1.53	1.36	0.81	0.90	2.24
Benzene	6.86	6.07	6.48	4.06	4.15	10.64
Cyclohexane	20.05	19.97	1.21	0.96	20.39	2.24
2-Methylhexane	3.83	3.65	2.53	1.69	1.77	5.34
2,3-Dimethylpentane	1.61	1.48	1.48	0.98	0.98	2.12
3-Methylhexane	3.49	3.47	2.75	1.86	1.94	5.71
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	4.21	4.23	5.56	2.69	2.70	6.59
n-Heptane	3.56	3.48	2.32	1.52	1.88	6.06
Methylcyclohexane	1.57	1.54	1.52	1.10	1.05	2.64
2,2,3-Trimethylpentane	1.12	1.14	1.24	0.68	0.70	1.86
2,3,4-Trimethylpentane	1.71	1.83	2.18	1.10	1.12	2.50
Toluene	22.14	21.95	20.32	11.79	14.16	31.70
2-Methylheptane	1.13	1.14	1.22	0.72	0.77	1.73
3-Methylheptane	1.13	1.13	1.22	0.68	0.66	1.83
1-Octene	0.04	0.09	0.15	0.05	0.10	0.16
n-Octane	1.58	1.57	1.48	1.07	1.12	2.75
Ethylbenzene	4.15	4.07	3.48	2.21	2.88	6.02
m-Xylene/p-Xylene	14.11	13.88	11.08	6.80	9.31	21.98
Styrene	1.59	1.58	1.31	1.13	1.61	1.09
o-Xylene	4.89	4.79	4.21	2.56	3.24	7.09
1-Nonene	0.20	0.12	0.20	0.09	0.14	0.29
n-Nonane	1.08	1.09	1.33	0.93	0.92	1.61
Isopropylbenzene	0.52	0.52	0.55	0.48	0.57	0.65
a-Pinene	0.41	0.37	1.04	0.44	0.23	0.17
n-Propylbenzene	1.17	1.13	1.09	0.93	0.89	1.66
m-Ethyltoluene	3.43	3.40	3.55	2.28	2.32	5.03
p-Ethyltoluene	2.05	1.94	2.00	1.48	1.42	2.97
1,3,5-Trimethylbenzene	1.63	1.72	2.01	1.19	1.26	2.36
o-Ethyltoluene	1.35	1.34	1.42	1.14	1.05	1.94
b-Pinene	0.70	0.71	0.81	0.60	0.74	0.51
1,2,4-Trimethylbenzene	4.61	4.74	5.29	3.37	3.18	6.89
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.15	1.14	2.00	1.11	1.50	0.84
1,2,3-Trimethylbenzene	1.10	1.20	1.34	0.92	0.71	1.61
m-Diethylbenzene	0.54	0.73	0.73	0.60	0.42	0.69
p-Diethylbenzene	0.49	0.73	0.61	0.53	0.46	0.70
1-Undecene	0.04	0.06	0.12	0.06	0.10	0.10
n-Undecane	1.35	1.33	1.43	1.07	2.13	0.77
1-Dodecene	0.39	0.16	0.16	0.13	0.30	0.44
n-Dodecane	0.42	0.44	0.51	0.40	0.91	0.41
1-Tridecene	ND	ND	0.04	ND	0.05	0.07
n-Tridecane	0.04	0.06	0.16	0.10	0.23	0.24
TNMOC (w/ unknowns)	289.27	291.03	275.43	202.27	208.60	413.00
TNMOC (speciated)	252.43	251.16	223.20	167.77	173.84	347.88

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**15022D1**	**15022R1**	**15023D2**	**15023R2**	**15041D1**	**15041R1**
Sampling Date:	**9/25/98**	**9/25/98**	**9/25/98**	**9/25/98**	**9/28/98**	**9/28/98**
Analysis Date:	**10/24/98**	**10/27/98**	**10/24/98**	**10/27/98**	**10/27/98**	**10/28/98**
Compound						
Ethylene	3.75	3.65	3.69	3.63	8.36	8.67
Acetylene	2.39	2.28	2.34	2.32	4.75	4.87
Ethane	9.03	8.89	8.97	9.01	16.01	16.03
Propylene	1.46	1.56	1.50	1.58	3.91	3.91
Propane	8.79	8.67	8.65	8.63	12.80	12.94
Propyne	0.07	0.06	0.15	0.04	0.23	0.27
Isobutane	2.93	2.89	2.87	2.82	4.52	4.60
Isobutene/1-Butene	1.70	1.62	1.72	1.71	4.38	4.82
1,3-Butadiene	0.26	0.26	0.24	0.27	0.81	0.63
n-Butane	6.49	6.45	6.50	6.49	10.49	10.04
trans-2-Butene	0.36	0.32	0.33	0.33	0.67	0.65
cis-2-Butene	0.41	0.43	0.43	0.44	0.73	0.74
3-Methyl-1-butene	1.32	ND	0.51	ND	0.36	0.37
Isopentane	16.85	16.96	16.82	16.26	30.02	30.52
1-Pentene	0.52	0.61	0.44	0.53	1.01	1.12
2-Methyl-1-butene	0.48	0.47	0.44	0.45	1.26	1.32
n-Pentane	5.17	5.09	5.22	5.10	8.63	8.69
Isoprene	0.93	0.95	1.00	0.98	1.85	1.92
trans-2-Pentene	0.65	0.67	0.69	0.72	1.72	1.75
cis-2-Pentene	0.50	0.50	0.52	0.56	1.01	1.02
2-Methyl-2-butene	0.45	0.45	0.51	0.47	1.69	1.72
2,2-Dimethylbutane	0.74	0.77	0.80	0.81	1.41	1.49
Cyclopentene	0.47	0.44	0.49	0.49	1.27	1.23
4-Methyl-1-pentene	ND	ND	ND	ND	0.06	0.15
Cyclopentane	0.66	0.67	0.64	0.60	0.98	1.12
2,3-Dimethylbutane	4.76	4.77	4.92	4.89	11.54	11.80
2-Methylpentane	3.56	3.41	3.58	3.55	7.36	7.47
3-Methylpentane	2.39	2.39	2.45	2.45	4.52	4.71
2-Methyl-1-pentene	0.14	0.13	0.17	0.16	0.30	0.33
1-Hexene	0.14	0.15	0.20	0.23	0.27	0.45
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	3.62	3.73	3.62	3.52	5.15	5.44
trans-2-Hexene	0.12	0.18	0.15	0.13	0.31	0.32
cis-2-Hexene	0.08	0.11	0.09	0.09	0.21	0.21
Methylcyclopentane	1.56	1.57	1.61	1.55	2.80	2.88
2,4-Dimethylpentane	0.73	0.71	0.72	0.77	1.32	1.40
Benzene	3.16	3.09	3.18	3.20	6.71	6.82
Cyclohexane	6.54	6.42	5.85	5.83	1.18	1.25
2-Methylhexane	1.76	1.67	1.74	1.72	3.02	2.78
2,3-Dimethylpentane	0.98	0.93	0.90	0.89	1.42	1.45
3-Methylhexane	1.54	1.51	1.59	1.61	3.01	3.01
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	2.33	2.30	2.38	2.45	4.86	5.03
n-Heptane	1.28	1.30	1.31	1.37	2.39	2.50
Methylcyclohexane	0.98	1.00	1.03	1.00	1.33	1.42
2,2,3-Trimethylpentane	0.49	0.49	0.43	0.59	1.14	1.05
2,3,4-Trimethylpentane	0.90	0.90	0.93	0.94	1.99	1.98
Toluene	10.16	10.06	10.18	10.09	18.33	18.60
2-Methylheptane	0.63	0.67	0.56	0.65	1.13	1.28
3-Methylheptane	0.61	0.71	0.64	0.63	1.19	1.20
1-Octene	0.10	0.08	0.07	0.07	0.11	0.20
n-Octane	1.04	1.01	1.03	1.03	1.48	1.52
Ethylbenzene	1.81	1.77	1.76	1.79	3.56	3.58
m-Xylene/p-Xylene	5.33	5.16	5.58	5.43	11.44	11.39
Styrene	1.09	1.00	0.76	0.87	1.35	1.35
o-Xylene	1.98	1.91	2.00	2.00	4.25	4.33
1-Nonene	0.25	0.16	0.15	0.12	0.17	0.33
n-Nonane	0.82	0.84	0.79	0.80	0.97	1.00
Isopropylbenzene	0.41	0.40	0.41	0.40	0.57	0.56
a-Pinene	ND	ND	0.07	0.09	1.21	1.27
n-Propylbenzene	0.61	0.54	0.64	0.56	1.10	1.16
m-Ethyltoluene	1.53	1.41	1.48	1.47	3.45	3.52
p-Ethyltoluene	1.06	0.89	0.98	0.93	1.92	1.97
1,3,5-Trimethylbenzene	0.94	0.77	0.83	0.84	1.82	1.92
o-Ethyltoluene	0.83	0.65	0.87	0.63	1.79	1.63
b-Pinene	0.55	0.51	0.45	0.44	0.93	1.00
1,2,4-Trimethylbenzene	2.27	2.11	2.31	2.19	5.14	5.51
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.86	0.79	0.79	0.78	1.24	1.28
1,2,3-Trimethylbenzene	0.50	0.47	0.50	0.49	1.30	1.26
m-Diethylbenzene	0.39	0.39	0.35	0.42	0.71	0.69
p-Diethylbenzene	0.31	0.34	0.28	0.37	0.58	0.66
1-Undecene	0.02	0.03	0.09	0.06	0.13	0.29
n-Undecane	0.87	0.83	0.75	0.75	1.22	1.24
1-Dodecene	0.35	0.09	0.07	0.13	0.13	0.18
n-Dodecane	0.38	0.25	0.28	0.22	0.50	0.75
1-Tridecene	ND	ND	ND	ND	ND	0.11
n-Tridecane	0.09	0.07	0.05	0.07	0.27	0.41
TNMOC (w/ unknowns)	172.61	168.22	164.15	163.50	292.76	300.22
TNMOC (speciated)	139.20	135.28	137.03	135.49	247.75	253.10

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**15042D2**	**15042R2**	**15081**	**15062D1**	**15062R1**	**15063D2**
Sampling Date:	**9/28/98**	**9/28/98**	**9/29/98**	**9/30/98**	**9/30/98**	**9/30/98**
Analysis Date:	**10/27/98**	**10/28/98**	**10/27/98**	**10/28/98**	**10/28/98**	**10/28/98**
Compound						
Ethylene	8.41	8.74	13.06	6.64	6.57	6.73
Acetylene	4.90	5.04	7.98	4.85	4.86	4.99
Ethane	15.88	16.17	18.67	16.06	15.72	16.28
Propylene	4.00	4.11	6.12	3.09	3.05	3.11
Propane	12.70	12.88	12.22	11.23	11.08	11.24
Propyne	0.28	0.25	0.46	0.25	0.19	0.20
Isobutane	4.53	4.57	6.51	3.34	3.34	3.25
Isobutene/1-Butene	4.37	4.62	6.77	3.32	3.17	3.30
1,3-Butadiene	0.75	0.87	1.32	0.54	0.58	0.54
n-Butane	10.36	10.62	24.52	9.27	9.23	9.36
trans-2-Butene	0.68	0.65	1.59	0.77	0.59	0.65
cis-2-Butene	0.73	0.73	1.50	0.77	0.66	0.72
3-Methyl-1-butene	0.34	0.35	0.71	0.36	0.34	0.36
Isopentane	31.49	32.31	54.50	27.91	27.86	29.63
1-Pentene	1.15	1.15	1.92	1.13	1.06	1.11
2-Methyl-1-butene	1.21	1.29	2.60	1.37	1.32	1.33
n-Pentane	8.39	8.62	16.16	9.26	9.19	9.35
Isoprene	1.85	1.93	3.08	1.62	1.59	1.63
trans-2-Pentene	1.70	1.72	3.85	1.83	1.84	1.95
cis-2-Pentene	1.02	1.03	2.03	1.10	1.06	1.12
2-Methyl-2-butene	1.68	1.74	4.03	1.87	1.84	1.96
2,2-Dimethylbutane	1.38	1.42	2.07	1.40	1.24	1.43
Cyclopentene	1.30	1.30	1.40	0.86	0.82	0.99
4-Methyl-1-pentene	0.11	0.08	0.24	0.11	0.12	0.13
Cyclopentane	1.00	1.17	1.81	1.27	1.27	1.28
2,3-Dimethylbutane	11.67	11.94	26.17	13.67	13.36	13.97
2-Methylpentane	7.45	7.59	13.49	8.31	8.31	8.64
3-Methylpentane	4.52	4.57	8.32	5.23	5.27	5.39
2-Methyl-1-pentene	0.34	0.37	0.77	0.40	0.43	0.46
1-Hexene	0.33	0.33	0.51	0.28	0.41	0.36
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	4.98	5.09	8.68	6.71	6.30	6.57
trans-2-Hexene	0.30	0.30	0.76	0.50	0.40	0.41
cis-2-Hexene	0.18	0.21	0.40	0.23	0.22	0.27
Methylcyclopentane	2.79	2.75	4.79	3.20	3.14	3.21
2,4-Dimethylpentane	1.36	1.21	2.17	1.31	1.32	1.30
Benzene	6.82	7.01	10.10	6.62	6.47	6.76
Cyclohexane	1.80	1.84	1.76	1.93	1.99	1.34
2-Methylhexane	3.07	3.26	4.51	3.41	3.43	3.25
2,3-Dimethylpentane	1.42	1.56	2.27	1.50	1.49	1.50
3-Methylhexane	2.89	3.04	5.05	3.42	3.36	3.44
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	4.88	4.89	9.01	4.94	4.86	5.36
n-Heptane	2.40	2.46	4.08	3.09	3.05	3.14
Methylcyclohexane	1.48	1.40	2.28	1.79	1.69	1.68
2,2,3-Trimethylpentane	1.00	1.08	2.04	1.24	1.22	1.29
2,3,4-Trimethylpentane	1.92	1.95	3.64	1.91	1.87	1.94
Toluene	18.11	18.40	33.99	26.35	25.87	22.42
2-Methylheptane	1.10	1.14	2.44	1.30	1.28	1.34
3-Methylheptane	1.16	1.23	2.19	1.30	1.28	1.27
1-Octene	0.11	0.09	0.17	0.15	0.08	0.08
n-Octane	1.46	1.51	2.74	1.67	1.62	1.64
Ethylbenzene	3.52	3.58	5.81	3.77	3.67	3.84
m-Xylene/p-Xylene	11.17	11.17	19.23	12.35	12.12	12.63
Styrene	1.41	1.38	1.92	1.90	2.11	2.42
o-Xylene	4.16	4.30	6.83	4.46	4.45	4.57
1-Nonene	0.17	0.23	0.29	0.15	0.26	0.15
n-Nonane	1.05	1.00	1.64	1.30	1.31	1.35
Isopropylbenzene	0.57	0.52	0.74	0.58	0.52	0.52
a-Pinene	1.14	1.12	1.52	0.48	0.64	0.41
n-Propylbenzene	1.14	1.21	1.69	1.22	1.27	1.32
m-Ethyltoluene	3.40	3.51	5.50	3.57	3.60	3.69
p-Ethyltoluene	1.96	1.97	3.01	2.12	2.09	2.27
1,3,5-Trimethylbenzene	1.88	1.96	3.10	2.05	2.04	2.13
o-Ethyltoluene	1.69	1.44	2.30	1.51	1.46	1.81
b-Pinene	0.93	0.94	1.04	0.50	0.56	0.65
1,2,4-Trimethylbenzene	5.21	5.21	8.25	5.21	5.22	5.60
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.30	1.27	2.31	1.59	1.51	1.51
1,2,3-Trimethylbenzene	1.44	1.52	2.14	1.38	1.26	1.38
m-Diethylbenzene	0.68	0.69	0.90	0.62	0.72	0.75
p-Diethylbenzene	0.62	0.58	0.78	0.55	0.65	0.53
1-Undecene	0.14	0.17	0.18	0.12	0.08	0.09
n-Undecane	1.21	1.24	1.72	1.22	1.22	1.38
1-Dodecene	0.14	0.20	0.19	0.15	0.17	0.34
n-Dodecane	0.42	0.61	0.84	0.55	0.58	0.62
1-Tridecene	ND	0.09	ND	ND	0.05	ND
n-Tridecane	0.14	0.15	0.23	0.16	0.13	0.11
TNMOC (w/ unknowns)	294.45	304.99	497.97	307.25	302.26	307.30
TNMOC (speciated)	249.22	254.63	419.58	242.14	254.99	243.45

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SITE CODE: CAMS 5
All concentrations reported in ppbC

Sample No.:	**15063R2**
Sampling Date:	**9/30/98**
Analysis Date:	**10/29/98**
Compound	
Ethylene	6.80
Acetylene	4.92
Ethane	15.80
Propylene	3.04
Propane	11.10
Propyne	0.19
Isobutane	3.26
Isobutene/1-Butene	3.31
1,3-Butadiene	0.58
n-Butane	9.19
trans-2-Butene	0.62
cis-2-Butene	0.75
3-Methyl-1-butene	0.33
Isopentane	30.01
1-Pentene	1.14
2-Methyl-1-butene	1.30
n-Pentane	9.15
Isoprene	1.57
trans-2-Pentene	1.88
cis-2-Pentene	1.12
2-Methyl-2-butene	1.92
2,2-Dimethylbutane	1.18
Cyclopentene	0.85
4-Methyl-1-pentene	0.11
Cyclopentane	1.26
2,3-Dimethylbutane	13.63
2-Methylpentane	8.61
3-Methylpentane	5.32
2-Methyl-1-pentene	0.45
1-Hexene	0.37
2-Ethyl-1-butene	ND
n-Hexane	6.55
trans-2-Hexene	0.45
cis-2-Hexene	0.28
Methylcyclopentane	3.18
2,4-Dimethylpentane	1.34
Benzene	6.64
Cyclohexane	1.29
2-Methylhexane	3.18
2,3-Dimethylpentane	1.49
3-Methylhexane	3.34
1-Heptene	ND
2,2,4-Trimethylpentane	5.30
n-Heptane	3.05
Methylcyclohexane	1.65
2,2,3-Trimethylpentane	1.23
2,3,4-Trimethylpentane	1.93
Toluene	22.26
2-Methylheptane	1.40
3-Methylheptane	1.31
1-Octene	0.08
n-Octane	1.60
Ethylbenzene	3.78
m-Xylene/p-Xylene	12.52
Styrene	2.32
o-Xylene	4.49
1-Nonene	0.21
n-Nonane	1.30
Isopropylbenzene	0.53
a-Pinene	0.47
n-Propylbenzene	1.25
m-Ethyltoluene	3.63
p-Ethyltoluene	2.30
1,3,5-Trimethylbenzene	2.15
o-Ethyltoluene	1.40
b-Pinene	0.75
1,2,4-Trimethylbenzene	5.62
1-Decene	ND
n-Decane	1.46
1,2,3-Trimethylbenzene	1.45
m-Diethylbenzene	0.85
p-Diethylbenzene	0.75
1-Undecene	0.12
n-Undecane	1.37
1-Dodecene	0.35
n-Dodecane	0.65
1-Tridecene	ND
n-Tridecane	0.16
TNMOC (w/ unknowns)	307.93
TNMOC (speciated)	257.23

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Sample No.:	**13014**	**13017**	**13055**	**13089**	**13090**	**13205**
Sampling Date:	**6/22/98**	**6/24/98**	**6/25/98**	**6/26/98**	**6/29/98**	**6/30/98**
Analysis Date:	**7/9/98**	**7/10/98**	**7/10/98**	**7/10/98**	**7/10/98**	**7/10/98**
Compound						
Ethylene	1.98	2.19	2.74	4.81	6.08	3.03
Acetylene	1.22	2.09	1.94	12.59	3.31	2.67
Ethane	2.92	4.12	5.21	8.34	6.09	5.91
Propylene	1.03	1.54	1.76	2.48	2.78	2.52
Propane	4.01	4.57	8.55	15.85	9.32	6.56
Propyne	0.10	0.15	0.20	0.37	0.31	0.29
Isobutane	0.99	3.74	1.85	3.62	4.36	1.48
Isobutene/1-Butene	1.81	2.60	2.32	2.87	2.78	2.69
1,3-Butadiene	0.16	0.19	0.32	0.50	0.39	0.42
n-Butane	5.75	20.06	5.07	5.20	7.26	3.79
trans-2-Butene	0.09	1.62	0.18	0.23	0.19	0.22
cis-2-Butene	0.12	1.70	0.18	0.23	0.18	0.22
3-Methyl-1-butene	0.92	1.97	0.25	0.18	1.20	0.28
Isopentane	16.27	55.55	11.35	19.02	18.82	15.09
1-Pentene	0.14	2.51	0.23	0.42	0.34	0.33
2-Methyl-1-butene	0.36	4.16	0.54	0.68	0.49	0.66
n-Pentane	1.90	18.56	3.34	5.19	5.10	3.80
Isoprene	1.51	1.55	1.34	1.40	1.37	1.27
trans-2-Pentene	0.30	4.62	0.52	0.72	0.51	0.68
cis-2-Pentene	0.11	2.39	0.21	0.33	0.23	0.30
2-Methyl-2-butene	0.28	6.57	0.53	0.73	0.52	0.76
2,2-Dimethylbutane	0.17	2.27	0.36	0.97	0.56	0.46
Cyclopentene	0.39	1.20	0.48	0.43	1.11	0.71
4-Methyl-1-pentene	0.03	0.29	0.02	0.07	ND	0.06
Cyclopentane	0.16	2.24	0.31	0.65	0.49	0.35
2,3-Dimethylbutane	2.35	34.90	3.57	6.74	5.15	4.73
2-Methylpentane	1.77	17.42	2.96	6.84	5.61	4.15
3-Methylpentane	0.77	11.47	1.50	3.83	2.10	1.96
2-Methyl-1-pentene	0.06	0.97	0.13	0.18	0.14	0.16
1-Hexene	0.11	0.66	0.17	0.21	0.19	0.21
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	1.06	12.82	2.05	3.86	2.92	2.45
trans-2-Hexene	0.07	1.01	0.09	0.15	0.15	0.22
cis-2-Hexene	0.03	0.56	0.07	0.09	0.06	0.09
Methylcyclopentane	0.55	5.28	1.11	1.99	1.57	1.30
2,4-Dimethylpentane	0.18	1.56	0.35	0.67	0.48	0.47
Benzene	1.56	5.36	2.52	4.41	3.69	3.15
Cyclohexane	0.25	8.71	0.47	1.18	0.93	0.48
2-Methylhexane	1.11	4.98	1.96	2.62	2.22	1.84
2,3-Dimethylpentane	0.17	1.89	0.61	1.03	0.78	0.68
3-Methylhexane	0.71	4.95	1.16	2.64	1.64	1.52
1-Heptene	0.07	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	1.03	4.96	2.00	3.28	2.48	2.69
n-Heptane	0.60	3.63	0.99	4.36	1.81	1.45
Methylcyclohexane	0.45	1.73	0.82	3.41	1.52	1.02
2,2,3-Trimethylpentane	0.29	1.24	0.48	1.07	0.68	0.64
2,3,4-Trimethylpentane	0.44	1.57	0.74	1.19	0.93	0.99
Toluene	3.53	15.33	6.75	13.68	8.84	8.65
2-Methylheptane	0.17	1.09	0.41	1.03	0.50	0.48
3-Methylheptane	0.15	0.81	0.30	0.66	0.41	0.36
1-Octene	0.14	0.13	0.07	0.08	0.11	0.07
n-Octane	0.34	1.34	0.57	1.20	0.79	0.58
Ethylbenzene	0.63	2.67	1.27	4.13	1.71	1.83
m-Xylene/p-Xylene	1.95	9.52	4.04	15.14	5.38	6.20
Styrene	0.77	1.49	0.74	4.90	1.33	0.65
o-Xylene	0.77	3.45	1.47	4.31	1.95	2.22
1-Nonene	0.11	0.17	0.08	0.22	0.09	0.12
n-Nonane	0.23	0.76	0.35	0.80	0.44	0.40
Isopropylbenzene	ND	0.19	0.06	0.16	0.23	0.09
a-Pinene	0.26	0.31	0.35	0.35	0.27	0.31
n-Propylbenzene	0.20	0.86	0.28	0.62	0.43	0.36
m-Ethyltoluene	0.90	2.80	1.15	2.14	1.51	1.48
p-Ethyltoluene	0.39	1.47	0.53	1.08	0.92	0.70
1,3,5-Trimethylbenzene	0.23	1.39	0.53	1.15	0.59	0.70
o-Ethyltoluene	0.22	1.32	0.49	1.08	0.58	0.67
b-Pinene	0.35	0.77	0.38	0.24	0.74	0.28
1,2,4-Trimethylbenzene	0.89	3.96	1.47	3.13	1.80	1.96
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.23	1.28	0.32	1.06	0.66	0.41
1,2,3-Trimethylbenzene	0.16	1.04	0.26	0.70	0.33	0.34
m-Diethylbenzene	0.05	0.78	0.08	0.17	0.13	0.10
p-Diethylbenzene	0.06	0.44	0.09	0.12	0.09	0.12
1-Undecene	ND	0.51	ND	0.04	ND	ND
n-Undecane	0.23	17.14	0.13	0.32	0.25	0.13
1-Dodecene	2.31	ND	ND	ND	ND	ND
n-Dodecane	ND	7.34	0.17	3.81	ND	ND
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.27	ND	ND	ND	0.04	ND
TNMOC (w/ unknowns)	112.47	462.29	132.73	238.78	211.31	149.07
TNMOC (speciated)	71.87	352.47	95.92	199.91	138.96	113.94

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Sample No.:	**13210**	**13203D1**	**13203R1**	**13204D2**	**13204R2**	**13214**
Sampling Date:	**7/1/98**	**7/2/98**	**7/2/98**	**7/2/98**	**7/2/98**	**7/3/98**
Analysis Date:	**7/11/98**	**7/8/98**	**7/9/98**	**7/9/98**	**7/9/98**	**7/11/98**
Compound						
Ethylene	4.10	6.04	5.72	0.99	6.42	4.02
Acetylene	3.84	13.32	12.32	12.28	11.46	6.90
Ethane	4.69	6.20	8.97	7.45	7.87	8.92
Propylene	3.04	3.49	3.25	3.22	3.04	2.80
Propane	12.80	10.07	9.47	9.34	8.75	13.87
Propyne	0.43	0.55	0.49	0.42	0.43	0.42
Isobutane	2.32	2.67	2.39	2.42	2.27	4.77
Isobutene/1-Butene	3.51	4.38	3.90	3.87	3.77	3.06
1,3-Butadiene	0.22	0.26	0.67	0.43	0.55	0.43
n-Butane	4.58	6.07	7.67	5.39	4.98	10.83
trans-2-Butene	0.42	0.41	0.42	0.38	0.35	0.25
cis-2-Butene	0.44	0.39	0.37	0.36	0.35	0.27
3-Methyl-1-butene	0.96	1.05	0.84	0.81	0.86	0.96
Isopentane	26.46	25.49	22.40	21.57	19.78	25.85
1-Pentene	0.65	0.49	0.66	0.67	0.48	0.49
2-Methyl-1-butene	0.96	0.98	0.98	0.99	0.74	0.81
n-Pentane	6.08	8.23	7.15	7.22	6.61	7.62
Isoprene	1.38	2.29	2.12	1.87	1.95	2.14
trans-2-Pentene	1.11	1.23	1.09	1.15	1.05	0.91
cis-2-Pentene	0.50	0.58	0.53	0.52	0.48	0.40
2-Methyl-2-butene	1.15	1.49	1.33	1.20	1.13	0.77
2,2-Dimethylbutane	0.76	0.62	0.74	0.72	0.65	0.87
Cyclopentene	1.47	1.60	1.54	1.27	1.07	2.17
4-Methyl-1-pentene	0.03	0.09	0.04	0.04	0.04	0.05
Cyclopentane	0.71	0.65	0.70	0.69	0.63	0.73
2,3-Dimethylbutane	7.90	9.35	8.59	8.20	7.62	7.89
2-Methylpentane	7.13	6.37	5.87	6.31	5.70	7.18
3-Methylpentane	3.71	3.77	3.35	3.44	3.02	3.87
2-Methyl-1-pentene	0.21	0.32	0.30	0.31	0.26	0.22
1-Hexene	0.29	0.32	0.25	0.25	0.23	0.29
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	4.88	4.54	4.20	4.14	3.79	5.43
trans-2-Hexene	0.20	0.26	0.32	0.35	0.32	0.26
cis-2-Hexene	0.12	0.17	0.16	0.15	0.13	0.11
Methylcyclopentane	2.49	2.44	2.25	2.21	1.99	2.37
2,4-Dimethylpentane	0.82	0.73	0.81	0.82	0.70	0.71
Benzene	4.41	5.48	5.28	5.23	4.95	5.18
Cyclohexane	1.72	1.00	0.95	0.90	0.84	1.05
2-Methylhexane	3.80	2.60	2.80	2.76	2.54	2.69
2,3-Dimethylpentane	1.42	0.92	1.11	1.13	1.08	1.06
3-Methylhexane	3.58	2.71	2.53	2.47	2.30	2.55
1-Heptene	ND	ND	ND	ND	ND	0.21
2,2,4-Trimethylpentane	4.05	4.61	4.43	4.39	4.02	3.44
n-Heptane	3.95	2.30	2.29	2.31	2.15	2.24
Methylcyclohexane	2.74	1.61	1.25	1.48	1.50	1.81
2,2,3-Trimethylpentane	1.13	1.24	1.11	1.11	0.99	0.99
2,3,4-Trimethylpentane	1.40	1.85	1.75	1.65	1.50	1.28
Toluene	17.28	20.00	17.44	17.75	16.11	13.90
2-Methylheptane	0.96	1.07	0.99	1.03	0.92	0.98
3-Methylheptane	0.66	0.82	0.71	0.73	0.67	0.67
1-Octene	0.12	0.08	0.11	0.12	0.12	0.14
n-Octane	1.11	1.39	1.32	1.35	1.29	1.32
Ethylbenzene	2.42	6.97	6.19	6.22	5.69	2.39
m-Xylene/p-Xylene	7.74	25.22	22.54	22.57	20.64	7.67
Styrene	1.24	5.23	5.02	4.97	4.55	3.51
o-Xylene	2.86	7.68	6.79	6.91	6.33	2.83
1-Nonene	0.15	0.10	0.17	0.29	0.28	0.20
n-Nonane	0.69	1.06	0.95	0.97	0.88	1.05
Isopropylbenzene	0.15	0.25	0.26	0.23	0.21	0.17
a-Pinene	0.66	0.51	0.66	0.59	0.55	0.54
n-Propylbenzene	0.61	0.80	0.84	0.81	0.78	0.71
m-Ethyltoluene	2.23	3.28	4.28	2.88	2.87	2.47
p-Ethyltoluene	1.09	1.66	1.84	1.43	1.38	1.25
1,3,5-Trimethylbenzene	1.12	1.64	1.53	1.55	1.43	1.35
o-Ethyltoluene	1.00	1.55	1.50	1.50	1.34	1.37
b-Pinene	0.58	0.54	0.66	0.38	0.43	0.42
1,2,4-Trimethylbenzene	3.05	4.64	4.29	4.12	3.83	3.48
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.85	1.70	1.36	1.41	1.42	1.44
1,2,3-Trimethylbenzene	0.99	1.19	0.77	0.97	0.92	0.80
m-Diethylbenzene	0.20	0.25	0.27	0.26	0.23	0.24
p-Diethylbenzene	0.21	0.27	0.22	0.23	0.23	0.21
1-Undecene	0.07	0.14	0.07	0.07	0.10	0.03
n-Undecane	0.53	0.84	0.77	0.89	0.81	0.68
1-Dodecene	ND	ND	ND	ND	ND	ND
n-Dodecane	ND	ND	0.62	ND	0.89	0.35
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	ND	0.12	0.21	0.05	0.28	ND
TNMOC (w/ unknowns)	262.76	304.52	296.85	288.50	278.25	250.83
TNMOC (speciated)	187.12	240.23	227.75	215.15	206.51	201.33

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All concentrations reported in ppbC

Sample No.:	**13323**	**13322**	**13321**	**13366**	**13374**	**13522**
Sampling Date:	**7/6/98**	**7/7/98**	**7/8/98**	**7/9/98**	**7/10/98**	**7/13/98**
Analysis Date:	**7/11/98**	**VOID**	**7/16/98**	**7/16/98**	**7/16/98**	**8/19/98**
Compound						
Ethylene	0.45		3.17	2.43	2.41	3.89
Acetylene	5.02		0.96	2.68	1.89	1.77
Ethane	5.20		2.58	3.39	5.47	6.96
Propylene	2.20		0.82	2.30	1.23	1.88
Propane	8.61		3.74	8.93	4.94	7.05
Propyne	0.29		0.09	ND	0.16	ND
Isobutane	1.74		0.97	1.49	3.12	1.90
Isobutene/1-Butene	2.71		4.73	2.31	1.95	2.14
1,3-Butadiene	0.36		0.21	0.39	0.18	0.23
n-Butane	6.11		3.08	4.07	16.84	3.62
trans-2-Butene	0.22		0.19	0.21	1.25	0.44
cis-2-Butene	0.22		0.21	0.24	1.38	0.55
3-Methyl-1-butene	0.76		0.11	0.20	1.45	0.61
Isopentane	17.12		9.51	15.65	45.48	22.25
1-Pentene	0.35		0.37	0.44	2.24	0.62
2-Methyl-1-butene	0.64		0.42	0.72	3.50	0.35
n-Pentane	4.57		3.28	4.01	15.12	3.31
Isoprene	1.04		0.60	1.85	1.31	2.01
trans-2-Pentene	0.65		0.69	0.68	4.27	0.61
cis-2-Pentene	0.28		0.34	0.31	2.12	0.50
2-Methyl-2-butene	0.69		1.27	0.73	5.52	0.50
2,2-Dimethylbutane	0.47		0.31	0.48	1.89	0.69
Cyclopentene	1.13		1.04	1.24	1.59	1.52
4-Methyl-1-pentene	0.03		ND	ND	0.31	ND
Cyclopentane	0.41		0.41	0.43	2.39	0.44
2,3-Dimethylbutane	4.77		0.74	4.74	31.50	3.69
2-Methylpentane	4.71		3.78	4.31	17.44	2.65
3-Methylpentane	2.17		2.06	2.17	10.52	1.82
2-Methyl-1-pentene	0.16		0.13	0.21	0.99	0.12
1-Hexene	0.22		0.19	0.14	0.58	0.10
2-Ethyl-1-butene	ND		ND	ND	ND	ND
n-Hexane	2.51		2.90	2.55	12.98	2.19
trans-2-Hexene	0.17		0.20	0.19	1.07	ND
cis-2-Hexene	0.08		0.11	0.09	0.58	ND
Methylcyclopentane	1.29		1.20	1.33	4.97	1.02
2,4-Dimethylpentane	0.51		0.41	0.43	1.58	0.82
Benzene	3.21		2.05	3.13	6.59	2.77
Cyclohexane	0.53		0.55	0.76	1.17	0.81
2-Methylhexane	1.92		1.80	2.41	3.64	1.25
2,3-Dimethylpentane	0.75		0.55	1.06	1.38	0.88
3-Methylhexane	1.41		1.15	2.33	4.34	1.37
1-Heptene	0.11		0.07	0.44	0.70	ND
2,2,4-Trimethylpentane	2.61		1.49	2.09	4.73	2.20
n-Heptane	1.20		0.98	2.49	3.79	1.14
Methylcyclohexane	1.03		0.64	1.75	1.57	0.77
2,2,3-Trimethylpentane	0.70		0.44	0.62	1.41	0.59
2,3,4-Trimethylpentane	0.94		0.59	0.85	1.72	0.98
Toluene	9.70		7.33	8.18	20.52	6.82
2-Methylheptane	0.57		0.40	0.55	1.10	0.54
3-Methylheptane	0.39		0.30	0.42	0.80	0.70
1-Octene	0.09		0.04	0.07	0.15	ND
n-Octane	0.64		0.63	0.75	1.41	0.83
Ethylbenzene	2.04		1.38	1.47	3.58	1.30
m-Xylene/p-Xylene	6.94		5.17	4.74	12.99	3.75
Styrene	1.23		0.30	0.44	1.48	1.63
o-Xylene	2.40		1.66	1.79	4.27	1.47
1-Nonene	0.14		0.10	0.14	0.19	ND
n-Nonane	0.46		0.33	0.42	0.97	0.59
Isopropylbenzene	0.10		ND	ND	0.21	0.41
a-Pinene	0.45		ND	0.59	0.35	0.29
n-Propylbenzene	0.42		0.29	0.35	1.01	0.57
m-Ethyltoluene	1.57		1.12	1.38	3.24	1.44
p-Ethyltoluene	0.76		0.55	0.66	1.77	0.88
1,3,5-Trimethylbenzene	0.78		0.48	0.68	1.48	0.74
o-Ethyltoluene	0.84		0.40	0.74	1.45	0.71
b-Pinene	0.57		ND	1.15	1.23	1.33
1,2,4-Trimethylbenzene	2.15		1.39	1.81	4.34	1.86
1-Decene	ND		ND	ND	ND	ND
n-Decane	0.54		0.21	0.34	1.00	0.67
1,2,3-Trimethylbenzene	0.40		0.21	0.44	0.74	0.58
m-Diethylbenzene	0.14		0.05	0.07	0.24	0.55
p-Diethylbenzene	0.11		0.06	0.10	0.37	0.36
1-Undecene	ND		ND	ND	ND	ND
n-Undecane	0.31		ND	ND	0.54	0.71
1-Dodecene	ND		ND	ND	ND	0.14
n-Dodecane	0.29		ND	ND	0.19	0.72
1-Tridecene	ND		ND	ND	ND	ND
n-Tridecane	ND		ND	ND	ND	0.27
TNMOC (w/ unknowns)	168.75		108.32	143.06	367.49	160.87
TNMOC (speciated)	126.31		83.54	116.54	306.87	118.87

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**13585**	**13582**	**13583**	**13592D1**	**13592R1**	**13593D2**
Sampling Date:	**7/14/98**	**7/15/98**	**7/16/98**	**7/17/98**	**7/17/98**	**7/17/98**
Analysis Date:	**8/19/98**	**8/7/98**	**8/7/98**	**8/19/98**	**8/21/98**	**8/20/98**
Compound						
Ethylene	5.67	8.18	19.52	6.28	5.49	5.87
Acetylene	3.92	4.91	12.81	2.88	2.58	2.62
Ethane	15.77	10.69	29.77	22.04	17.89	19.57
Propylene	2.28	3.51	8.60	2.25	2.05	2.08
Propane	16.17	10.60	29.44	23.34	22.09	25.88
Propyne	0.17	0.63	0.83	0.13	0.14	0.13
Isobutane	4.98	2.29	6.70	8.14	7.68	8.35
Isobutene/1-Butene	2.50	3.73	15.72	2.27	1.97	1.99
1,3-Butadiene	0.33	0.63	1.85	0.31	0.38	0.23
n-Butane	8.98	4.68	17.16	12.28	11.67	15.96
trans-2-Butene	0.37	0.55	1.55	0.39	0.43	0.44
cis-2-Butene	0.62	0.64	1.70	0.57	0.54	0.53
3-Methyl-1-butene	0.60	0.43	2.67	0.10	0.08	0.19
Isopentane	23.54	14.63	66.96	30.97	29.41	25.34
1-Pentene	0.51	0.76	2.38	0.60	0.55	0.60
2-Methyl-1-butene	0.61	0.71	2.16	0.47	0.37	0.42
n-Pentane	6.85	10.74	20.62	8.28	7.91	7.35
Isoprene	1.45	1.58	3.17	1.22	1.11	1.56
trans-2-Pentene	0.82	1.07	3.71	0.71	0.72	0.80
cis-2-Pentene	0.46	0.66	4.89	0.60	0.47	0.54
2-Methyl-2-butene	0.60	0.87	6.17	0.54	0.57	0.50
2,2-Dimethylbutane	0.94	0.99	2.71	1.19	1.16	1.16
Cyclopentene	3.00	0.81	2.58	2.73	2.58	3.10
4-Methyl-1-pentene	ND	ND	0.26	ND	ND	ND
Cyclopentane	0.83	0.63	2.14	0.86	0.79	0.71
2,3-Dimethylbutane	7.89	7.54	15.82	5.30	5.10	5.15
2-Methylpentane	5.18	4.29	15.44	5.82	5.57	5.62
3-Methylpentane	3.09	3.31	9.75	3.48	3.27	3.24
2-Methyl-1-pentene	0.19	0.26	0.72	0.15	0.17	0.15
1-Hexene	0.14	0.26	0.76	0.14	0.13	0.12
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	4.95	4.08	11.27	8.70	8.08	7.45
trans-2-Hexene	0.15	0.15	0.67	0.06	0.05	0.06
cis-2-Hexene	ND	ND	0.60	ND	ND	ND
Methylcyclopentane	1.95	2.19	5.50	2.29	2.13	2.08
2,4-Dimethylpentane	0.89	1.00	2.50	0.96	0.82	0.94
Benzene	4.76	5.08	12.25	4.54	4.12	4.24
Cyclohexane	1.19	1.00	1.97	7.96	7.64	6.51
2-Methylhexane	1.61	2.15	5.99	2.37	2.15	2.33
2,3-Dimethylpentane	1.05	1.35	2.90	1.28	1.19	1.45
3-Methylhexane	2.26	2.42	6.51	2.44	2.25	2.31
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	2.48	4.07	11.50	2.66	2.67	2.68
n-Heptane	2.35	1.83	5.75	2.68	2.62	2.53
Methylcyclohexane	1.72	1.35	3.32	2.25	2.09	2.12
2,2,3-Trimethylpentane	0.79	0.89	2.81	0.78	0.81	0.59
2,3,4-Trimethylpentane	1.06	1.49	4.24	1.08	0.96	1.11
Toluene	13.06	14.09	42.09	17.44	16.41	15.87
2-Methylheptane	0.95	1.04	2.61	1.28	1.23	1.38
3-Methylheptane	0.96	1.14	2.58	1.24	1.12	1.10
1-Octene	0.11	ND	0.15	0.11	0.05	0.11
n-Octane	1.30	1.50	4.45	1.68	1.60	2.12
Ethylbenzene	3.75	4.06	8.32	2.42	2.34	4.57
m-Xylene/p-Xylene	12.20	13.11	27.48	7.55	7.24	12.95
Styrene	0.95	3.43	3.21	1.98	1.71	2.57
o-Xylene	3.80	4.41	9.95	2.94	2.76	3.89
1-Nonene	0.16	0.18	0.69	0.30	0.27	0.26
n-Nonane	1.01	1.35	2.90	1.64	1.63	1.72
Isopropylbenzene	0.52	0.64	0.99	0.68	0.61	0.59
a-Pinene	0.36	0.38	ND	0.21	0.51	0.85
n-Propylbenzene	0.75	1.10	2.59	0.99	0.98	0.89
m-Ethyltoluene	2.10	3.10	9.38	2.30	2.28	2.18
p-Ethyltoluene	1.43	1.79	4.80	1.56	1.67	1.53
1,3,5-Trimethylbenzene	1.34	1.59	5.30	1.74	1.56	1.35
o-Ethyltoluene	1.04	1.45	3.57	1.08	1.07	0.99
b-Pinene	0.60	2.94	0.57	0.68	0.91	1.31
1,2,4-Trimethylbenzene	3.14	4.43	13.68	3.66	3.53	3.23
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.11	1.55	3.88	2.41	2.18	2.13
1,2,3-Trimethylbenzene	0.73	1.20	3.34	1.10	0.71	0.68
m-Diethylbenzene	0.41	0.88	0.89	0.48	0.67	0.74
p-Diethylbenzene	0.40	0.70	0.97	0.48	0.47	0.65
1-Undecene	ND	ND	0.43	ND	ND	0.03
n-Undecane	0.91	1.58	3.39	1.86	1.78	1.87
1-Dodecene	0.06	0.71	0.36	0.19	0.25	0.34
n-Dodecane	0.32	0.91	1.53	0.54	0.53	0.83
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.12	0.30	0.57	0.11	0.16	0.14
TNMOC (w/ unknowns)	238.11	293.72	656.60	282.34	267.84	328.18
TNMOC (speciated)	199.24	199.17	547.03	242.74	226.64	243.45

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**13593R2**	**13612**	**13728**	**13732**	**13764**	**13761**
Sampling Date:	**7/17/98**	**7/20/98**	**7/21/98**	**7/22/98**	**7/23/98**	**7/24/98**
Analysis Date:	**8/21/98**	**8/8/98**	**8/20/98**	**8/20/98**	**8/20/98**	**8/20/98**
Compound						
Ethylene	5.86	6.16	5.14	4.05	3.84	4.37
Acetylene	2.51	3.97	9.54	2.44	1.72	2.49
Ethane	19.36	12.08	6.33	6.07	3.92	5.16
Propylene	2.17	2.79	2.88	2.16	1.87	2.06
Propane	25.86	14.89	9.17	7.32	3.77	5.15
Propyne	0.15	0.22	0.18	0.16	0.10	ND
Isobutane	8.13	3.20	2.24	4.25	1.24	1.47
Isobutene/1-Butene	2.02	3.30	3.14	3.29	2.16	2.31
1,3-Butadiene	0.24	0.53	0.61	0.38	0.42	0.51
n-Butane	15.80	7.23	5.08	5.17	2.52	2.73
trans-2-Butene	0.39	0.70	0.78	0.78	0.46	0.43
cis-2-Butene	0.52	0.62	0.59	0.62	0.65	0.64
3-Methyl-1-butene	0.17	0.10	0.13	2.21	ND	0.15
Isopentane	25.51	20.07	17.79	26.64	13.38	14.47
1-Pentene	0.54	0.63	0.70	0.91	0.57	0.43
2-Methyl-1-butene	0.41	0.59	0.65	0.48	0.45	0.43
n-Pentane	7.30	5.57	5.79	4.76	3.03	3.27
Isoprene	1.58	1.67	1.72	1.62	1.46	1.50
trans-2-Pentene	0.86	1.10	1.49	0.98	0.88	0.71
cis-2-Pentene	0.53	0.69	0.77	0.60	0.59	0.61
2-Methyl-2-butene	0.47	0.93	1.03	0.93	0.81	0.73
2,2-Dimethylbutane	1.28	0.91	0.99	0.64	0.69	0.75
Cyclopentene	2.98	0.85	0.90	0.79	0.72	0.58
4-Methyl-1-pentene	ND	0.02	0.08	0.13	0.03	0.06
Cyclopentane	0.74	0.61	0.69	0.82	0.48	0.40
2,3-Dimethylbutane	4.71	6.88	6.20	4.30	3.60	3.68
2-Methylpentane	5.57	4.60	4.31	3.92	2.32	2.56
3-Methylpentane	3.30	2.76	2.58	2.74	1.57	1.78
2-Methyl-1-pentene	0.12	0.23	0.25	0.17	0.15	0.19
1-Hexene	0.09	0.14	0.17	0.10	0.16	0.07
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	7.53	3.22	3.14	4.07	1.87	2.47
trans-2-Hexene	0.05	0.17	0.17	0.16	0.13	0.08
cis-2-Hexene	ND	0.14	0.11	0.09	0.04	0.05
Methylcyclopentane	2.15	1.95	1.62	1.71	1.07	1.16
2,4-Dimethylpentane	1.00	0.92	0.93	0.87	0.67	0.67
Benzene	4.32	3.79	3.94	3.44	2.79	2.40
Cyclohexane	6.49	1.08	0.81	84.57	0.74	1.18
2-Methylhexane	2.04	2.04	1.97	1.83	1.61	1.92
2,3-Dimethylpentane	1.32	1.29	1.24	1.15	1.02	1.17
3-Methylhexane	2.20	1.91	1.82	1.47	1.53	2.01
1-Heptene	ND	0.05	ND	ND	ND	ND
2,2,4-Trimethylpentane	2.78	2.94	2.88	1.76	1.63	1.91
n-Heptane	2.52	1.52	1.52	1.27	1.47	1.66
Methylcyclohexane	2.02	1.31	1.12	0.93	0.94	0.98
2,2,3-Trimethylpentane	0.84	0.64	0.62	0.52	0.38	0.30
2,3,4-Trimethylpentane	1.11	1.17	1.12	0.89	0.64	0.82
Toluene	15.82	9.99	12.16	17.47	5.73	6.06
2-Methylheptane	1.31	0.96	1.00	0.55	0.65	0.73
3-Methylheptane	1.06	0.74	1.06	0.85	0.57	0.61
1-Octene	0.07	0.28	ND	0.09	0.14	0.08
n-Octane	2.17	1.17	1.26	1.78	0.81	0.91
Ethylbenzene	4.57	2.80	5.91	2.51	1.17	1.43
m-Xylene/p-Xylene	13.00	8.80	20.73	6.37	3.33	3.91
Styrene	2.30	1.39	1.81	2.41	1.21	1.13
o-Xylene	3.89	3.17	6.20	2.47	1.37	1.70
1-Nonene	0.16	0.39	0.20	0.28	ND	0.04
n-Nonane	1.78	0.87	1.09	1.27	0.62	0.84
Isopropylbenzene	0.57	0.59	0.55	0.56	0.48	0.49
a-Pinene	0.97	0.53	0.51	0.59	0.56	0.89
n-Propylbenzene	0.89	0.92	0.97	0.88	0.59	0.75
m-Ethyltoluene	2.22	2.26	2.65	2.00	1.35	1.54
p-Ethyltoluene	1.54	1.35	1.62	1.40	0.93	1.02
1,3,5-Trimethylbenzene	1.43	1.31	1.62	1.43	0.80	0.90
o-Ethyltoluene	1.06	1.16	1.31	0.91	0.74	0.87
b-Pinene	1.82	1.30	0.70	1.17	1.58	1.41
1,2,4-Trimethylbenzene	3.32	3.13	4.15	3.25	2.12	2.35
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	2.21	0.94	1.48	4.05	0.63	0.71
1,2,3-Trimethylbenzene	1.04	0.85	0.98	0.69	0.65	0.65
m-Diethylbenzene	0.73	0.56	0.44	0.44	0.48	0.56
p-Diethylbenzene	0.52	0.43	0.42	0.36	0.36	0.40
1-Undecene	0.08	0.06	0.05	0.24	ND	ND
n-Undecane	1.85	1.01	1.38	7.05	0.60	0.73
1-Dodecene	0.41	0.54	0.11	ND	0.10	0.06
n-Dodecane	0.82	0.44	0.60	2.06	0.24	0.20
1-Tridecene	ND	0.02	ND	ND	ND	ND
n-Tridecane	0.17	0.21	0.18	0.27	0.13	0.09
TNMOC (w/ unknowns)	325.92	216.65	226.67	303.57	126.98	136.13
TNMOC (speciated)	243.29	176.37	186.06	257.58	98.04	109.60

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**13778**	**13894D1**	**13894R1**	**13895D2**	**13895R2**	**13903**
Sampling Date:	**7/27/98**	**7/28/98**	**7/28/98**	**7/28/98**	**7/28/98**	**7/29/98**
Analysis Date:	**8/21/98**	**8/18/98**	**8/19/98**	**8/18/98**	**8/19/98**	**8/18/98**
Compound						
Ethylene	3.02	4.04	3.97	3.37	3.60	2.91
Acetylene	1.69	1.73	1.32	2.29	1.70	1.30
Ethane	3.06	4.89	5.00	4.12	4.28	2.78
Propylene	1.49	1.77	1.73	1.72	1.77	1.49
Propane	4.89	11.42	11.20	10.43	11.74	4.05
Propyne	0.12	ND	ND	ND	ND	ND
Isobutane	1.59	2.08	2.06	2.00	2.19	0.95
Isobutene/1-Butene	1.77	1.94	1.92	1.76	1.95	1.76
1,3-Butadiene	0.29	0.28	0.31	0.21	0.29	0.22
n-Butane	2.21	2.38	2.18	2.21	2.52	1.92
trans-2-Butene	0.38	0.37	0.44	0.51	0.41	0.35
cis-2-Butene	0.57	0.55	0.63	0.51	0.53	0.53
3-Methyl-1-butene	0.16	ND	ND	ND	ND	ND
Isopentane	12.05	11.29	12.05	12.74	13.64	14.54
1-Pentene	0.48	0.49	0.45	0.40	0.36	0.45
2-Methyl-1-butene	0.30	0.27	0.32	0.33	0.33	0.36
n-Pentane	2.76	2.69	2.73	2.56	2.93	3.01
Isoprene	1.26	1.19	1.13	1.12	1.21	1.15
trans-2-Pentene	0.80	0.67	0.66	0.68	0.70	0.63
cis-2-Pentene	0.57	0.59	0.59	0.55	0.53	0.51
2-Methyl-2-butene	0.63	0.52	0.46	0.46	0.65	0.51
2,2-Dimethylbutane	0.63	0.67	0.71	0.57	0.68	0.58
Cyclopentene	0.58	0.92	0.67	0.71	0.72	0.42
4-Methyl-1-pentene	ND	ND	ND	ND	ND	ND
Cyclopentane	0.48	0.49	0.54	0.45	0.47	0.41
2,3-Dimethylbutane	3.62	2.98	3.15	2.82	3.10	2.91
2-Methylpentane	2.97	2.18	2.93	2.28	2.76	1.97
3-Methylpentane	1.65	1.69	1.61	1.55	1.75	1.39
2-Methyl-1-pentene	0.15	0.12	0.12	0.13	0.18	0.15
1-Hexene	0.10	0.14	0.10	0.12	0.13	0.07
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	1.97	1.82	1.86	1.71	2.04	1.49
trans-2-Hexene	0.13	0.10	0.09	0.09	0.08	ND
cis-2-Hexene	ND	ND	ND	ND	ND	ND
Methylcyclopentane	1.05	1.02	1.04	1.01	1.14	1.11
2,4-Dimethylpentane	0.75	0.69	0.72	0.63	0.75	0.64
Benzene	1.91	2.05	2.20	2.04	2.25	1.91
Cyclohexane	1.22	0.74	0.74	1.56	1.68	0.79
2-Methylhexane	2.63	1.26	1.96	1.68	1.84	0.87
2,3-Dimethylpentane	1.22	0.96	1.09	0.96	1.00	0.79
3-Methylhexane	2.27	1.77	1.67	1.58	1.81	1.54
1-Heptene	ND	0.03	0.03	0.08	0.05	ND
2,2,4-Trimethylpentane	2.03	1.71	1.56	1.37	1.64	1.34
n-Heptane	2.29	1.76	1.66	1.64	1.75	1.39
Methylcyclohexane	1.37	1.16	1.03	1.03	1.23	0.74
2,2,3-Trimethylpentane	0.52	0.31	0.34	0.34	0.43	0.32
2,3,4-Trimethylpentane	0.78	0.77	0.76	0.68	0.74	0.62
Toluene	6.84	6.34	6.16	5.97	6.61	4.72
2-Methylheptane	0.69	0.68	0.63	0.62	0.64	0.54
3-Methylheptane	0.71	0.65	0.67	0.67	0.68	0.52
1-Octene	ND	ND	ND	ND	ND	ND
n-Octane	0.79	0.97	0.88	0.86	0.89	0.83
Ethylbenzene	1.33	1.56	1.51	1.53	1.63	1.14
m-Xylene/p-Xylene	3.80	4.51	4.15	4.23	4.66	3.00
Styrene	1.05	0.86	0.76	1.01	1.01	1.24
o-Xylene	1.51	1.57	1.61	1.65	1.74	1.26
1-Nonene	ND	ND	ND	ND	ND	ND
n-Nonane	0.60	0.62	0.66	0.62	0.60	0.58
Isopropylbenzene	0.49	0.50	0.45	0.38	0.45	0.44
a-Pinene	0.37	0.47	0.48	0.37	0.50	0.40
n-Propylbenzene	0.62	0.69	0.63	0.70	0.60	0.56
m-Ethyltoluene	1.26	1.47	1.45	1.41	1.47	1.19
p-Ethyltoluene	0.85	1.18	0.93	0.96	0.95	0.83
1,3,5-Trimethylbenzene	0.80	0.97	0.87	0.90	0.87	0.81
o-Ethyltoluene	0.60	0.69	0.60	0.72	0.72	0.75
b-Pinene	1.12	1.10	1.04	1.24	1.19	1.46
1,2,4-Trimethylbenzene	1.76	2.19	2.15	2.14	2.26	1.82
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.66	0.73	0.71	0.65	0.71	0.61
1,2,3-Trimethylbenzene	0.49	0.68	0.84	0.51	0.55	0.48
m-Diethylbenzene	0.55	0.52	0.45	0.50	0.46	0.58
p-Diethylbenzene	0.31	0.46	0.40	0.41	0.42	0.32
1-Undecene	0.69	ND	ND	ND	ND	ND
n-Undecane	0.63	0.80	0.71	0.71	0.67	0.68
1-Dodecene	0.10	ND	ND	ND	ND	ND
n-Dodecane	0.22	0.32	0.30	0.20	0.20	0.22
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.12	0.13	0.15	0.10	0.10	0.11
TNMOC (w/ unknowns)	130.17	129.21	126.11	127.10	134.08	118.62
TNMOC (speciated)	99.37	105.16	104.85	102.07	110.09	85.95

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**13942**	**13959**	**14058**	**13979D1**	**13979R1**	**13980D2**
Sampling Date:	**7/31/98**	**8/3/98**	**8/4/98**	**8/5/98**	**8/5/98**	**8/5/98**
Analysis Date:	**8/18/98**	**8/19/98**	**8/28/98**	**8/19/98**	**8/20/98**	**8/19/98**
Compound						
Ethylene	4.23	6.00	5.70	2.26	9.92	8.95
Acetylene	1.74	17.26	4.40	5.53	5.85	5.67
Ethane	5.43	14.86	14.19	4.11	16.20	13.49
Propylene	1.98	3.06	2.18	4.55	4.16	3.93
Propane	6.19	15.83	14.76	47.83	43.03	41.32
Propyne	ND	0.53	0.20	0.62	0.25	0.56
Isobutane	1.56	5.17	4.68	5.41	5.03	4.58
Isobutene/1-Butene	2.45	3.24	2.08	4.56	4.13	3.93
1,3-Butadiene	0.31	0.61	0.34	1.00	0.80	0.83
n-Butane	4.45	8.89	7.80	8.07	7.23	7.12
trans-2-Butene	0.42	0.59	0.40	0.94	0.67	0.88
cis-2-Butene	0.53	0.62	0.52	0.85	0.79	0.82
3-Methyl-1-butene	0.11	ND	0.30	0.16	0.13	0.22
Isopentane	12.41	25.00	24.50	35.93	32.78	32.30
1-Pentene	0.48	0.77	0.66	1.11	0.87	1.10
2-Methyl-1-butene	0.39	0.73	0.53	1.02	0.97	1.03
n-Pentane	3.07	7.79	6.71	10.69	9.56	9.25
Isoprene	1.94	2.52	0.83	1.31	1.18	1.18
trans-2-Pentene	0.76	1.11	0.83	1.49	1.35	1.32
cis-2-Pentene	0.59	0.71	0.61	0.99	0.91	0.87
2-Methyl-2-butene	0.69	0.99	0.70	1.42	1.36	1.23
2,2-Dimethylbutane	0.78	1.22	1.36	1.77	1.12	1.20
Cyclopentene	0.68	2.62	1.69	0.81	0.72	0.75
4-Methyl-1-pentene	ND	ND	0.08	ND	ND	ND
Cyclopentane	0.54	0.65	0.92	1.29	0.96	0.77
2,3-Dimethylbutane	3.48	6.70	7.13	11.84	10.67	10.91
2-Methylpentane	2.95	5.84	7.60	8.62	7.56	7.22
3-Methylpentane	1.68	3.66	4.13	5.08	4.50	4.46
2-Methyl-1-pentene	0.12	0.24	0.19	0.30	0.28	0.26
1-Hexene	0.14	0.19	0.16	0.31	0.23	0.32
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	1.92	4.72	4.38	6.43	6.06	5.57
trans-2-Hexene	0.10	0.44	0.12	0.46	0.22	0.47
cis-2-Hexene	ND	ND	ND	0.18	0.13	0.14
Methylcyclopentane	1.11	2.13	2.00	3.08	2.70	2.69
2,4-Dimethylpentane	0.71	1.06	0.88	1.38	1.29	1.17
Benzene	2.52	5.13	4.44	6.83	6.03	6.04
Cyclohexane	0.89	1.11	1.55	2.19	1.90	1.90
2-Methylhexane	1.39	1.82	2.54	5.78	5.41	5.55
2,3-Dimethylpentane	1.03	1.09	1.26	2.36	2.39	2.07
3-Methylhexane	1.20	2.46	3.02	6.85	6.15	5.90
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	1.85	3.37	2.91	5.59	4.84	4.76
n-Heptane	1.18	2.55	5.87	7.72	6.85	6.42
Methylcyclohexane	0.90	1.80	3.95	3.48	3.04	3.00
2,2,3-Trimethylpentane	0.46	0.91	1.13	1.81	1.62	1.50
2,3,4-Trimethylpentane	0.79	1.30	1.13	2.07	1.77	1.72
Toluene	5.89	15.22	15.02	23.21	20.59	19.86
2-Methylheptane	0.66	1.27	1.44	1.56	1.34	1.32
3-Methylheptane	0.67	1.02	1.24	1.56	1.30	1.44
1-Octene	ND	ND	0.05	0.09	0.08	0.10
n-Octane	0.93	1.77	1.66	1.96	1.56	1.68
Ethylbenzene	1.41	5.38	2.41	4.21	3.87	3.77
m-Xylene/p-Xylene	3.74	17.87	7.18	12.66	11.42	10.93
Styrene	1.11	2.50	0.94	2.15	1.93	1.98
o-Xylene	1.55	5.71	2.61	4.66	4.21	4.02
1-Nonene	ND	0.17	0.11	0.28	0.19	0.08
n-Nonane	0.68	1.28	1.11	1.47	1.25	1.36
Isopropylbenzene	0.57	0.64	0.61	0.75	0.54	0.65
a-Pinene	0.42	0.54	0.16	1.22	0.89	0.86
n-Propylbenzene	0.64	0.91	0.78	1.25	1.15	1.16
m-Ethyltoluene	1.55	2.73	2.00	3.92	3.51	3.46
p-Ethyltoluene	1.00	1.75	1.34	2.25	1.98	2.08
1,3,5-Trimethylbenzene	0.91	1.52	1.27	2.18	2.03	1.98
o-Ethyltoluene	0.71	1.28	1.03	1.63	1.61	1.54
b-Pinene	1.13	0.38	0.47	0.83	0.72	0.74
1,2,4-Trimethylbenzene	2.29	3.84	3.12	5.54	5.10	4.87
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.71	1.46	1.27	1.62	1.50	1.52
1,2,3-Trimethylbenzene	0.65	1.11	1.11	1.83	1.49	1.68
m-Diethylbenzene	0.54	0.58	0.54	0.59	0.68	0.61
p-Diethylbenzene	0.41	0.51	0.45	0.65	0.62	0.58
1-Undecene	ND	ND	0.05	ND	ND	ND
n-Undecane	0.75	1.45	1.08	1.52	1.49	1.66
1-Dodecene	ND	ND	0.07	ND	0.11	0.07
n-Dodecane	0.28	0.59	0.43	0.70	0.59	0.97
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.11	0.17	0.13	0.28	0.25	0.31
TNMOC (w/ unknowns)	136.51	283.93	250.54	376.53	345.76	335.04
TNMOC (speciated)	105.49	238.97	201.07	306.67	295.56	286.68

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**13980R2**	**14055**	**14056**	**14091**	**14231**
Sampling Date:	**8/5/98**	**8/6/98**	**8/7/98**	**8/10/98**	**8/13/98**
Analysis Date:	**8/20/98**	**8/28/98**	**8/28/98**	**9/21/98**	**9/2/98**
Compound					
Ethylene	11.02	5.67	1.64	3.24	5.06
Acetylene	6.19	4.45	1.59	2.42	4.44
Ethane	17.65	42.52	3.08	3.70	13.24
Propylene	4.60	3.12	0.92	1.65	2.17
Propane	47.02	45.32	3.26	5.97	12.47
Propyne	0.41	0.19	ND	ND	0.17
Isobutane	5.20	10.35	1.38	2.60	3.94
Isobutene/1-Butene	4.33	3.99	1.24	1.83	2.57
1,3-Butadiene	0.83	0.58	0.13	0.26	0.43
n-Butane	7.90	23.21	6.09	2.56	7.59
trans-2-Butene	0.68	0.71	0.68	0.51	0.58
cis-2-Butene	0.85	0.89	0.78	0.48	0.67
3-Methyl-1-butene	0.19	ND	0.37	0.12	0.14
Isopentane	35.43	34.04	23.06	11.33	22.74
1-Pentene	1.01	1.39	1.29	0.55	0.62
2-Methyl-1-butene	1.13	0.96	1.72	0.32	0.62
n-Pentane	10.39	14.63	8.58	2.96	6.65
Isoprene	1.30	1.71	0.52	1.16	0.68
trans-2-Pentene	1.54	1.81	2.42	0.67	1.03
cis-2-Pentene	0.97	1.26	1.42	0.53	0.74
2-Methyl-2-butene	1.52	1.76	3.00	0.70	0.84
2,2-Dimethylbutane	1.57	1.32	1.38	0.72	0.99
Cyclopentene	0.94	0.96	0.71	0.53	1.04
4-Methyl-1-pentene	ND	ND	0.14	ND	ND
Cyclopentane	1.02	1.40	1.53	0.53	0.75
2,3-Dimethylbutane	11.80	10.63	17.47	3.70	7.76
2-Methylpentane	8.50	9.05	9.59	2.81	5.12
3-Methylpentane	4.97	5.43	6.14	1.85	3.12
2-Methyl-1-pentene	0.38	0.39	0.58	0.12	0.18
1-Hexene	0.31	0.34	0.36	0.13	0.21
2-Ethyl-1-butene	ND	ND	ND	ND	ND
n-Hexane	6.79	7.93	7.24	1.84	3.59
trans-2-Hexene	0.37	0.32	0.51	0.09	0.13
cis-2-Hexene	0.17	0.12	0.29	0.08	0.13
Methylcyclopentane	2.96	3.98	2.94	1.22	1.93
2,4-Dimethylpentane	1.42	1.49	1.21	0.72	0.87
Benzene	6.85	6.18	4.09	2.66	4.20
Cyclohexane	2.21	3.02	0.75	1.02	1.21
2-Methylhexane	5.75	3.71	1.82	3.11	2.30
2,3-Dimethylpentane	2.56	1.77	1.06	1.46	1.34
3-Methylhexane	6.88	3.64	2.44	3.40	2.35
1-Heptene	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	5.60	4.44	3.09	2.16	2.86
n-Heptane	7.23	3.83	2.00	3.01	1.99
Methylcyclohexane	3.37	3.65	0.92	1.76	1.51
2,2,3-Trimethylpentane	1.79	0.97	0.71	0.51	0.71
2,3,4-Trimethylpentane	1.93	1.76	1.18	0.81	1.15
Toluene	22.70	18.25	10.60	7.56	10.32
2-Methylheptane	1.48	1.73	0.78	0.64	0.88
3-Methylheptane	1.43	1.49	0.73	0.64	0.84
1-Octene	0.07	0.08	ND	ND	0.09
n-Octane	1.84	2.47	1.00	0.75	1.12
Ethylbenzene	4.23	3.54	2.04	1.18	1.90
m-Xylene/p-Xylene	12.39	10.70	6.80	3.44	5.50
Styrene	2.09	1.78	0.83	0.82	1.52
o-Xylene	4.55	4.10	2.35	1.38	2.05
1-Nonene	0.20	0.12	0.06	ND	0.10
n-Nonane	1.43	1.61	0.69	0.60	0.73
Isopropylbenzene	0.61	0.81	0.47	0.42	0.43
a-Pinene	1.04	0.90	0.10	0.24	0.48
n-Propylbenzene	1.20	1.40	0.76	0.52	0.67
m-Ethyltoluene	3.87	3.55	1.96	1.16	1.64
p-Ethyltoluene	2.22	2.25	1.20	0.81	1.06
1,3,5-Trimethylbenzene	2.23	2.07	1.03	0.77	0.94
o-Ethyltoluene	1.60	1.63	0.78	0.75	0.78
b-Pinene	0.85	1.09	0.64	0.82	0.86
1,2,4-Trimethylbenzene	5.42	5.38	2.83	1.69	2.42
1-Decene	ND	ND	ND	ND	ND
n-Decane	1.63	1.61	0.48	0.59	0.79
1,2,3-Trimethylbenzene	1.45	1.37	0.77	0.39	0.64
m-Diethylbenzene	0.58	1.09	0.51	0.37	0.55
p-Diethylbenzene	0.45	0.88	0.43	0.28	0.54
1-Undecene	ND	0.14	ND	ND	0.04
n-Undecane	1.76	1.75	0.49	0.54	0.69
1-Dodecene	0.24	0.22	0.13	ND	0.17
n-Dodecane	1.29	0.55	0.18	0.21	0.40
1-Tridecene	ND	ND	0.02	ND	ND
n-Tridecane	0.29	0.67	0.08	0.09	0.18
TNMOC (w/ unknowns)	379.30	407.49	211.78	137.65	206.50
TNMOC (speciated)	307.04	348.11	170.07	104.39	171.18

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**14246D1**	**14246R1**	**14247D2**	**14247R2**	**14218**	**14226**
Sampling Date:	**8/14/98**	**8/14/98**	**8/14/98**	**8/14/98**	**8/17/98**	**8/18/98**
Analysis Date:	**9/10/98**	**9/11/98**	**9/10/98**	**9/11/98**	**9/11/98**	**9/21/98**
Compound						
Ethylene	5.79	5.83	5.89	5.81	5.01	5.31
Acetylene	4.69	4.85	4.66	4.80	3.74	4.19
Ethane	13.04	13.26	13.09	13.06	6.20	9.50
Propylene	2.72	2.76	2.62	2.67	2.46	2.79
Propane	17.90	18.24	17.99	17.95	6.25	10.18
Propyne	0.15	0.22	0.16	0.14	0.23	0.16
Isobutane	3.98	4.04	3.97	3.95	1.63	2.51
Isobutene/1-Butene	2.60	2.76	2.68	2.65	2.70	2.87
1,3-Butadiene	0.50	0.55	0.54	0.53	0.51	0.52
n-Butane	5.63	5.82	5.79	5.74	5.16	12.16
trans-2-Butene	0.54	0.55	0.50	0.51	0.48	0.50
cis-2-Butene	0.56	0.56	0.60	0.58	0.55	0.66
3-Methyl-1-butene	0.18	0.12	0.20	0.20	0.16	0.19
Isopentane	23.49	23.44	22.09	21.92	16.27	16.49
1-Pentene	0.70	0.63	0.67	0.64	0.52	0.59
2-Methyl-1-butene	0.57	0.65	0.66	0.63	0.58	0.74
n-Pentane	6.15	6.37	6.22	6.25	4.78	6.72
Isoprene	0.83	0.94	0.86	0.87	0.93	1.00
trans-2-Pentene	0.94	0.98	1.00	1.00	0.99	1.06
cis-2-Pentene	0.64	0.64	0.69	0.63	0.69	0.72
2-Methyl-2-butene	0.79	0.76	0.82	0.78	0.90	0.94
2,2-Dimethylbutane	0.98	1.13	1.03	0.94	1.10	1.04
Cyclopentene	0.41	0.52	0.49	0.41	0.47	0.63
4-Methyl-1-pentene	ND	0.11	ND	ND	ND	ND
Cyclopentane	0.75	0.76	0.82	0.88	0.71	0.68
2,3-Dimethylbutane	7.32	7.40	7.38	7.35	5.82	6.24
2-Methylpentane	4.92	5.11	4.86	4.76	4.16	4.45
3-Methylpentane	3.32	3.44	3.39	3.36	2.59	2.85
2-Methyl-1-pentene	0.25	0.19	0.19	0.21	0.26	0.22
1-Hexene	0.22	0.27	0.25	0.21	0.15	0.20
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	6.85	6.96	6.74	6.11	2.88	3.42
trans-2-Hexene	0.15	0.15	0.17	0.16	0.15	0.17
cis-2-Hexene	0.12	0.13	0.20	0.12	0.12	0.12
Methylcyclopentane	2.51	2.58	2.54	2.53	1.78	2.10
2,4-Dimethylpentane	0.92	1.07	1.00	0.97	0.86	0.92
Benzene	3.98	3.87	3.92	3.94	3.62	4.06
Cyclohexane	2.17	2.19	2.13	2.26	0.91	1.53
2-Methylhexane	2.94	2.52	2.68	3.10	1.87	2.35
2,3-Dimethylpentane	1.34	1.37	1.29	1.56	1.07	1.28
3-Methylhexane	3.13	3.22	3.18	3.35	1.96	2.19
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	3.32	3.38	3.36	3.40	3.05	2.93
n-Heptane	2.70	2.73	2.63	2.62	1.57	1.74
Methylcyclohexane	1.82	1.84	1.79	1.81	0.99	1.31
2,2,3-Trimethylpentane	0.89	0.93	0.85	0.89	0.66	0.66
2,3,4-Trimethylpentane	1.26	1.31	1.27	1.33	1.30	1.22
Toluene	16.32	16.63	16.40	16.41	9.40	12.40
2-Methylheptane	1.02	1.09	1.08	1.05	0.75	0.90
3-Methylheptane	0.97	1.01	1.00	1.06	0.84	0.74
1-Octene	0.04	0.05	0.06	0.05	0.04	0.07
n-Octane	1.39	1.38	1.34	1.32	0.89	1.03
Ethylbenzene	2.42	2.53	2.44	2.50	2.05	2.84
m-Xylene/p-Xylene	7.29	7.58	7.30	7.37	6.18	9.09
Styrene	1.26	1.09	1.09	0.93	1.23	1.11
o-Xylene	2.71	2.82	2.71	2.76	2.32	3.12
1-Nonene	0.16	0.15	0.13	0.15	0.10	0.07
n-Nonane	1.02	1.03	0.99	0.95	0.64	0.75
Isopropylbenzene	0.44	0.48	0.44	0.53	0.45	0.47
a-Pinene	0.71	0.82	0.64	0.69	0.54	0.58
n-Propylbenzene	0.81	0.87	0.84	0.89	0.74	0.73
m-Ethyltoluene	2.28	2.19	2.30	2.29	1.82	1.88
p-Ethyltoluene	1.35	1.38	1.38	1.41	1.08	1.13
1,3,5-Trimethylbenzene	1.39	1.37	1.35	1.31	1.01	1.07
o-Ethyltoluene	1.05	1.04	1.17	1.24	0.96	0.93
b-Pinene	0.82	0.84	0.52	0.51	0.88	0.44
1,2,4-Trimethylbenzene	3.35	3.36	3.22	3.31	2.59	2.74
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.39	1.35	1.28	1.32	0.78	0.82
1,2,3-Trimethylbenzene	0.65	0.66	0.94	0.80	0.69	0.69
m-Diethylbenzene	0.49	0.53	0.50	0.54	0.51	0.42
p-Diethylbenzene	0.37	0.42	0.46	0.50	0.44	0.31
1-Undecene	0.04	0.06	0.03	0.07	ND	ND
n-Undecane	1.14	1.15	1.64	1.68	0.79	0.70
1-Dodecene	0.12	0.08	0.10	0.11	0.11	0.03
n-Dodecane	0.45	0.47	0.82	0.83	0.30	0.22
1-Tridecene	ND	0.02	ND	ND	ND	ND
n-Tridecane	0.17	0.14	0.23	0.15	0.13	ND
TNMOC (w/ unknowns)	234.38	238.62	234.68	234.92	178.84	200.50
TNMOC (speciated)	196.29	199.70	196.32	196.32	137.06	167.35

SNMOC 1998 REPORT
SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**14241**	**14240**	**14351**	**14519D1**	**14519R1**	**14525D2**
Sampling Date:	**8/19/98**	**8/20/98**	**8/21/98**	**8/27/98**	**8/27/98**	**8/27/98**
Analysis Date:	**9/11/98**	**9/22/98**	**9/22/98**	**10/16/98**	**10/19/98**	**10/16/98**
Compound						
Ethylene	8.24	5.94	3.75	5.01	4.96	4.95
Acetylene	5.76	3.93	3.07	3.43	3.39	3.42
Ethane	9.75	14.97	8.38	8.38	8.31	8.31
Propylene	3.30	2.44	1.74	2.13	2.23	2.13
Propane	18.52	15.30	9.93	15.57	15.81	15.54
Propyne	0.20	0.19	0.13	0.17	0.16	0.14
Isobutane	4.00	4.53	3.02	2.60	2.61	2.55
Isobutene/1-Butene	2.84	2.05	1.77	2.31	2.41	2.29
1,3-Butadiene	0.58	0.31	0.26	0.39	0.38	0.35
n-Butane	5.01	7.60	4.88	4.43	4.65	4.49
trans-2-Butene	0.59	0.44	0.43	0.41	0.42	0.44
cis-2-Butene	0.67	0.58	0.56	0.47	0.56	0.50
3-Methyl-1-butene	1.39	0.15	0.17	0.15	0.13	0.13
Isopentane	22.65	24.97	22.56	23.15	24.37	17.42
1-Pentene	0.70	0.64	0.73	0.52	0.54	0.47
2-Methyl-1-butene	0.83	0.60	0.56	0.59	0.62	0.55
n-Pentane	6.74	6.50	4.94	4.25	4.53	4.32
Isoprene	1.04	0.88	0.87	0.81	0.83	0.84
trans-2-Pentene	1.18	0.86	0.73	0.81	0.91	0.80
cis-2-Pentene	0.75	0.62	0.58	0.54	0.58	0.56
2-Methyl-2-butene	1.19	0.63	0.61	0.97	1.05	0.75
2,2-Dimethylbutane	1.18	1.18	0.97	0.86	0.95	0.77
Cyclopentene	2.46	2.47	2.58	0.78	0.73	0.48
4-Methyl-1-pentene	0.07	ND	ND	0.04	0.08	0.05
Cyclopentane	0.93	0.77	0.62	0.62	0.62	0.54
2,3-Dimethylbutane	8.73	8.88	4.83	5.40	5.81	5.33
2-Methylpentane	5.70	5.26	4.04	4.38	4.54	3.68
3-Methylpentane	3.54	3.15	2.52	2.35	2.47	2.42
2-Methyl-1-pentene	0.23	0.22	0.19	0.19	0.21	0.19
1-Hexene	0.20	0.13	0.23	0.15	0.18	0.16
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	6.13	3.71	3.43	2.86	2.83	2.73
trans-2-Hexene	0.22	0.15	0.13	0.17	0.08	0.14
cis-2-Hexene	0.11	0.08	0.06	0.11	0.12	0.07
Methylcyclopentane	2.36	2.01	1.60	1.66	1.69	1.53
2,4-Dimethylpentane	1.16	0.92	0.79	0.82	0.78	0.75
Benzene	5.67	4.51	3.38	3.34	3.44	3.40
Cyclohexane	1.41	1.22	18.05	1.02	0.93	1.01
2-Methylhexane	2.65	2.61	1.76	2.37	2.26	2.62
2,3-Dimethylpentane	1.57	1.30	1.20	1.29	1.24	1.28
3-Methylhexane	2.84	2.35	1.75	2.65	2.71	2.59
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	3.88	2.76	2.04	2.62	2.59	2.55
n-Heptane	3.08	2.64	1.73	2.05	2.11	2.13
Methylcyclohexane	2.37	2.64	1.53	1.52	1.60	1.58
2,2,3-Trimethylpentane	1.03	0.96	0.48	0.66	0.78	0.68
2,3,4-Trimethylpentane	1.62	1.03	0.86	0.92	1.07	1.04
Toluene	28.68	20.56	11.07	15.61	15.84	15.92
2-Methylheptane	1.52	1.54	0.89	0.80	0.99	0.82
3-Methylheptane	1.35	1.30	0.77	0.80	0.83	0.68
1-Octene	0.14	0.08	0.10	0.07	0.07	0.04
n-Octane	1.98	1.85	1.14	1.06	1.05	1.07
Ethylbenzene	4.70	3.68	3.91	1.98	1.96	1.96
m-Xylene/p-Xylene	16.24	12.79	14.78	5.50	5.68	5.67
Styrene	1.22	0.90	1.65	1.13	1.23	0.79
o-Xylene	5.26	3.80	3.88	2.14	2.17	2.17
1-Nonene	0.43	0.23	0.26	0.16	0.13	0.11
n-Nonane	1.76	1.56	1.93	0.74	0.79	0.74
Isopropylbenzene	0.64	0.45	0.50	0.43	0.43	0.42
a-Pinene	0.62	0.24	0.34	0.23	0.20	0.20
n-Propylbenzene	1.22	0.88	1.15	0.64	0.63	0.64
m-Ethyltoluene	3.57	2.03	2.67	1.62	1.58	1.63
p-Ethyltoluene	2.14	1.38	1.80	1.01	0.99	1.02
1,3,5-Trimethylbenzene	2.43	1.53	2.07	0.88	0.92	0.99
o-Ethyltoluene	1.67	0.97	1.09	0.82	0.77	0.72
b-Pinene	0.48	0.39	0.89	0.70	0.70	0.56
1,2,4-Trimethylbenzene	5.64	3.18	4.31	2.33	2.38	2.35
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	2.88	2.27	3.02	0.80	0.80	0.91
1,2,3-Trimethylbenzene	1.39	0.88	1.15	0.52	0.61	0.69
m-Diethylbenzene	0.76	0.37	0.63	0.41	0.43	0.40
p-Diethylbenzene	0.53	0.46	0.44	0.33	0.36	0.41
1-Undecene	0.10	0.07	0.10	0.07	0.07	0.07
n-Undecane	1.76	1.22	1.83	0.87	0.91	0.86
1-Dodecene	0.09	0.13	0.20	0.24	0.31	0.16
n-Dodecane	0.67	0.33	0.68	0.46	0.47	0.41
1-Tridecene	0.04	ND	0.10	ND	ND	0.05
n-Tridecane	0.16	0.12	0.28	0.16	0.16	0.08
TNMOC (w/ unknowns)	307.52	254.57	238.17	192.31	197.10	180.88
TNMOC (speciated)	245.14	210.28	188.06	158.47	162.72	151.20

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All concentrations reported in ppbC

Sample No.:	**14525R2**	**14524**	**14552**	**14581D1**	**14581R1**	**14582D2**
Sampling Date:	**8/27/98**	**8/28/98**	**8/31/98**	**9/2/98**	**9/2/98**	**9/2/98**
Analysis Date:	**10/19/98**	**10/16/98**	**10/15/98**	**10/2/98**	**10/22/98**	**10/2/98**
Compound						
Ethylene	4.86	7.27	4.10	11.60	11.28	11.49
Acetylene	3.49	4.82	9.48	12.24	11.61	12.30
Ethane	8.48	7.93	8.27	17.02	16.57	16.83
Propylene	2.09	3.46	2.51	5.36	5.09	5.30
Propane	15.75	15.85	13.75	23.99	23.29	23.81
Propyne	0.14	0.15	0.16	0.41	0.40	0.43
Isobutane	2.59	4.63	4.16	6.07	5.87	6.36
Isobutene/1-Butene	2.31	3.37	3.59	5.24	5.20	5.14
1,3-Butadiene	0.41	0.58	0.40	1.06	0.95	1.05
n-Butane	4.47	5.26	5.88	9.67	9.54	9.93
trans-2-Butene	0.44	0.53	0.38	0.77	0.72	0.81
cis-2-Butene	0.54	0.61	0.50	0.87	0.83	0.89
3-Methyl-1-butene	0.15	0.21	ND	0.84	1.14	0.91
Isopentane	17.52	26.10	39.33	41.12	48.94	41.58
1-Pentene	0.54	0.69	0.51	1.12	1.07	1.03
2-Methyl-1-butene	0.63	0.83	0.67	1.38	1.54	1.48
n-Pentane	4.22	6.05	6.05	10.93	10.78	11.15
Isoprene	0.88	1.31	1.20	1.30	1.47	1.32
trans-2-Pentene	0.85	1.19	0.81	1.84	2.03	1.86
cis-2-Pentene	0.58	0.74	0.56	1.03	1.12	1.02
2-Methyl-2-butene	0.94	1.26	1.00	1.96	2.40	2.06
2,2-Dimethylbutane	0.84	1.10	1.20	1.76	1.76	1.96
Cyclopentene	0.55	0.96	1.07	1.72	2.04	1.80
4-Methyl-1-pentene	0.04	0.08	ND	0.09	0.14	0.06
Cyclopentane	0.59	0.88	0.81	1.38	1.38	1.47
2,3-Dimethylbutane	5.33	7.89	5.36	12.18	16.82	12.38
2-Methylpentane	3.68	5.60	4.78	10.02	11.11	9.95
3-Methylpentane	2.40	3.54	3.33	6.05	6.21	6.13
2-Methyl-1-pentene	0.20	0.27	0.14	0.41	0.49	0.40
1-Hexene	0.15	0.20	0.14	0.31	0.41	0.44
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	2.70	4.39	3.59	6.99	7.68	7.52
trans-2-Hexene	0.11	0.19	0.14	0.34	0.41	0.35
cis-2-Hexene	0.11	0.10	0.12	0.23	0.28	0.25
Methylcyclopentane	1.63	2.34	2.10	3.90	4.17	4.01
2,4-Dimethylpentane	0.89	0.95	0.85	1.54	1.72	1.54
Benzene	3.39	4.57	4.18	6.51	8.17	6.88
Cyclohexane	1.03	1.23	65.14	3.48	3.58	4.41
2-Methylhexane	2.28	2.35	2.18	3.64	3.97	4.31
2,3-Dimethylpentane	1.15	1.23	1.08	1.98	2.06	2.02
3-Methylhexane	2.54	2.67	2.37	4.10	4.42	4.03
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	2.56	3.57	2.79	6.04	6.95	6.23
n-Heptane	2.20	2.20	1.97	3.02	3.61	2.83
Methylcyclohexane	1.54	1.92	2.05	1.92	2.20	1.98
2,2,3-Trimethylpentane	0.81	1.01	0.73	1.41	1.77	1.48
2,3,4-Trimethylpentane	1.00	1.37	1.18	2.29	2.63	2.31
Toluene	15.90	22.54	20.07	22.61	29.32	24.41
2-Methylheptane	0.81	1.20	0.96	1.41	1.66	1.45
3-Methylheptane	0.80	1.11	0.94	1.35	1.58	1.41
1-Octene	0.04	0.09	0.16	0.11	0.15	0.20
n-Octane	1.05	1.55	1.47	1.71	2.13	1.70
Ethylbenzene	2.00	2.87	3.74	3.41	4.78	3.63
m-Xylene/p-Xylene	5.65	8.51	10.50	10.66	14.59	10.98
Styrene	1.00	1.52	3.02	2.00	2.91	2.01
o-Xylene	2.21	3.20	3.69	4.06	5.40	4.20
1-Nonene	0.19	0.24	0.21	0.28	0.33	0.41
n-Nonane	0.70	1.40	1.08	1.47	1.95	1.54
Isopropylbenzene	0.46	0.58	0.62	0.56	0.62	0.55
a-Pinene	0.34	0.45	1.53	0.85	1.04	0.88
n-Propylbenzene	0.62	0.86	0.97	1.05	1.49	1.16
m-Ethyltoluene	1.64	2.42	2.46	3.19	4.83	3.25
p-Ethyltoluene	1.01	1.57	1.38	1.84	2.66	1.88
1,3,5-Trimethylbenzene	1.03	1.63	1.35	2.07	3.02	2.18
o-Ethyltoluene	0.75	0.98	0.99	1.39	2.08	1.45
b-Pinene	0.63	0.90	1.01	1.21	2.13	1.32
1,2,4-Trimethylbenzene	2.40	3.72	3.43	4.93	7.60	5.31
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.76	2.28	2.21	1.86	2.87	2.01
1,2,3-Trimethylbenzene	0.62	0.75	0.99	1.26	1.92	1.38
m-Diethylbenzene	0.45	0.64	0.37	0.74	1.04	0.60
p-Diethylbenzene	0.37	0.49	0.40	0.60	0.84	0.47
1-Undecene	0.05	0.13	0.11	0.09	0.15	0.18
n-Undecane	0.84	1.50	3.80	1.45	2.30	1.69
1-Dodecene	0.46	0.12	0.27	0.39	0.69	0.28
n-Dodecane	0.38	0.66	9.49	0.64	1.15	0.80
1-Tridecene	ND	ND	0.06	ND	0.04	0.08
n-Tridecane	0.12	0.18	2.67	0.28	0.43	0.32
TNMOC (w/ unknowns)	183.16	256.47	396.45	380.58	454.38	384.29
TNMOC (speciated)	152.91	207.55	290.53	310.58	357.52	319.23

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**14582R2**	**14688**	**14771D1**	**14771R1**
Sampling Date:	**9/2/98**	**9/3/98**	**9/4/98**	**9/4/98**
Analysis Date:	**10/22/98**	**10/2/98**	**10/4/98**	**10/22/98**
Compound				
Ethylene	11.39	11.53	6.98	7.08
Acetylene	11.85	21.87	5.16	5.03
Ethane	16.76	13.30	11.25	11.23
Propylene	5.21	5.44	3.19	3.24
Propane	23.50	15.88	20.91	20.96
Propyne	0.48	0.41	0.19	0.25
Isobutane	6.29	4.11	4.17	4.21
Isobutene/1-Butene	5.40	5.71	3.33	3.31
1,3-Butadiene	1.02	1.00	0.52	0.61
n-Butane	9.80	9.59	6.30	6.33
trans-2-Butene	1.03	0.76	0.54	0.52
cis-2-Butene	0.94	0.86	0.64	0.60
3-Methyl-1-butene	0.90	0.30	0.13	0.24
Isopentane	45.79	36.00	27.12	30.81
1-Pentene	1.17	1.19	0.70	0.78
2-Methyl-1-butene	1.70	1.27	0.76	0.95
n-Pentane	11.01	11.62	7.72	7.76
Isoprene	1.63	1.21	0.93	1.07
trans-2-Pentene	2.14	1.64	1.25	1.46
cis-2-Pentene	1.26	0.96	0.72	0.83
2-Methyl-2-butene	2.62	1.72	1.10	1.37
2,2-Dimethylbutane	1.91	1.68	1.22	1.28
Cyclopentene	2.02	1.72	0.77	0.73
4-Methyl-1-pentene	0.13	0.12	0.07	0.08
Cyclopentane	1.49	1.27	1.07	1.01
2,3-Dimethylbutane	15.85	11.97	8.16	9.78
2-Methylpentane	10.80	8.80	6.41	7.14
3-Methylpentane	6.34	5.52	4.58	4.96
2-Methyl-1-pentene	0.46	0.37	0.20	0.31
1-Hexene	0.48	0.30	0.22	0.24
2-Ethyl-1-butene	ND	ND	ND	ND
n-Hexane	7.84	6.55	7.37	8.08
trans-2-Hexene	0.43	0.34	0.23	0.26
cis-2-Hexene	0.25	0.15	0.12	0.19
Methylcyclopentane	4.30	3.43	3.23	3.54
2,4-Dimethylpentane	1.79	1.43	1.05	1.31
Benzene	8.41	6.73	4.04	5.11
Cyclohexane	4.45	2.10	1.95	2.34
2-Methylhexane	4.03	3.88	3.69	3.97
2,3-Dimethylpentane	1.98	1.77	1.58	1.65
3-Methylhexane	4.55	3.83	3.98	4.56
1-Heptene	ND	ND	ND	ND
2,2,4-Trimethylpentane	7.35	5.41	3.97	4.66
n-Heptane	3.74	3.20	4.79	5.66
Methylcyclohexane	2.35	1.75	3.17	3.56
2,2,3-Trimethylpentane	1.71	1.47	0.89	1.23
2,3,4-Trimethylpentane	2.77	2.09	1.39	1.68
Toluene	31.27	23.34	16.69	22.25
2-Methylheptane	1.73	1.37	1.08	1.28
3-Methylheptane	1.72	1.39	1.00	1.17
1-Octene	0.27	0.09	0.07	0.10
n-Octane	2.19	1.62	1.21	1.53
Ethylbenzene	4.86	7.40	2.22	3.02
m-Xylene/p-Xylene	14.86	25.44	6.68	9.21
Styrene	2.76	1.65	0.75	1.15
o-Xylene	5.64	7.75	2.59	3.45
1-Nonene	0.54	0.21	0.15	0.18
n-Nonane	2.07	1.36	0.89	1.19
Isopropylbenzene	0.74	0.57	0.49	0.46
a-Pinene	1.05	0.93	0.30	0.31
n-Propylbenzene	1.64	0.98	0.63	0.94
m-Ethyltoluene	4.95	2.99	1.77	2.62
p-Ethyltoluene	2.76	1.61	0.99	1.52
1,3,5-Trimethylbenzene	3.15	1.86	1.14	1.54
o-Ethyltoluene	2.14	1.09	1.01	1.56
b-Pinene	1.87	0.63	0.62	1.09
1,2,4-Trimethylbenzene	7.86	3.73	2.74	3.93
1-Decene	ND	ND	ND	ND
n-Decane	3.07	2.73	0.90	1.34
1,2,3-Trimethylbenzene	1.50	0.89	0.60	0.78
m-Diethylbenzene	1.08	0.44	0.32	0.49
p-Diethylbenzene	0.85	0.41	0.29	0.39
1-Undecene	0.27	0.15	0.04	0.10
n-Undecane	2.60	4.38	0.89	1.31
1-Dodecene	0.63	ND	0.15	0.27
n-Dodecane	1.25	0.91	0.48	0.77
1-Tridecene	0.12	ND	0.02	0.06
n-Tridecane	0.55	0.08	0.20	0.35
TNMOC (w/ unknowns)	449.44	386.99	248.33	292.01
TNMOC (speciated)	363.28	318.28	214.63	235.10

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**14772D2**	**14772R2**	**14765**	**14766D1**	**14766R1**	**14767D2**
Sampling Date:	**9/4/98**	**9/4/98**	**9/8/98**	**9/9/98**	**9/9/98**	**9/9/98**
Analysis Date:	**10/5/98**	**10/22/98**	**10/9/98**	**10/10/98**	**10/26/98**	**10/10/98**
Compound						
Ethylene	7.08	6.97	7.90	2.46	2.69	3.74
Acetylene	5.30	5.10	6.44	1.98	2.04	2.98
Ethane	11.44	11.19	9.15	6.48	7.05	8.42
Propylene	3.05	3.20	3.88	0.93	1.07	1.59
Propane	20.83	20.91	14.46	6.98	7.37	10.37
Propyne	0.16	0.23	0.31	0.04	0.11	0.11
Isobutane	4.12	4.18	2.77	2.07	2.17	3.14
Isobutene/1-Butene	3.33	3.42	4.26	1.23	1.27	1.81
1,3-Butadiene	0.56	0.59	0.73	0.12	0.12	0.23
n-Butane	6.30	6.34	5.83	3.60	3.80	5.44
trans-2-Butene	0.54	0.52	0.57	0.21	0.28	0.40
cis-2-Butene	0.58	0.64	0.60	0.38	0.38	0.58
3-Methyl-1-butene	0.19	0.32	0.29	0.13	0.14	0.10
Isopentane	27.77	32.22	25.50	12.77	15.44	19.17
1-Pentene	0.63	0.75	0.74	0.31	0.28	0.56
2-Methyl-1-butene	0.76	1.01	0.93	0.19	0.31	0.38
n-Pentane	7.61	7.64	6.46	2.75	2.95	4.13
Isoprene	0.90	1.09	1.27	0.55	0.53	0.78
trans-2-Pentene	1.21	1.47	1.29	0.46	0.42	0.63
cis-2-Pentene	0.70	0.89	0.79	0.35	0.36	0.54
2-Methyl-2-butene	0.99	1.38	1.42	0.22	0.36	0.52
2,2-Dimethylbutane	1.24	1.24	1.21	0.65	0.67	0.93
Cyclopentene	0.72	0.78	1.51	1.23	1.52	2.29
4-Methyl-1-pentene	0.07	0.06	0.08	ND	0.02	ND
Cyclopentane	1.03	1.00	0.89	0.41	0.40	0.56
2,3-Dimethylbutane	7.94	10.14	7.99	1.95	2.28	3.24
2-Methylpentane	6.43	7.01	5.98	2.07	2.37	3.27
3-Methylpentane	4.56	4.97	3.67	1.27	1.33	1.95
2-Methyl-1-pentene	0.18	0.32	0.34	0.06	0.09	0.13
1-Hexene	0.18	0.22	0.24	0.08	0.07	0.16
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	7.24	8.07	4.54	1.65	1.67	2.57
trans-2-Hexene	0.21	0.23	0.29	ND	0.07	ND
cis-2-Hexene	0.13	0.15	0.13	ND	0.04	ND
Methylcyclopentane	3.22	0.33	2.44	0.84	0.79	1.26
2,4-Dimethylpentane	1.06	1.30	1.09	0.48	0.55	0.81
Benzene	4.12	5.11	5.61	1.88	2.31	3.31
Cyclohexane	2.93	3.45	1.22	0.77	0.89	0.94
2-Methylhexane	3.40	4.81	2.58	0.92	1.06	1.52
2,3-Dimethylpentane	1.52	1.99	1.28	0.70	0.74	1.09
3-Methylhexane	4.09	4.70	2.72	0.93	1.07	1.52
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	4.00	4.56	3.95	0.98	1.08	1.60
n-Heptane	4.77	5.52	2.12	1.03	1.23	1.73
Methylcyclohexane	3.11	3.64	1.49	1.07	1.20	1.66
2,2,3-Trimethylpentane	1.08	1.21	0.94	0.30	0.30	0.53
2,3,4-Trimethylpentane	1.37	1.69	1.54	0.43	0.51	0.70
Toluene	16.67	22.23	18.32	7.17	9.31	12.88
2-Methylheptane	1.05	1.25	1.08	0.61	0.75	1.01
3-Methylheptane	1.03	1.27	1.11	0.52	0.70	0.86
1-Octene	0.11	0.09	0.14	0.08	0.05	0.11
n-Octane	1.18	1.54	1.37	0.75	0.92	1.32
Ethylbenzene	2.15	3.08	7.95	0.91	1.22	1.58
m-Xylene/p-Xylene	6.37	9.10	29.42	2.49	3.50	4.57
Styrene	0.61	1.31	1.28	0.46	0.63	0.98
o-Xylene	2.55	3.46	8.12	0.86	1.24	1.61
1-Nonene	0.17	0.19	0.15	0.06	0.08	0.19
n-Nonane	0.87	1.19	0.94	0.59	0.80	1.09
Isopropylbenzene	0.41	0.53	0.44	0.28	0.49	0.48
a-Pinene	0.29	0.43	0.39	0.07	0.07	0.18
n-Propylbenzene	0.68	0.91	0.78	0.35	0.56	0.62
m-Ethyltoluene	1.78	2.68	2.32	0.62	1.00	1.11
p-Ethyltoluene	1.05	1.55	1.26	0.50	0.84	0.86
1,3,5-Trimethylbenzene	1.11	1.62	1.30	0.49	0.75	0.80
o-Ethyltoluene	1.11	1.28	1.06	0.37	0.69	0.63
b-Pinene	0.67	1.14	0.66	0.19	0.38	0.45
1,2,4-Trimethylbenzene	2.67	3.95	3.43	0.99	1.58	1.96
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.93	1.43	1.08	0.68	0.95	1.26
1,2,3-Trimethylbenzene	0.77	1.11	0.84	0.34	0.54	0.60
m-Diethylbenzene	0.35	0.57	0.52	0.27	0.47	0.47
p-Diethylbenzene	0.30	0.45	0.41	0.10	0.42	0.34
1-Undecene	0.05	0.05	0.06	0.04	0.04	0.10
n-Undecane	0.90	1.37	1.08	0.42	0.73	0.94
1-Dodecene	0.09	0.35	0.13	0.02	0.12	0.21
n-Dodecane	0.49	0.85	0.47	0.12	0.21	0.27
1-Tridecene	ND	0.09	ND	ND	ND	0.05
n-Tridecane	0.15	0.34	0.10	0.03	0.08	0.06
TNMOC (w/ unknowns)	249.93	301.10	290.00	100.62	121.48	171.48
TNMOC (speciated)	215.19	247.96	235.63	84.25	93.48	135.00

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**14767R2**	**14788**	**14799**	**14824**	**14968**	**14987D1**
Sampling Date:	**9/9/98**	**9/10/98**	**9/11/98**	**9/14/98**	**9/15/98**	**9/17/98**
Analysis Date:	**10/26/98**	**10/12/98**	**10/21/98**	**10/17/98**	**10/20/98**	**10/20/98**
Compound						
Ethylene	2.76	2.99	1.88	4.44	5.42	3.06
Acetylene	2.03	2.32	1.47	13.57	4.29	2.32
Ethane	7.05	4.57	4.15	11.11	8.54	4.10
Propylene	1.10	1.25	0.88	2.14	2.36	1.38
Propane	7.28	4.62	4.46	12.83	10.50	4.87
Propyne	0.05	ND	ND	0.16	0.16	0.09
Isobutane	2.20	1.16	1.33	2.74	2.96	1.41
Isobutene/1-Butene	1.31	1.76	1.50	2.88	2.97	1.53
1,3-Butadiene	0.14	0.17	0.14	0.41	0.51	0.22
n-Butane	3.77	2.45	2.32	6.67	5.61	2.53
trans-2-Butene	0.29	0.30	0.23	0.47	0.50	0.32
cis-2-Butene	0.40	0.38	0.35	0.51	0.57	0.44
3-Methyl-1-butene	0.05	0.08	0.06	0.15	0.19	0.08
Isopentane	16.67	15.11	10.11	19.19	17.92	16.63
1-Pentene	0.30	0.33	0.33	0.48	0.59	0.45
2-Methyl-1-butene	0.33	0.34	0.22	0.61	0.74	0.28
n-Pentane	2.90	3.03	2.07	5.38	4.64	2.66
Isoprene	0.57	0.43	0.39	0.78	1.10	0.72
trans-2-Pentene	0.44	0.48	0.45	0.87	1.05	0.65
cis-2-Pentene	0.38	0.39	0.37	0.61	0.66	0.44
2-Methyl-2-butene	0.31	0.31	0.56	0.86	0.99	0.41
2,2-Dimethylbutane	0.69	0.63	0.51	0.77	0.90	0.71
Cyclopentene	1.60	0.16	0.32	0.58	0.62	0.60
4-Methyl-1-pentene	0.04	0.02	ND	ND	0.07	ND
Cyclopentane	0.39	0.41	0.35	0.73	0.65	0.46
2,3-Dimethylbutane	2.24	2.70	1.90	4.44	5.69	3.05
2-Methylpentane	2.47	2.21	1.52	3.75	4.12	2.81
3-Methylpentane	1.42	1.57	1.07	2.33	2.50	1.54
2-Methyl-1-pentene	0.11	0.11	0.09	0.19	0.25	0.11
1-Hexene	0.12	0.14	0.08	0.14	0.19	0.10
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	1.67	2.03	1.30	3.08	2.86	1.79
trans-2-Hexene	0.07	ND	0.03	0.18	0.15	0.07
cis-2-Hexene	0.05	0.07	ND	0.09	0.10	0.05
Methylcyclopentane	0.76	1.12	0.70	1.65	1.66	1.06
2,4-Dimethylpentane	0.54	0.67	0.48	0.74	0.93	0.58
Benzene	2.36	2.65	1.93	3.35	3.90	2.40
Cyclohexane	0.59	2.28	0.67	0.95	1.02	0.97
2-Methylhexane	0.85	0.90	0.88	1.53	1.77	1.43
2,3-Dimethylpentane	0.67	0.69	0.72	0.89	1.06	0.94
3-Methylhexane	1.00	1.01	0.80	1.60	1.81	1.45
1-Heptene	ND	ND	0.41	ND	ND	ND
2,2,4-Trimethylpentane	1.09	1.43	1.01	2.22	3.16	1.59
n-Heptane	1.24	0.80	0.68	1.27	1.61	1.19
Methylcyclohexane	1.22	0.69	0.66	1.00	1.12	0.88
2,2,3-Trimethylpentane	0.37	0.26	0.29	0.58	0.71	0.29
2,3,4-Trimethylpentane	0.50	0.61	0.44	1.01	1.29	0.69
Toluene	9.12	7.63	4.77	8.89	11.21	9.92
2-Methylheptane	0.72	0.68	0.41	0.68	0.83	0.74
3-Methylheptane	0.68	0.51	0.41	0.68	0.82	0.69
1-Octene	0.06	0.07	ND	0.04	0.05	0.07
n-Octane	0.89	1.02	0.62	0.85	1.04	1.14
Ethylbenzene	1.20	1.59	1.05	2.94	2.03	2.67
m-Xylene/p-Xylene	3.47	4.26	2.60	9.70	6.01	8.86
Styrene	0.78	1.36	1.07	1.13	1.19	0.89
o-Xylene	1.21	1.74	1.27	3.10	2.36	2.57
1-Nonene	0.11	0.22	0.19	0.09	0.11	0.17
n-Nonane	0.81	2.30	2.03	0.59	0.79	1.48
Isopropylbenzene	0.36	0.49	0.50	0.36	0.41	0.43
a-Pinene	0.12	ND	0.08	0.75	0.48	0.13
n-Propylbenzene	0.50	0.99	1.11	0.64	0.69	0.86
m-Ethyltoluene	0.91	2.09	2.51	1.71	2.01	1.97
p-Ethyltoluene	0.69	1.53	1.72	1.00	1.18	1.36
1,3,5-Trimethylbenzene	0.68	1.88	2.04	0.93	1.17	1.38
o-Ethyltoluene	0.47	0.90	1.08	0.81	1.05	0.93
b-Pinene	0.48	0.98	0.60	0.52	0.69	0.23
1,2,4-Trimethylbenzene	1.46	3.51	4.02	2.36	2.99	3.09
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.98	2.75	2.59	0.69	1.01	1.82
1,2,3-Trimethylbenzene	0.50	0.93	1.19	0.77	0.76	0.65
m-Diethylbenzene	0.42	0.46	0.51	0.46	0.48	0.34
p-Diethylbenzene	0.29	0.46	0.48	0.42	0.43	0.38
1-Undecene	0.05	0.11	0.10	0.03	0.08	0.06
n-Undecane	0.68	1.22	1.46	1.11	0.99	0.99
1-Dodecene	0.16	0.08	0.23	0.15	0.13	ND
n-Dodecane	0.26	0.24	0.27	0.64	0.62	0.29
1-Tridecene	0.06	ND	ND	ND	0.02	ND
n-Tridecane	0.13	0.06	0.04	0.15	0.19	0.07
TNMOC (w/ unknowns)	125.11	148.18	114.88	207.95	192.15	149.41
TNMOC (speciated)	93.54	98.80	85.07	162.14	152.21	113.53

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SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**14987R1**	**14988D2**	**14988R2**	**14974**	**14977**	**14997**
Sampling Date:	**9/17/98**	**9/17/98**	**9/17/98**	**9/18/98**	**9/22/98**	**9/23/98**
Analysis Date:	**10/26/98**	**10/20/98**	**10/26/98**	**10/15/98**	**10/21/98**	**10/23/98**
Compound						
Ethylene	3.08	3.10	3.13	14.16	6.18	3.55
Acetylene	2.37	2.24	2.43	10.49	9.02	2.57
Ethane	4.09	4.03	4.14	19.33	13.48	6.82
Propylene	1.34	1.37	1.40	6.47	2.89	1.54
Propane	4.83	4.88	4.90	24.75	11.97	7.27
Propyne	0.10	0.03	0.06	0.48	0.28	ND
Isobutane	1.39	1.41	1.38	6.29	3.55	1.65
Isobutene/1-Butene	1.64	1.68	1.66	6.49	3.49	1.96
1,3-Butadiene	0.21	0.33	0.21	1.42	0.56	0.31
n-Butane	2.57	2.67	2.56	9.57	6.66	3.84
trans-2-Butene	0.29	0.30	0.33	0.97	0.55	0.38
cis-2-Butene	0.40	0.43	0.39	1.04	0.53	0.39
3-Methyl-1-butene	0.06	0.04	0.04	0.36	0.21	0.12
Isopentane	17.16	15.38	16.09	37.01	23.53	13.95
1-Pentene	0.47	0.44	0.42	1.13	0.61	0.44
2-Methyl-1-butene	0.30	0.39	0.36	1.86	0.73	0.50
n-Pentane	2.58	2.62	2.59	11.34	5.63	3.19
Isoprene	0.64	0.77	0.73	1.51	0.69	0.85
trans-2-Pentene	0.52	0.60	0.63	2.77	1.01	0.66
cis-2-Pentene	0.44	0.46	0.48	1.46	0.63	0.47
2-Methyl-2-butene	0.38	0.39	0.45	2.98	0.95	0.55
2,2-Dimethylbutane	0.56	0.64	0.58	1.64	0.93	0.73
Cyclopentene	0.61	0.73	0.73	0.90	0.89	0.46
4-Methyl-1-pentene	ND	0.04	0.05	0.12	ND	ND
Cyclopentane	0.43	0.40	0.40	1.50	0.78	0.59
2,3-Dimethylbutane	2.99	3.05	3.04	17.01	6.34	3.25
2-Methylpentane	2.82	2.57	2.58	10.48	4.92	2.81
3-Methylpentane	1.53	1.58	1.59	6.71	3.00	1.76
2-Methyl-1-pentene	0.09	0.11	0.11	0.61	0.18	0.15
1-Hexene	0.08	0.09	0.07	0.47	0.18	0.16
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	1.84	1.81	1.80	7.38	3.55	1.94
trans-2-Hexene	0.08	0.07	0.10	0.54	0.19	0.07
cis-2-Hexene	0.07	0.06	0.06	0.32	0.14	0.07
Methylcyclopentane	0.98	1.00	1.01	4.37	2.08	1.14
2,4-Dimethylpentane	0.59	0.58	0.63	2.05	0.91	0.66
Benzene	2.34	2.53	2.53	9.52	4.82	2.76
Cyclohexane	0.97	1.34	1.37	2.33	1.16	1.17
2-Methylhexane	1.66	1.48	1.65	4.42	2.14	1.45
2,3-Dimethylpentane	0.95	0.96	0.87	2.37	1.20	0.95
3-Methylhexane	1.49	1.48	1.49	4.91	2.26	1.28
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	1.56	1.66	1.67	8.38	3.03	1.93
n-Heptane	1.14	1.21	1.25	4.05	2.22	1.05
Methylcyclohexane	0.86	0.91	0.92	2.79	1.81	1.02
2,2,3-Trimethylpentane	0.25	0.38	0.35	2.00	0.91	0.45
2,3,4-Trimethylpentane	0.68	0.71	0.69	3.34	1.21	0.82
Toluene	9.72	10.11	9.94	37.77	12.97	6.87
2-Methylheptane	0.71	0.79	0.79	1.92	1.00	0.57
3-Methylheptane	0.58	0.56	0.70	1.92	1.10	0.60
1-Octene	0.07	0.07	0.06	0.15	ND	0.09
n-Octane	1.15	1.16	1.14	2.45	1.19	0.80
Ethylbenzene	2.57	2.77	2.58	5.93	3.54	1.38
m-Xylene/p-Xylene	8.53	9.42	9.30	18.58	11.62	3.82
Styrene	0.90	0.69	0.86	1.93	1.74	0.82
o-Xylene	2.49	2.72	2.61	6.95	3.92	1.58
1-Nonene	0.14	0.15	0.24	0.39	0.14	0.10
n-Nonane	1.47	1.53	1.47	1.92	0.89	0.67
Isopropylbenzene	0.33	0.46	0.31	0.74	0.45	0.37
a-Pinene	0.16	0.35	0.50	3.22	0.22	0.09
n-Propylbenzene	0.96	0.92	0.87	1.87	0.82	0.60
m-Ethyltoluene	2.18	2.16	2.22	6.08	2.28	1.47
p-Ethyltoluene	1.60	1.43	1.47	3.20	1.37	0.93
1,3,5-Trimethylbenzene	1.54	1.50	1.62	3.36	1.39	0.88
o-Ethyltoluene	1.32	1.01	1.14	3.11	1.01	0.88
b-Pinene	0.23	0.54	0.35	1.76	0.52	0.35
1,2,4-Trimethylbenzene	3.75	3.56	3.75	9.08	3.55	2.32
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.76	1.88	1.81	3.11	1.06	0.85
1,2,3-Trimethylbenzene	1.28	0.86	1.13	2.77	0.89	0.72
m-Diethylbenzene	1.26	0.56	0.89	1.00	0.46	0.42
p-Diethylbenzene	1.00	0.39	0.70	0.85	0.39	0.25
1-Undecene	0.07	0.07	0.07	0.24	0.06	0.04
n-Undecane	1.22	1.04	1.13	2.21	0.90	0.78
1-Dodecene	ND	ND	ND	0.26	0.05	0.07
n-Dodecane	0.28	0.30	0.27	1.16	0.45	0.32
1-Tridecene	0.03	ND	0.02	0.11	ND	ND
n-Tridecane	0.06	0.05	0.05	0.28	0.15	0.19
TNMOC (w/ unknowns)	150.08	148.02	150.01	472.64	233.66	135.64
TNMOC (speciated)	116.85	115.97	117.94	384.43	192.13	106.53

SNMOC 1998 REPORT
SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**14992**	**15016D1**	**15016R1**	**15017D2**	**15017R2**	**15036**
Sampling Date:	**9/24/98**	**9/25/98**	**9/25/98**	**9/25/98**	**9/25/98**	**9/28/98**
Analysis Date:	**10/23/98**	**10/24/98**	**10/27/98**	**10/24/98**	**10/27/98**	**10/27/98**
Compound						
Ethylene	4.34	4.32	4.24	4.49	4.25	20.51
Acetylene	6.62	2.85	2.79	2.90	2.90	19.08
Ethane	12.79	8.32	8.22	8.52	8.25	32.00
Propylene	1.85	1.77	1.80	1.85	1.89	9.43
Propane	12.03	8.39	8.38	8.53	8.29	24.44
Propyne	0.11	0.14	0.06	0.11	0.13	0.75
Isobutane	3.59	2.81	2.80	2.89	2.84	7.68
Isobutene/1-Butene	2.04	1.95	2.01	1.98	2.00	10.03
1,3-Butadiene	0.27	0.33	0.33	0.38	0.33	2.04
n-Butane	6.73	5.34	5.36	5.49	5.38	19.32
trans-2-Butene	0.36	0.36	0.35	0.28	0.31	1.38
cis-2-Butene	0.41	0.44	0.45	0.44	0.42	1.47
3-Methyl-1-butene	0.12	0.12	0.14	0.13	0.10	0.50
Isopentane	22.26	15.75	15.51	16.93	16.74	60.88
1-Pentene	0.47	0.43	0.41	0.42	0.48	1.92
2-Methyl-1-butene	0.37	0.40	0.43	0.51	0.48	3.03
n-Pentane	4.73	3.87	3.85	3.96	3.90	18.87
Isoprene	0.47	0.54	0.53	0.53	0.57	2.06
trans-2-Pentene	0.64	0.62	0.62	0.68	0.66	4.48
cis-2-Pentene	0.45	0.47	0.50	0.44	0.51	2.34
2-Methyl-2-butene	0.49	0.39	0.41	0.40	0.39	4.74
2,2-Dimethylbutane	0.88	0.75	0.72	0.72	0.69	2.62
Cyclopentene	0.88	0.41	0.38	0.34	0.35	2.19
4-Methyl-1-pentene	ND	ND	ND	ND	ND	0.28
Cyclopentane	0.59	0.49	0.53	0.52	0.58	2.33
2,3-Dimethylbutane	3.61	3.89	3.83	3.90	3.85	27.93
2-Methylpentane	3.73	2.76	2.67	3.00	2.95	17.38
3-Methylpentane	2.17	1.84	1.87	1.93	1.85	10.81
2-Methyl-1-pentene	0.14	0.12	0.12	0.13	0.12	0.95
1-Hexene	0.12	0.22	0.18	0.19	0.20	0.76
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	2.82	2.12	2.18	2.15	2.29	11.87
trans-2-Hexene	0.08	0.08	0.09	0.09	0.14	1.08
cis-2-Hexene	0.11	0.09	0.13	0.11	0.09	0.56
Methylcyclopentane	1.41	1.21	1.26	1.31	1.27	6.65
2,4-Dimethylpentane	0.79	0.64	0.68	0.62	0.61	2.83
Benzene	3.97	3.02	3.07	3.11	3.08	14.75
Cyclohexane	0.97	2.38	2.46	1.12	1.14	2.50
2-Methylhexane	1.61	1.92	1.90	2.02	1.93	6.73
2,3-Dimethylpentane	1.01	0.93	0.99	1.00	0.93	2.95
3-Methylhexane	1.65	1.82	1.85	1.85	1.84	7.56
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	1.90	1.91	1.88	2.00	1.96	11.72
n-Heptane	1.53	1.86	1.91	1.91	1.88	6.20
Methylcyclohexane	1.23	1.30	1.35	1.30	1.30	3.64
2,2,3-Trimethylpentane	0.54	0.51	0.41	0.50	0.49	2.98
2,3,4-Trimethylpentane	0.78	0.79	0.78	0.77	0.79	4.58
Toluene	8.33	7.21	7.42	7.34	7.20	50.54
2-Methylheptane	0.75	0.67	0.70	0.73	0.65	3.20
3-Methylheptane	0.76	0.57	0.70	0.57	0.67	3.19
1-Octene	0.05	ND	ND	0.05	0.06	0.24
n-Octane	1.07	1.00	0.99	1.05	0.96	4.35
Ethylbenzene	1.72	1.36	1.41	1.39	1.33	10.08
m-Xylene/p-Xylene	5.07	3.82	3.89	3.90	3.83	33.71
Styrene	0.91	0.64	0.61	0.67	0.68	2.72
o-Xylene	1.92	1.57	1.52	1.57	1.45	11.84
1-Nonene	0.06	0.06	0.03	0.11	0.06	0.46
n-Nonane	0.79	0.69	0.71	0.69	0.73	2.78
Isopropylbenzene	0.44	0.37	0.31	0.38	0.33	1.00
a-Pinene	0.18	0.20	0.12	0.14	0.12	2.44
n-Propylbenzene	0.53	0.53	0.45	0.53	0.43	2.52
m-Ethyltoluene	1.39	1.26	1.21	1.32	1.12	8.72
p-Ethyltoluene	0.92	0.87	0.71	0.86	0.71	4.58
1,3,5-Trimethylbenzene	0.79	0.75	0.68	0.82	0.69	4.97
o-Ethyltoluene	0.81	0.66	0.62	0.72	0.57	3.64
b-Pinene	0.19	0.29	0.25	0.28	0.27	1.72
1,2,4-Trimethylbenzene	1.98	1.89	1.82	1.86	1.82	13.56
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.65	0.52	0.62	0.54	0.65	3.55
1,2,3-Trimethylbenzene	0.52	0.44	0.67	0.51	0.58	3.61
m-Diethylbenzene	0.36	0.38	0.48	0.39	0.46	1.35
p-Diethylbenzene	0.30	0.28	0.39	0.30	0.34	1.08
1-Undecene	ND	0.02	0.03	0.03	0.02	0.29
n-Undecane	0.62	0.60	0.56	0.63	0.55	2.58
1-Dodecene	0.03	ND	ND	ND	ND	0.45
n-Dodecane	0.22	0.22	0.25	0.25	0.18	1.61
1-Tridecene	ND	0.01	0.03	0.01	0.02	0.09
n-Tridecane	0.05	0.04	0.03	0.04	0.03	0.45
TNMOC (w/ unknowns)	173.36	137.99	145.19	141.68	139.42	705.84
TNMOC (speciated)	145.03	117.61	117.63	120.16	117.68	548.09

SNMOC 1998 REPORT
SITE CODE: DLTX
All concentrations reported in ppbC

Sample No.:	**15056**	**15059**
Sampling Date:	**9/29/98**	**9/30/98**
Analysis Date:	**10/27/98**	**10/28/98**
Compound		
Ethylene	19.23	10.24
Acetylene	13.49	10.01
Ethane	23.95	12.06
Propylene	9.01	4.93
Propane	49.47	15.26
Propyne	0.69	0.34
Isobutane	8.81	10.52
Isobutene/1-Butene	10.52	5.40
1,3-Butadiene	1.49	0.93
n-Butane	29.48	11.00
trans-2-Butene	1.76	0.72
cis-2-Butene	2.05	0.79
3-Methyl-1-butene	0.79	0.35
Isopentane	82.67	50.49
1-Pentene	2.48	1.02
2-Methyl-1-butene	3.42	1.33
n-Pentane	23.60	19.13
Isoprene	0.83	1.05
trans-2-Pentene	5.64	1.91
cis-2-Pentene	2.84	1.08
2-Methyl-2-butene	5.63	1.92
2,2-Dimethylbutane	2.59	1.46
Cyclopentene	2.19	0.90
4-Methyl-1-pentene	0.28	0.13
Cyclopentane	2.27	1.57
2,3-Dimethylbutane	30.62	12.34
2-Methylpentane	17.11	9.42
3-Methylpentane	11.69	6.54
2-Methyl-1-pentene	0.97	0.39
1-Hexene	0.78	0.37
2-Ethyl-1-butene	ND	ND
n-Hexane	15.40	8.90
trans-2-Hexene	0.90	0.34
cis-2-Hexene	0.57	0.22
Methylcyclopentane	7.53	5.12
2,4-Dimethylpentane	2.70	1.60
Benzene	13.04	7.04
Cyclohexane	5.06	5.74
2-Methylhexane	10.65	4.04
2,3-Dimethylpentane	4.23	1.90
3-Methylhexane	11.17	4.97
1-Heptene	ND	ND
2,2,4-Trimethylpentane	11.30	6.09
n-Heptane	9.91	5.20
Methylcyclohexane	5.99	3.65
2,2,3-Trimethylpentane	3.10	1.68
2,3,4-Trimethylpentane	4.12	2.26
Toluene	54.78	940.16
2-Methylheptane	2.94	1.80
3-Methylheptane	2.90	1.72
1-Octene	0.20	0.16
n-Octane	3.49	3.23
Ethylbenzene	7.69	6.28
m-Xylene/p-Xylene	25.47	20.79
Styrene	3.25	4.14
o-Xylene	9.48	6.86
1-Nonene	0.49	0.37
n-Nonane	3.23	2.31
Isopropylbenzene	1.07	0.84
a-Pinene	3.37	0.89
n-Propylbenzene	2.73	1.37
m-Ethyltoluene	8.51	4.18
p-Ethyltoluene	4.72	2.46
1,3,5-Trimethylbenzene	5.46	2.69
o-Ethyltoluene	3.51	1.65
b-Pinene	1.79	0.77
1,2,4-Trimethylbenzene	13.25	6.22
1-Decene	ND	ND
n-Decane	5.33	3.33
1,2,3-Trimethylbenzene	3.23	1.51
m-Diethylbenzene	1.34	0.75
p-Diethylbenzene	1.09	0.63
1-Undecene	0.24	0.10
n-Undecane	3.47	3.16
1-Dodecene	0.51	0.30
n-Dodecane	2.09	1.52
1-Tridecene	0.13	0.10
n-Tridecane	0.56	0.24
TNMOC (w/ unknowns)	784.54	1267.42
TNMOC (speciated)	648.32	1145.75

SNMOC 1998 REPORT
SITE CODE: JUMX
All concentrations reported in ppbC

Sample No.:	**14674**	**14675**	**14686**	**14665**	**14697**	**14693**
Sampling Date:	**8/25/98**	**8/27/98**	**8/29/98**	**9/1/98**	**9/2/98**	**9/3/98**
Analysis Date:	**9/23/98**	**10/16/98**	**10/15/98**	**10/2/98**	**11/12/98**	**10/3/98**
Compound						
Ethylene	4.64	1.70	2.96	8.41	3.89	5.58
Acetylene	4.19	1.73	2.53	8.04	3.30	5.22
Ethane	8.45	4.71	11.58	12.35	11.32	6.83
Propylene	2.53	0.97	1.53	4.08	1.89	2.72
Propane	14.01	12.81	28.64	24.91	15.21	12.88
Propyne	ND	ND	ND	0.25	0.12	0.17
Isobutane	5.05	1.05	3.56	11.73	2.55	2.28
Isobutene/1-Butene	3.92	1.88	1.62	3.35	2.23	2.47
1,3-Butadiene	0.37	0.10	0.28	0.80	0.32	0.52
n-Butane	9.65	2.69	10.11	12.77	6.42	4.79
trans-2-Butene	0.54	0.22	0.39	0.81	0.30	0.41
cis-2-Butene	0.63	0.34	0.44	1.04	0.38	0.50
3-Methyl-1-butene	0.27	ND	0.09	1.35	0.07	0.17
Isopentane	51.10	12.31	17.34	47.27	22.63	17.82
1-Pentene	0.88	0.36	0.51	1.10	0.48	0.50
2-Methyl-1-butene	0.88	0.24	0.49	1.56	0.44	0.62
n-Pentane	6.32	1.68	4.65	12.79	4.24	4.59
Isoprene	0.72	0.37	0.49	0.95	0.56	0.48
trans-2-Pentene	1.00	0.42	0.63	1.79	0.63	0.77
cis-2-Pentene	0.74	0.34	0.50	1.07	0.42	0.52
2-Methyl-2-butene	0.84	0.23	0.37	1.64	0.25	0.37
2,2-Dimethylbutane	0.94	0.50	0.71	1.10	0.63	0.77
Cyclopentene	0.58	0.15	0.26	0.42	0.35	0.24
4-Methyl-1-pentene	0.09	ND	ND	0.04	ND	ND
Cyclopentane	0.83	0.31	0.65	1.29	0.62	0.72
2,3-Dimethylbutane	2.42	0.79	2.05	3.12	1.30	1.75
2-Methylpentane	4.51	1.40	3.12	7.08	3.51	3.52
3-Methylpentane	3.05	1.02	2.03	5.16	2.03	2.53
2-Methyl-1-pentene	0.36	0.12	0.12	0.39	0.14	0.21
1-Hexene	0.36	0.11	0.16	0.28	0.16	0.16
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	4.11	1.16	2.36	11.64	2.35	2.72
trans-2-Hexene	0.20	ND	0.07	0.33	0.11	0.13
cis-2-Hexene	0.10	ND	0.07	0.24	0.09	0.09
Methylcyclopentane	2.28	0.62	1.51	4.70	1.66	1.93
2,4-Dimethylpentane	1.63	0.72	1.17	2.56	1.16	1.40
Benzene	3.78	1.81	2.92	6.93	3.91	4.16
Cyclohexane	2.46	0.72	1.55	110.41	1.21	1.33
2-Methylhexane	2.19	1.10	1.27	2.77	1.41	1.74
2,3-Dimethylpentane	2.49	1.19	1.75	3.80	1.84	2.26
3-Methylhexane	2.66	1.30	1.33	3.31	1.63	1.84
1-Heptene	ND	0.68	ND	ND	ND	ND
2,2,4-Trimethylpentane	4.01	1.09	2.66	5.31	2.89	3.33
n-Heptane	1.95	1.13	1.05	2.55	1.28	1.43
Methylcyclohexane	3.18	0.60	0.92	2.84	0.96	1.04
2,2,3-Trimethylpentane	7.28	4.34	2.27	2.20	1.84	1.50
2,3,4-Trimethylpentane	113.85	72.02	32.46	21.59	23.87	17.03
Toluene	188.03	102.54	50.09	50.24	38.18	30.08
2-Methylheptane	1.95	1.32	1.14	1.38	0.94	0.89
3-Methylheptane	2.26	1.64	1.10	1.22	0.97	0.92
1-Octene	0.46	0.41	0.29	0.18	0.25	0.11
n-Octane	1.47	0.90	0.91	1.53	0.92	0.87
Ethylbenzene	3.62	2.18	4.16	4.70	2.54	2.47
m-Xylene/p-Xylene	9.39	5.52	9.80	10.52	6.92	6.68
Styrene	9.50	7.88	5.07	4.23	5.21	2.02
o-Xylene	10.89	7.44	5.86	5.25	4.18	3.62
1-Nonene	11.49	8.66	5.08	3.33	3.51	2.44
n-Nonane	1.29	1.54	0.91	1.84	0.64	0.57
Isopropylbenzene	0.51	0.32	0.36	0.44	0.48	0.31
a-Pinene	0.19	0.31	0.09	0.34	0.09	0.26
n-Propylbenzene	0.86	0.55	0.72	0.95	0.67	0.58
m-Ethyltoluene	1.77	1.07	1.78	2.67	1.67	1.42
p-Ethyltoluene	1.15	0.88	1.11	1.51	0.95	0.78
1,3,5-Trimethylbenzene	1.68	1.57	1.78	2.14	1.06	1.05
o-Ethyltoluene	0.64	0.55	0.76	0.94	0.70	0.59
b-Pinene	0.10	2.33	2.16	1.01	3.32	0.31
1,2,4-Trimethylbenzene	2.62	1.99	3.01	2.79	2.50	2.16
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	2.57	1.88	1.34	3.56	1.01	0.74
1,2,3-Trimethylbenzene	0.73	0.48	0.50	0.87	0.68	0.48
m-Diethylbenzene	0.52	0.54	0.43	0.41	0.46	0.33
p-Diethylbenzene	0.67	0.48	0.57	0.49	0.66	0.31
1-Undecene	0.19	0.05	0.16	0.22	ND	ND
n-Undecane	5.06	1.30	1.11	2.40	0.82	0.47
1-Dodecene	0.37	0.30	0.70	0.43	1.07	0.26
n-Dodecane	9.72	0.37	0.46	4.41	0.32	0.15
1-Tridecene	ND	ND	0.04	ND	ND	ND
n-Tridecane	1.17	0.09	0.12	1.42	0.11	0.04
TNMOC (w/ unknowns)	2206.87	944.38	558.42	633.12	399.35	299.86
TNMOC (speciated)	552.87	292.12	252.76	469.57	213.41	183.00

SNMOC 1998 REPORT
SITE CODE: JUMX
All concentrations reported in ppbC

Sample No.:	**14791**	**14790**	**14792D1**	**14792R1**	**14793D2**	**14793R2**
Sampling Date:	**9/4/98**	**9/5/98**	**9/8/98**	**9/8/98**	**9/8/98**	**9/8/98**
Analysis Date:	**10/17/98**	**10/4/98**	**10/9/98**	**10/24/98**	**10/9/98**	**10/24/98**
Compound						
Ethylene	3.78	2.65	10.26	9.16	10.35	9.24
Acetylene	17.42	2.34	9.92	8.47	9.71	8.43
Ethane	12.71	6.75	19.42	17.88	18.00	17.97
Propylene	7.93	1.45	5.51	4.95	5.25	4.87
Propane	104.04	11.61	191.96	169.25	185.32	170.09
Propyne	0.51	ND	0.23	0.25	0.27	0.20
Isobutane	7.62	1.54	6.26	5.54	6.06	5.53
Isobutene/1-Butene	4.37	1.96	3.15	2.74	3.19	2.81
1,3-Butadiene	1.42	0.19	1.03	0.94	1.04	0.99
n-Butane	27.41	3.48	19.44	17.06	19.02	17.09
trans-2-Butene	1.32	0.32	0.84	0.72	0.75	0.65
cis-2-Butene	1.39	0.38	0.82	0.78	0.84	0.75
3-Methyl-1-butene	1.49	ND	0.42	0.20	0.18	0.24
Isopentane	41.41	12.15	19.88	17.87	19.32	19.00
1-Pentene	1.84	0.34	0.94	0.77	0.77	0.81
2-Methyl-1-butene	2.72	0.31	1.37	1.18	1.06	1.21
n-Pentane	16.88	3.11	7.54	6.66	7.40	6.69
Isoprene	1.12	0.39	0.89	0.82	0.79	0.88
trans-2-Pentene	3.18	0.44	1.77	1.52	1.55	1.57
cis-2-Pentene	1.87	0.34	1.07	0.96	0.92	0.98
2-Methyl-2-butene	3.68	0.26	1.88	1.62	1.42	1.70
2,2-Dimethylbutane	1.52	0.50	1.07	0.94	1.05	1.01
Cyclopentene	0.95	0.34	0.69	0.38	0.47	0.45
4-Methyl-1-pentene	0.19	ND	0.19	0.07	0.09	0.09
Cyclopentane	1.89	0.49	0.89	0.96	0.98	0.94
2,3-Dimethylbutane	4.51	1.21	2.33	2.53	2.35	2.51
2-Methylpentane	11.44	2.49	6.24	6.03	5.95	6.09
3-Methylpentane	7.48	1.90	4.64	3.97	4.42	3.99
2-Methyl-1-pentene	0.72	0.07	0.44	0.38	0.34	0.35
1-Hexene	0.49	0.11	0.30	0.24	0.27	0.23
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	9.14	1.79	5.62	4.97	5.12	5.00
trans-2-Hexene	0.78	0.06	0.43	0.43	0.37	0.45
cis-2-Hexene	0.44	0.06	1.17	1.08	1.09	1.06
Methylcyclopentane	5.71	1.01	3.66	3.28	3.46	3.28
2,4-Dimethylpentane	4.61	0.81	2.79	2.62	2.53	2.48
Benzene	12.44	1.93	9.06	8.01	7.31	7.97
Cyclohexane	5.12	1.00	2.11	2.08	2.24	1.90
2-Methylhexane	4.14	1.14	3.08	2.56	2.53	2.71
2,3-Dimethylpentane	7.11	1.28	4.42	3.85	3.89	3.90
3-Methylhexane	4.54	0.94	3.42	2.89	2.93	2.97
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	9.44	1.84	6.54	5.72	5.69	5.74
n-Heptane	3.75	0.82	2.85	2.59	2.52	2.61
Methylcyclohexane	2.48	0.64	2.02	1.72	1.70	1.74
2,2,3-Trimethylpentane	2.67	1.83	1.77	1.60	1.60	1.72
2,3,4-Trimethylpentane	17.62	26.51	11.65	10.20	10.38	10.91
Toluene	53.10	40.98	39.82	35.46	33.48	36.66
2-Methylheptane	1.82	0.83	1.34	1.23	1.22	1.24
3-Methylheptane	1.95	0.94	1.44	1.07	1.06	1.09
1-Octene	0.26	0.17	0.17	0.14	0.12	0.16
n-Octane	1.54	0.62	1.24	1.23	1.16	1.32
Ethylbenzene	7.29	1.64	4.95	4.46	4.08	4.61
m-Xylene/p-Xylene	20.97	4.44	14.18	13.64	11.59	13.93
Styrene	6.33	3.77	2.18	2.34	1.96	2.46
o-Xylene	8.47	3.37	5.55	5.62	4.79	5.82
1-Nonene	2.79	3.34	1.88	1.83	1.59	1.92
n-Nonane	1.27	0.54	0.90	0.89	0.82	0.88
Isopropylbenzene	0.60	0.27	0.35	0.42	0.38	0.41
a-Pinene	0.80	0.22	0.52	0.40	0.41	0.49
n-Propylbenzene	1.48	0.45	0.98	1.09	0.86	1.09
m-Ethyltoluene	4.56	0.85	2.93	3.09	2.45	3.16
p-Ethyltoluene	2.36	0.53	1.49	1.67	1.32	1.68
1,3,5-Trimethylbenzene	2.87	0.74	1.87	1.97	1.67	2.00
o-Ethyltoluene	1.70	0.39	1.15	1.30	1.06	1.27
b-Pinene	1.25	1.74	0.80	0.93	0.77	0.90
1,2,4-Trimethylbenzene	7.27	1.27	4.64	5.00	3.99	5.16
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.88	0.72	1.24	1.18	1.09	1.25
1,2,3-Trimethylbenzene	1.63	0.27	0.90	1.08	0.90	1.14
m-Diethylbenzene	0.57	0.27	0.48	0.49	0.52	0.55
p-Diethylbenzene	0.65	0.30	0.49	0.57	0.48	0.52
1-Undecene	0.22	ND	0.06	0.17	0.10	0.07
n-Undecane	1.71	0.61	1.06	1.13	0.94	1.09
1-Dodecene	0.21	0.45	0.11	0.04	0.08	0.11
n-Dodecane	0.73	0.19	0.54	0.55	0.35	0.42
1-Tridecene	ND	ND	ND	ND	0.03	ND
n-Tridecane	0.10	0.08	0.06	0.13	0.06	0.09
TNMOC (w/ unknowns)	687.83	315.69	569.52	513.83	523.44	524.23
TNMOC (speciated)	519.70	168.75	475.27	427.59	441.82	433.30

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SITE CODE: JUMX
All concentrations reported in ppbC

Sample No.:	**14830**	**14808**	**14829**	**15013**	**15011**	**15012**
Sampling Date:	**9/9/98**	**9/10/98**	**9/11/98**	**9/12/98**	**9/14/98**	**9/15/98**
Analysis Date:	**10/10/98**	**10/14/98**	**10/12/98**	**10/13/98**	**10/17/98**	**10/17/98**
Compound						
Ethylene	9.55	3.56	4.25	6.79	4.89	1.28
Acetylene	8.97	3.45	4.23	6.26	11.65	1.14
Ethane	25.01	10.81	9.19	24.00	10.07	6.61
Propylene	4.80	1.63	2.17	3.22	5.54	0.68
Propane	242.48	18.38	18.32	86.46	48.99	7.34
Propyne	0.29	ND	0.07	0.22	0.28	ND
Isobutane	5.54	2.69	3.49	4.91	5.82	1.41
Isobutene/1-Butene	2.93	1.77	2.07	2.23	3.42	1.30
1,3-Butadiene	0.80	0.26	0.36	0.55	1.05	0.11
n-Butane	22.67	7.36	6.87	17.39	18.85	3.42
trans-2-Butene	0.55	0.39	0.35	0.42	1.16	0.32
cis-2-Butene	0.70	0.49	0.47	0.62	1.33	0.33
3-Methyl-1-butene	1.28	0.10	1.20	0.62	0.92	26.14
Isopentane	13.00	17.62	35.56	25.67	32.59	8.83
1-Pentene	0.99	0.64	0.35	1.02	1.52	0.29
2-Methyl-1-butene	1.22	0.53	0.61	1.12	2.28	0.13
n-Pentane	8.18	5.18	5.07	10.15	13.23	1.83
Isoprene	0.75	0.72	0.78	0.60	0.88	0.34
trans-2-Pentene	1.49	0.74	0.68	1.16	2.58	0.37
cis-2-Pentene	0.92	0.52	0.53	0.74	1.56	0.28
2-Methyl-2-butene	1.26	0.51	0.50	0.50	3.06	0.14
2,2-Dimethylbutane	1.07	0.65	0.72	0.84	1.18	0.47
Cyclopentene	0.41	0.15	0.47	0.35	0.64	0.11
4-Methyl-1-pentene	0.08	ND	ND	0.09	0.12	ND
Cyclopentane	1.05	0.63	0.78	0.94	1.44	0.36
2,3-Dimethylbutane	2.60	1.24	1.49	2.55	3.56	0.71
2-Methylpentane	6.44	2.94	3.55	6.92	8.33	1.22
3-Methylpentane	4.35	2.09	2.37	5.01	5.54	0.91
2-Methyl-1-pentene	0.45	0.12	0.18	0.32	0.54	ND
1-Hexene	0.26	0.13	0.12	0.31	0.34	ND
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	5.17	2.68	3.29	6.58	6.59	1.03
trans-2-Hexene	0.34	0.15	0.11	0.24	0.57	0.03
cis-2-Hexene	0.41	0.08	0.53	0.36	0.35	ND
Methylcyclopentane	3.27	1.65	1.98	3.35	4.30	0.69
2,4-Dimethylpentane	2.35	1.16	1.21	2.37	3.60	0.55
Benzene	7.25	3.24	4.29	6.38	9.01	1.39
Cyclohexane	1.72	3.86	16.67	2.16	2.07	0.91
2-Methylhexane	2.81	1.25	2.20	2.38	2.86	0.93
2,3-Dimethylpentane	3.70	1.77	2.16	3.72	4.91	0.80
3-Methylhexane	2.80	1.50	2.69	2.69	3.12	0.64
1-Heptene	0.92	ND	0.94	ND	ND	ND
2,2,4-Trimethylpentane	5.07	2.49	2.75	4.85	6.51	1.06
n-Heptane	2.28	1.24	2.14	2.09	2.75	0.50
Methylcyclohexane	1.57	1.08	4.21	1.66	1.79	0.58
2,2,3-Trimethylpentane	1.68	1.43	1.38	1.62	2.23	1.29
2,3,4-Trimethylpentane	12.53	18.15	13.68	12.79	20.32	20.76
Toluene	37.72	34.10	37.64	39.26	46.60	30.12
2-Methylheptane	1.13	0.93	1.27	1.03	1.38	0.66
3-Methylheptane	1.30	0.96	1.32	1.17	1.26	0.73
1-Octene	0.18	0.16	0.12	0.18	0.19	ND
n-Octane	1.19	1.04	1.45	1.09	1.22	0.59
Ethylbenzene	4.88	2.88	2.97	6.13	4.91	1.11
m-Xylene/p-Xylene	14.39	6.34	7.99	18.41	13.87	2.98
Styrene	2.34	3.23	4.78	3.17	7.21	3.53
o-Xylene	5.50	3.57	3.86	6.82	6.25	2.67
1-Nonene	1.95	2.68	2.20	1.93	2.80	2.82
n-Nonane	0.89	1.79	2.06	1.24	0.90	0.44
Isopropylbenzene	0.35	0.42	0.56	0.59	0.49	0.37
a-Pinene	0.45	0.37	0.35	0.98	0.42	ND
n-Propylbenzene	0.72	0.69	0.93	1.06	1.04	0.39
m-Ethyltoluene	2.11	1.54	2.17	2.63	3.01	0.71
p-Ethyltoluene	1.18	1.02	1.52	1.56	1.63	0.55
1,3,5-Trimethylbenzene	1.47	1.45	2.23	1.78	1.96	0.63
o-Ethyltoluene	0.86	0.75	0.86	1.06	1.17	0.36
b-Pinene	0.52	1.61	2.84	1.48	1.09	1.80
1,2,4-Trimethylbenzene	3.17	2.40	4.25	3.94	4.81	1.00
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	1.31	2.22	4.20	1.89	1.47	0.61
1,2,3-Trimethylbenzene	0.76	0.77	1.19	0.78	1.25	0.26
m-Diethylbenzene	0.26	0.41	0.43	0.56	0.57	0.40
p-Diethylbenzene	0.31	0.43	0.54	0.49	0.59	0.41
1-Undecene	0.05	0.16	0.16	0.13	0.11	ND
n-Undecane	1.24	1.46	4.33	1.58	0.98	0.52
1-Dodecene	ND	0.53	0.54	0.32	0.18	0.49
n-Dodecane	0.28	0.30	1.84	0.55	0.43	0.16
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	ND	0.05	0.23	0.19	0.06	0.11
TNMOC (w/ unknowns)	4856.83	920.76	552.09	531.22	532.90	255.78
TNMOC (speciated)	501.50	201.28	261.85	367.19	372.19	151.64

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SITE CODE: JUMX
All concentrations reported in ppbC

Sample No.:	**15014D1**		**15014R1**		**15015D2**		**15015R2**		**15028**	**15094**
Sampling Date:	**9/18/98**		**9/18/98**		**9/18/98**		**9/18/98**		**9/22/98**	**9/23/98**
Analysis Date:	**10/26/98**		**12/7/98**		**10/21/98**		**10/27/98**		**10/21/98**	**10/21/98**
Compound										
Ethylene	11.00		12.77		11.18		10.93		6.26	8.45
Acetylene	8.98		10.92		8.95		8.92		5.28	6.89
Ethane	24.01		27.55		24.32		23.70		5.64	11.60
Propylene	5.09		6.08		5.17		5.15		2.84	3.87
Propane	54.59		64.54		55.81		55.19		45.03	40.83
Propyne	0.38		0.50		0.31		0.32		0.26	0.27
Isobutane	6.58		7.67		7.63		7.62		1.82	4.07
Isobutene/1-Butene	3.30		3.68		3.33		3.37		2.41	2.72
1,3-Butadiene	1.17		1.36		1.17		1.16		0.65	0.73
n-Butane	18.70		21.94		21.32		21.01		6.23	11.51
trans-2-Butene	0.77		0.97		0.81		0.76		0.43	0.53
cis-2-Butene	0.98		1.05		0.93		1.00		0.51	0.69
3-Methyl-1-butene	2.20		2.43		0.57		0.48		1.01	0.56
Isopentane	0.00	@	0.00	@	0.00	@	0.00	@	14.37	25.18
1-Pentene	1.17		1.28		1.17		1.17		0.57	0.76
2-Methyl-1-butene	1.72		2.08		1.78		1.72		0.76	0.99
n-Pentane	13.00		15.26		14.62		14.33		5.53	7.43
Isoprene	0.86		0.85		0.91		0.85		0.68	0.73
trans-2-Pentene	2.02		2.31		2.03		2.12		1.00	1.25
cis-2-Pentene	1.19		1.28		1.20		1.26		0.61	0.73
2-Methyl-2-butene	1.71		1.87		1.68		1.57		0.93	1.42
2,2-Dimethylbutane	1.24		1.30		1.27		1.20		0.66	0.79
Cyclopentene	0.75		0.44		0.57		0.63		0.29	0.47
4-Methyl-1-pentene	0.16		0.14		0.06		0.13		ND	0.09
Cyclopentane	1.43		1.71		1.50		1.49		0.69	0.95
2,3-Dimethylbutane	4.58		5.29		4.72		4.53		2.31	2.50
2-Methylpentane	9.94		12.23		9.67		9.32		4.21	5.03
3-Methylpentane	6.50		7.63		6.42		6.42		2.73	3.24
2-Methyl-1-pentene	0.49		0.65		0.54		0.50		0.27	0.26
1-Hexene	0.42		0.48		0.42		0.43		0.21	0.19
2-Ethyl-1-butene	ND		ND		ND		ND		ND	ND
n-Hexane	7.69		9.26		7.98		7.73		3.33	4.09
trans-2-Hexene	0.49		0.80		0.46		0.49		0.22	0.24
cis-2-Hexene	0.33		0.40		0.28		0.31		0.17	0.15
Methylcyclopentane	4.89		5.80		5.00		4.90		2.31	2.70
2,4-Dimethylpentane	3.02		3.57		3.10		3.06		1.32	1.77
Benzene	10.53		12.61		11.01		10.69		4.88	5.66
Cyclohexane	2.89		3.30		5.85		5.81		1.63	57.98
2-Methylhexane	4.20		4.90		3.58		3.45		3.01	2.62
2,3-Dimethylpentane	4.68		5.35		4.45		4.40		2.39	2.95
3-Methylhexane	4.86		5.85		4.61		4.44		3.11	2.57
1-Heptene	1.56		ND		ND		ND		ND	ND
2,2,4-Trimethylpentane	6.51		7.64		6.61		6.48		3.02	3.62
n-Heptane	3.72		3.88		3.90		3.89		2.83	2.13
Methylcyclohexane	2.57		3.03		2.74		2.64		1.50	1.72
2,2,3-Trimethylpentane	1.75		2.11		1.80		1.79		1.56	1.51
2,3,4-Trimethylpentane	7.92		9.26		8.22		8.06		16.34	13.72
Toluene	34.04		40.81		36.72		35.96		30.06	33.66
2-Methylheptane	1.55		1.79		1.62		1.58		1.05	0.97
3-Methylheptane	1.65		1.47		1.39		1.71		1.08	0.95
1-Octene	0.42		0.51		0.39		0.32		0.09	0.13
n-Octane	2.15		2.44		2.22		2.23		1.01	1.04
Ethylbenzene	4.91		5.85		4.92		4.57		3.28	3.87
m-Xylene/p-Xylene	13.66		16.48		14.29		13.55		8.50	10.58
Styrene	1.76		2.00		1.48		1.27		2.60	3.56
o-Xylene	5.22		6.00		5.20		4.90		4.21	4.74
1-Nonene	1.67		1.86		1.44		1.46		2.22	2.05
n-Nonane	1.23		1.40		1.21		1.20		0.68	0.81
Isopropylbenzene	0.42		0.34		0.32		0.40		0.41	0.40
a-Pinene	0.53		0.62		0.78		0.60		2.12	1.11
n-Propylbenzene	0.84		1.08		0.95		0.80		0.87	0.82
m-Ethyltoluene	2.54		2.97		2.83		2.38		2.62	2.41
p-Ethyltoluene	1.46		1.73		1.61		1.38		1.35	1.29
1,3,5-Trimethylbenzene	1.70		1.96		1.85		1.61		1.65	1.67
o-Ethyltoluene	0.97		1.50		1.05		0.97		1.05	1.04
b-Pinene	0.79		0.69		0.51		0.37		1.02	1.33
1,2,4-Trimethylbenzene	4.20		4.58		4.48		3.81		3.81	4.38
1-Decene	ND		ND		ND		ND		ND	ND
n-Decane	1.26		1.55		1.30		1.26		0.83	1.46
1,2,3-Trimethylbenzene	0.95		1.13		0.96		0.93		0.70	0.88
m-Diethylbenzene	0.46		0.38		0.32		0.34		0.49	0.57
p-Diethylbenzene	0.51		0.42		0.45		0.36		0.57	0.45
1-Undecene	0.07		0.14		0.09		0.11		ND	0.07
n-Undecane	0.89		1.05		0.96		0.82		0.79	1.60
1-Dodecene	0.09		0.12		0.04		ND		0.37	0.60
n-Dodecane	0.36		0.45		0.38		0.34		0.34	1.43
1-Tridecene	ND		0.08		ND		ND		ND	0.07
n-Tridecane	0.05		0.05		0.05		0.03		0.16	0.50
TNMOC (w/ unknowns)	19201.33		23241.52		19026.46		19799.96		1814.45	684.61
TNMOC (speciated)	338.87		395.50		349.46		340.70		235.73	332.57

@ A large non-target peak prevents quantitation of this compound.

SNMOC 1998 REPORT
SITE CODE: JUMX
All concentrations reported in ppbC

Sample No.:	**15088D1**	**15088R1**	**15089D2**	**15089R2**	**15093D1**	**15093R1**
Sampling Date:	**9/24/98**	**9/24/98**	**9/24/98**	**9/24/98**	**9/28/98**	**9/28/98**
Analysis Date:	**10/22/98**	**10/27/98**	**10/22/98**	**10/27/98**	**10/27/98**	**10/28/98**
Compound						
Ethylene	2.16	2.29	2.21	2.18	13.71	14.02
Acetylene	1.77	1.78	1.80	1.78	11.02	11.53
Ethane	3.38	3.43	3.45	3.47	31.30	32.23
Propylene	1.11	1.04	1.10	1.16	8.67	8.86
Propane	8.95	8.80	9.15	8.80	51.02	52.50
Propyne	ND	ND	0.06	0.06	0.49	0.49
Isobutane	0.86	0.93	0.93	0.94	7.10	7.22
Isobutene/1-Butene	1.25	1.06	1.26	1.14	4.26	4.28
1,3-Butadiene	0.18	0.16	0.22	0.19	1.45	1.46
n-Butane	2.18	2.22	2.27	2.33	23.74	24.32
trans-2-Butene	0.32	0.33	0.30	0.32	1.15	1.17
cis-2-Butene	0.36	0.39	0.36	0.42	1.25	1.29
3-Methyl-1-butene	0.05	ND	ND	ND	1.94	1.90
Isopentane	10.89	10.83	9.54	8.45	42.92	44.75
1-Pentene	0.33	0.38	0.34	0.32	1.58	1.63
2-Methyl-1-butene	0.29	0.26	0.35	0.25	2.64	2.73
n-Pentane	1.83	1.81	1.89	1.87	21.30	21.93
Isoprene	0.41	0.43	0.43	0.43	1.16	1.25
trans-2-Pentene	0.46	0.50	0.47	0.47	3.67	3.77
cis-2-Pentene	0.34	0.34	0.39	0.41	1.94	2.01
2-Methyl-2-butene	0.18	0.15	0.24	0.24	4.21	4.33
2,2-Dimethylbutane	0.41	0.38	0.48	0.46	1.55	1.67
Cyclopentene	0.17	0.11	0.10	0.16	1.11	1.08
4-Methyl-1-pentene	ND	ND	ND	ND	0.22	0.22
Cyclopentane	0.33	0.33	0.33	0.41	2.31	2.37
2,3-Dimethylbutane	1.03	1.09	1.06	1.11	8.87	9.20
2-Methylpentane	1.87	1.80	1.82	1.79	14.46	14.96
3-Methylpentane	1.08	1.07	1.14	1.14	9.16	9.46
2-Methyl-1-pentene	0.06	0.09	0.09	0.10	0.89	0.92
1-Hexene	0.08	0.07	0.09	0.10	0.57	0.61
2-Ethyl-1-butene	ND	ND	ND	ND	ND	ND
n-Hexane	1.27	1.28	1.28	1.30	11.87	12.25
trans-2-Hexene	0.05	0.06	0.08	0.08	0.94	0.96
cis-2-Hexene	0.07	0.05	0.06	0.06	0.59	0.64
Methylcyclopentane	0.96	0.99	0.97	0.99	7.90	8.14
2,4-Dimethylpentane	0.70	0.67	0.65	0.70	4.21	4.37
Benzene	1.80	1.70	1.81	1.74	14.18	14.47
Cyclohexane	1.07	1.07	1.81	1.63	4.67	4.80
2-Methylhexane	1.07	1.03	1.33	0.96	5.25	5.30
2,3-Dimethylpentane	1.04	0.98	1.12	0.97	5.93	6.11
3-Methylhexane	1.02	1.01	1.09	0.99	6.02	6.17
1-Heptene	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	1.14	1.16	1.13	1.11	8.85	9.15
n-Heptane	0.83	0.87	0.92	0.84	5.62	5.87
Methylcyclohexane	0.62	0.64	0.68	0.59	3.91	4.00
2,2,3-Trimethylpentane	0.58	0.53	0.60	0.55	2.38	2.45
2,3,4-Trimethylpentane	6.15	6.10	6.16	5.72	9.85	10.17
Toluene	11.48	11.42	11.56	10.76	47.04	48.59
2-Methylheptane	0.43	0.48	0.47	0.45	1.97	2.07
3-Methylheptane	0.48	0.47	0.48	0.51	2.17	2.21
1-Octene	0.04	ND	0.05	0.06	0.22	0.26
n-Octane	0.48	0.45	0.51	0.46	2.21	2.33
Ethylbenzene	1.20	1.14	1.25	1.15	7.26	7.63
m-Xylene/p-Xylene	2.86	2.77	2.98	2.70	22.31	23.14
Styrene	1.61	1.47	1.55	1.29	2.63	2.73
o-Xylene	1.46	1.51	1.63	1.47	8.29	8.58
1-Nonene	0.87	0.86	0.93	0.81	1.61	1.67
n-Nonane	0.40	0.40	0.45	0.36	1.63	1.68
Isopropylbenzene	0.32	0.27	0.36	0.28	0.68	0.63
a-Pinene	0.21	0.22	0.20	0.35	1.73	1.79
n-Propylbenzene	0.44	0.36	0.46	0.35	1.73	1.78
m-Ethyltoluene	0.86	0.72	0.92	0.74	5.03	5.27
p-Ethyltoluene	0.57	0.47	0.65	0.42	2.74	2.81
1,3,5-Trimethylbenzene	0.60	0.53	0.66	0.50	3.21	3.31
o-Ethyltoluene	0.39	0.37	0.52	0.34	1.88	1.97
b-Pinene	0.94	0.67	0.83	0.65	1.30	1.23
1,2,4-Trimethylbenzene	1.31	1.23	1.41	1.26	8.23	8.71
1-Decene	ND	ND	ND	ND	ND	ND
n-Decane	0.46	0.42	0.50	0.47	2.42	2.51
1,2,3-Trimethylbenzene	0.30	0.44	0.32	0.33	1.99	2.03
m-Diethylbenzene	0.30	0.39	0.40	0.35	0.81	0.89
p-Diethylbenzene	0.30	0.36	0.40	0.25	0.74	0.94
1-Undecene	ND	ND	ND	0.08	0.25	0.34
n-Undecane	0.46	0.37	0.73	0.58	1.69	1.96
1-Dodecene	0.40	0.07	0.48	0.15	0.20	0.25
n-Dodecane	0.13	0.08	0.43	0.31	0.74	0.75
1-Tridecene	ND	ND	ND	ND	ND	ND
n-Tridecane	0.05	0.03	0.12	0.06	0.28	0.20
TNMOC (w/ unknowns)	174.98	170.44	181.39	164.87	682.56	710.03
TNMOC (speciated)	90.06	84.78	92.82	82.73	500.81	517.28

SNMOC 1998 REPORT
SITE CODE: JUMX
All concentrations reported in ppbC

Sample No.:	**15095D2**	**15095R2**	**15091**
Sampling Date:	**9/28/98**	**9/28/98**	**9/29/98**
Analysis Date:	**10/27/98**	**10/28/98**	**10/27/98**
Compound			
Ethylene	13.64	14.11	11.01
Acetylene	10.96	11.38	9.29
Ethane	31.22	32.46	18.40
Propylene	8.61	8.88	4.89
Propane	50.69	52.35	43.64
Propyne	0.44	0.53	0.40
Isobutane	7.05	7.25	4.86
Isobutene/1-Butene	4.19	4.37	3.73
1,3-Butadiene	1.45	1.51	1.12
n-Butane	23.51	24.42	15.20
trans-2-Butene	1.09	1.15	0.91
cis-2-Butene	1.28	1.33	0.90
3-Methyl-1-butene	2.33	2.70	2.73
Isopentane	41.04	42.81	16.80
1-Pentene	1.73	1.62	1.13
2-Methyl-1-butene	2.60	2.76	1.84
n-Pentane	21.18	21.90	13.61
Isoprene	1.18	1.24	0.95
trans-2-Pentene	3.71	3.78	2.07
cis-2-Pentene	1.99	2.00	1.21
2-Methyl-2-butene	4.29	4.45	2.26
2,2-Dimethylbutane	1.59	1.67	1.14
Cyclopentene	1.00	0.99	0.63
4-Methyl-1-pentene	0.20	0.20	0.12
Cyclopentane	2.30	2.35	1.40
2,3-Dimethylbutane	8.86	9.09	4.75
2-Methylpentane	14.37	14.78	8.96
3-Methylpentane	9.16	9.40	5.88
2-Methyl-1-pentene	0.95	0.97	0.51
1-Hexene	0.53	0.53	0.35
2-Ethyl-1-butene	ND	ND	ND
n-Hexane	12.17	12.52	7.55
trans-2-Hexene	1.05	1.11	0.51
cis-2-Hexene	0.61	0.60	0.30
Methylcyclopentane	7.76	7.96	4.67
2,4-Dimethylpentane	4.12	4.21	2.67
Benzene	14.17	14.54	9.26
Cyclohexane	4.67	4.41	3.03
2-Methylhexane	5.43	5.31	3.27
2,3-Dimethylpentane	6.40	6.13	3.92
3-Methylhexane	5.98	6.13	3.78
1-Heptene	ND	ND	ND
2,2,4-Trimethylpentane	8.78	9.10	5.68
n-Heptane	5.62	5.81	3.59
Methylcyclohexane	3.97	4.03	2.42
2,2,3-Trimethylpentane	2.51	2.39	2.09
2,3,4-Trimethylpentane	8.60	8.86	14.19
Toluene	45.18	46.56	43.80
2-Methylheptane	2.06	2.02	1.47
3-Methylheptane	2.14	2.12	1.56
1-Octene	0.25	0.22	0.20
n-Octane	2.22	2.30	1.64
Ethylbenzene	7.22	7.25	5.16
m-Xylene/p-Xylene	22.25	23.12	15.09
Styrene	2.25	2.44	2.64
o-Xylene	8.21	8.54	6.13
1-Nonene	1.30	1.31	2.00
n-Nonane	1.69	1.68	1.37
Isopropylbenzene	0.57	0.71	0.39
a-Pinene	1.70	1.77	0.75
n-Propylbenzene	1.73	1.80	1.17
m-Ethyltoluene	5.13	5.37	3.31
p-Ethyltoluene	2.66	2.89	1.82
1,3,5-Trimethylbenzene	3.25	3.40	2.26
o-Ethyltoluene	1.99	2.05	1.31
b-Pinene	1.16	1.24	0.94
1,2,4-Trimethylbenzene	8.35	8.81	5.34
1-Decene	ND	ND	ND
n-Decane	2.45	2.45	1.72
1,2,3-Trimethylbenzene	2.00	2.06	1.10
m-Diethylbenzene	0.87	0.87	0.51
p-Diethylbenzene	0.88	0.83	0.50
1-Undecene	0.25	0.30	0.21
n-Undecane	1.77	1.76	1.40
1-Dodecene	0.20	0.23	0.15
n-Dodecane	0.76	0.82	0.47
1-Tridecene	ND	0.04	ND
n-Tridecane	0.17	0.20	0.12
TNMOC (w/ unknowns)	645.66	665.22	5375.30
TNMOC (speciated)	495.61	511.25	352.16

1998 SNMOC - NWNJ
Toxics Option Report (June 1998 - September 1998)

SAMPLE SITE #	NWNJ 13179	NWNJ 13899	NWNJ 14059	NWNJ 14468
SAMPLE DATE	6/29/98	7/29/98	8/6/98	8/24/98
ANALYSIS DATE	7/23/98	8/13/98	9/21/98	9/23/98
FILE NAME	L8GW005	L8HK027	L8IS2001	L8IV023
UNITS	ppbv	ppbv	ppbv	ppbv
ACETYLENE	1.76	4.92	5.02	3.71
PROPYLENE	1.92	2.68	7.04	3.66
CHLOROMETHANE	0.52	0.57	0.79	0.57
VINYL CHLORIDE	ND	0.00	ND	ND
1,3-BUTADIENE	0.09	0.24	ND	ND
BROMOMETHANE	ND	0.01 U	ND	ND
CHLOROETHANE	ND	0.00	ND	ND
ACETONITRILE	ND	0.00	ND	ND
ACRYLONITRILE	ND	0.00	ND	ND
METHYLENE CHLORIDE	0.50	0.42	1.00	ND
trans - 1,2 - DICHLOROETHYLENE	ND	0.00	ND	ND
1,1 - DICHLOROETHANE	ND	0.00	ND	ND
METHYL TERT-BUTYL ETHER	1.28	2.31	3.81	2.73
METHYL ETHYL KETONE	0.79	1.06	1.88	1.09
CHLOROPRENE	ND	0.00	ND	ND
BROMOCHLOROMETHANE	ND	0.00	ND	ND
CHLOROFORM	0.03 U	0.04	0.10	ND
ETHYL TERT BUTYL ETHER	ND	0.00	ND	ND
1,2 - DICHLOROETHANE	ND	0.00	ND	ND
1,1,1 - TRICHLOROETHANE	1.01	0.68	0.62	0.62
BENZENE	0.50	1.07	0.69	0.68
CARBON TETRACHLORIDE	0.08 IU	0.11	0.08 U	0.06 U
TERT-AMLY METHYL ETHER	ND	0.10	ND	ND
1,2 - DICHLOROPROPANE	ND	0.00	ND	ND
ETHYL ACRYLATE	ND	0.00	ND	ND
BROMODICHLOROMETHANE	ND	0.00	ND	ND
TRICHLOROETHYLENE	ND	0.06 U	0.37	ND
METHYL METHACRYLATE	ND	ND	ND	ND
cis - 1,3 - DICHLOROPROPENE	ND	0.00	ND	ND
METHYL ISOBUTYL KETONE	ND	0.18	0.31	ND
trans - 1,3 - DICHLOROPROPENE	ND	0.00	ND	ND
1,1,2 - TRICHLOROETHANE	ND	0.00	ND	ND
TOLUENE	1.87	2.95	4.32	2.00
DIBROMOCHLOROMETHANE	ND	0.00	ND	ND
N-OCTANE	0.17	0.23	ND	ND
TETRACHLOROETHYLENE	0.04 U	0.10 U	0.28	ND
CHLOROBENZENE	ND	0.00	ND	ND
ETHYLBENZENE	0.35	0.50	0.64	0.31
m,p - XYLENE	0.88	1.41	1.87	0.85
BROMOFORM	ND	0.00	ND	ND
STYRENE	0.17	0.18	ND	ND
1,1,2,2 - TETRACHLOROETHANE	ND	0.00	ND	ND
o - XYLENE	0.47	0.72	0.87	0.53
m - DICHLOROBENZENE	ND	0.00	ND	ND
p - DICHLOROBENZENE	0.04 U	0.07 U	0.11	ND
o - DICHLOROBENZENE	ND	0.02 U	ND	ND

U = Under Detection Limit
ND = Not Detected

1998 SNMOC - NWNJ
Toxics Option Report (June 1998 - September 1998)

SAMPLE SITE #	NWNJ 14487D1	NWNJ 14487R1	NWNJ 14488D2	NWNJ 14488R2
SAMPLE DATE	8/25/98	8/25/98	8/25/98	8/25/98
ANALYSIS DATE	10/15/98	12/1/98	10/15/98	12/1/98
FILE NAME	L8JM019	L8LA009	L8JM019	L8JM010
UNITS	ppbv	ppbv	ppbv	ppbv
ACETYLENE	3.66	3.82	3.74	3.75
PROPYLENE	3.88	3.66	3.92	3.63
CHLOROMETHANE	0.58	0.59	0.63	0.58
VINYL CHLORIDE	ND	ND	ND	ND
1,3-BUTADIENE	0.18	0.21	0.17	0.16
BROMOMETHANE	ND	ND	ND	ND
CHLOROETHANE	ND	ND	ND	ND
ACETONITRILE	ND	ND	ND	ND
ACRYLONITRILE	ND	ND	ND	ND
METHYLENE CHLORIDE	0.27	0.26	0.27	0.25
trans - 1,2 - DICHLOROETHYLENE	ND	ND	ND	ND
1,1 - DICHLOROETHANE	ND	ND	ND	ND
METHYL TERT-BUTYL ETHER	2.11	1.94	2.19	1.92
METHYL ETHYL KETONE	1.15	1.49	1.02	1.19
CHLOROPRENE	ND	ND	ND	ND
BROMOCHLOROMETHANE	ND	ND	ND	ND
CHLOROFORM	ND	ND	0.04 U	ND
ETHYL TERT BUTYL ETHER	ND	ND	ND	ND
1,2 - DICHLOROETHANE	ND	ND	ND	ND
1,1,1 - TRICHLOROETHANE	0.42	0.39	0.44	0.42
BENZENE	1.04	0.99	1.03	0.94
CARBON TETRACHLORIDE	0.11	0.11	0.11	0.11
TERT-AMLY METHYL ETHER	ND	ND	ND	ND
1,2 - DICHLOROPROPANE	ND	ND	ND	ND
ETHYL ACRYLATE	ND	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND	ND
TRICHLOROETHYLENE	ND	ND	ND	ND
METHYL METHACRYLATE	ND	ND	ND	ND
cis - 1,3 - DICHLOROPROPENE	ND	ND	ND	ND
METHYL ISOBUTYL KETONE	0.14	0.14	0.12	0.13
trans - 1,3 - DICHLOROPROPENE	ND	ND	ND	ND
1,1,2 - TRICHLOROETHANE	ND	ND	ND	ND
TOLUENE	3.02	2.90	3.71	3.70
DIBROMOCHLOROMETHANE	ND	ND	ND	ND
N-OCTANE	0.12	0.16	0.15	0.12
TETRACHLOROETHYLENE	0.43	0.42	0.41	0.40
CHLOROBENZENE	ND	ND	ND	ND
ETHYLBENZENE	0.45	0.45	0.46	0.42
m,p - XYLENE	1.34	1.30	1.37	1.26
BROMOFORM	ND	ND	ND	ND
STYRENE	0.16	0.17	0.16	0.16
1,1,2,2 - TETRACHLOROETHANE	ND	ND	ND	ND
o - XYLENE	0.63	0.63	0.66	0.61
m - DICHLOROBENZENE	ND	ND	ND	ND
p - DICHLOROBENZENE	0.12	0.11	0.13	0.11
o - DICHLOROBENZENE	ND	ND	ND	ND

U = Under Detection Limit
ND = Not Detected

1998 SNMOC - NWNJ
Toxics Option Report (June 1998 - September 1998)

SAMPLE SITE #	NWNJ 14984		NWNJ 15058
SAMPLE DATE	9/18/98		9/30/98
ANALYSIS DATE	11/3/98		10/24/02
FILE NAME	L8KC011		L8J!015
UNITS	ppbv		ppbv
ACETYLENE	3.66		7.15
PROPYLENE	4.67		8.04
CHLOROMETHANE	0.89		0.39
VINYL CHLORIDE	ND		ND
1,3-BUTADIENE	0.09		0.46
BROMOMETHANE	ND		ND
CHLOROETHANE	ND		ND
ACETONITRILE	ND		ND
ACRYLONITRILE	ND		ND
METHYLENE CHLORIDE	1.25		0.68
trans - 1,2 - DICHLOROETHYLENE	ND		ND
1,1 - DICHLOROETHANE	ND		ND
METHYL TERT-BUTYL ETHER	1.59		6.21
METHYL ETHYL KETONE	1.07		1.18
CHLOROPRENE	ND		ND
BROMOCHLOROMETHANE	ND		ND
CHLOROFORM	ND		0.06
ETHYL TERT BUTYL ETHER	ND		ND
1,2 - DICHLOROETHANE	ND		ND
1,1,1 - TRICHLOROETHANE	0.48		0.60
BENZENE	0.69		2.23
CARBON TETRACHLORIDE	0.11		0.11
TERT-AMLY METHYL ETHER	ND		0.16
1,2 - DICHLOROPROPANE	ND		ND
ETHYL ACRYLATE	ND		ND
BROMODICHLOROMETHANE	ND		ND
TRICHLOROETHYLENE	0.08		ND
METHYL METHACRYLATE	ND		ND
cis - 1,3 - DICHLOROPROPENE	ND		ND
METHYL ISOBUTYL KETONE	ND		0.12
trans - 1,3 - DICHLOROPROPENE	ND		ND
1,1,2 - TRICHLOROETHANE	ND		ND
TOLUENE	2.19		6.92
DIBROMOCHLOROMETHANE	ND		ND
N-OCTANE	0.15		0.35
TETRACHLOROETHYLENE	0.20		0.20
CHLOROBENZENE	ND		ND
ETHYLBENZENE	0.35		0.96
m,p - XYLENE	0.92		2.88
BROMOFORM	ND		ND
STYRENE	0.12		0.24
1,1,2,2 - TETRACHLOROETHANE	ND		ND
o - XYLENE	0.46		1.43
m - DICHLOROBENZENE	ND		ND
p - DICHLOROBENZENE	0.04	U	0.26
o - DICHLOROBENZENE	ND		ND

U = Under Detection Limit
ND = Not Detected

1998 SNMOC CARBONYLS

Sample Site: Newark, New Jersey **NWNJ**
Underivatized Concentration (ppbv)

SAMPLE #	**13180**	**13597**	**13900**	**14096**	**14251**	**14669**	**14778**
SAMPLE DATE	**6/29/98**	**7/20/98**	**7/29/98**	**8/7/98**	**8/18/98**	**9/2/98**	**9/10/98**
EXTRACTION DATE	**8/3/98**	**8/3/98**	**8/3/98**	**8/18/98**	**9/25/98**	**10/22/98**	**10/28/98**
ANALYSIS DATE	**8/12/98**	**8/12/98**	**8/12/98**	**8/22/98**	**10/2/98**	**10/28/98**	**10/29/98**
FILE NAME	**Q8HK024**	**Q8HK025**	**Q8HK026**	**Q8HU027**	**Q8JB022**	**Q8J~019**	**Q8J#018**
UNITS	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**
Formaldehyde	3.79	6.04	5.96	19.81	25.34	20.78	18.62
Acetaldehyde	1.92	2.90	2.61	3.96	3.58	5.43	2.26
Acrolein	0.13	0.43	0.25	0.45	1.26	0.54	0.51
Acetone	4.89	6.07	4.96	7.51	6.55	8.83	3.80
Propionaldehyde	0.13	0.36	0.21	0.46	0.22	0.36	0.17
Crotonaldehyde	ND	ND	ND	ND	ND	ND	ND
Butyr/Isobutyraldehyde	0.34	0.35	0.28	1.21	1.84	3.54	2.75
Benzaldehyde	ND	ND	ND	0.35	0.46	0.34	0.26
Isovaleraldehyde	ND	0.09	ND	0.28	0.23	0.30	0.16
Valeraldehyde	ND	0.08	ND	0.17	0.22	0.20	0.11
Tolualdehydes	ND	ND	ND	ND	ND	ND	ND
Hexaldehyde	0.13	0.15	0.11	0.37	0.38	0.43	0.26
2,5-Dimethylbenzaldehyde	ND	ND	ND	ND	ND	ND	ND

u - Concentration is below the detection limit

1998 SNMOC CARBONYLS

Sample Site: Newark, New Jersey
Underivatized Concentration (ppbv)

SAMPLE #	14810	14985 D1	14985 R1	14986 D2	14986 R2
SAMPLE DATE	9/15/98	9/21/98	9/21/98	9/21/98	9/21/98
EXTRACTION DATE	10/28/98	11/9/98	11/9/98	11/9/98	11/9/98
ANALYSIS DATE	10/30/98	11/13/98	11/13/98	11/13/98	11/13/98
FILE NAME	Q8J#026	Q8KK057	Q8KK058	Q8KK059	Q8KK060
UNITS	ppbv	ppbv	ppbv	ppbv	ppbv
Formaldehyde	VOID	22.13	21.62	22.03	21.87
Acetaldehyde	VOID	4.30	4.42	4.38	4.44
Acrolein	VOID	0.79	0.87	0.83	0.70
Acetone	VOID	6.82	6.85	6.89	6.61
Propionaldehyde	VOID	0.38	0.41	0.43	0.38
Crotonaldehyde	VOID	ND	ND	ND	ND
Butyr/Isobutyraldehyde	VOID	3.22	3.22	2.31	2.50
Benzaldehyde	VOID	0.46	0.41	0.47	0.35
Isovaleraldehyde	VOID	0.32	0.32	0.27	0.31
Valeraldehyde	VOID	0.24	0.27	0.24	0.22
Tolualdehydes	VOID	ND	ND	ND	ND
Hexaldehyde	VOID	0.51	0.34	0.57	0.53
2,5-Dimethylbenzaldehyde	VOID	ND	ND	ND	ND

u - Concentration is below the detection limit

FIELD BLANK DATA

Sample Site: Newark, NJ **NWNJ**

RAW AMOUNT

Derivatized Conc. (ug/ml)

Sample Date	8/25/98
Data File ID	Q8JB019
FB ID	14502 FB
Date Analyzed	10/2/98
Formaldehyde	0.02
Acetaldehyde	0.05
Acrolein	0.00
Acetone	0.36
Propionaldehyde	0.00
Crotonaldehyde	0.00
Butyr/Isobutyraldehyde	0.39
Benzaldehyde	0.00
Isovaleraldehyde	0.00
Valeraldehyde	0.00
Tolualdehydes	0.00
Hexaldehyde	0.00
2,5-Dimethylbenzaldehyde	0.00

FIELD BLANK

Underivatized Conc.(total ug)

Data File ID	Q8JB019
FB ID	14502 FB
Date Analyzed	10/2/98
Formaldehyde	0.01
Acetaldehyde	0.04
Acrolein	ND
Acetone	0.35
Propionaldehyde	ND
Crotonaldehyde	ND
Butyr/Isobutyraldehyde	0.45
Benzaldehyde	ND
Isovaleraldehyde	ND
Valeraldehyde	ND
Tolualdehydes	ND
Hexaldehyde	ND
2,5-Dimethylbenzaldehyde	ND

1998 SNMOC CARBONYLS

Sample Site: Fort Worth, Texas **CAMS13**
Underivatized Concentration (ppbv)

SAMPLE #	13605	13906	14175	14667	14787	14899	14981
SAMPLE DATE	7/20/98	7/29/98	8/11/98	9/2/98	9/10/98	9/18/98	9/23/98
EXTRACTION DATE	8/3/98	8/3/98	8/18/98	10/22/98	10/28/98	10/28/98	11/9/98
ANALYSIS DATE	8/12/98	8/12/98	8/22/98	10/28/98	10/29/98	10/30/98	11/12/98
FILE NAME	Q8HK021	Q8HK022	Q8HU025	Q8J~016	Q8J#016	Q8J#029	Q8KK029
UNITS	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Formaldehyde	4.73	2.68	3.77	4.45	3.20	1.58	1.46
Acetaldehyde	2.01	1.16	1.60	2.28	1.58	0.73	0.72
Acrolein	0.09	ND	ND	0.21	ND	0.04	ND
Acetone	3.86	2.77	3.93	6.35	3.57	0.59	1.83
Propionaldehyde	0.14	ND	0.20	0.31	0.22	0.10	0.14
Crotonaldehyde	ND	ND	ND	ND	ND	ND	ND
Butyr/Isobutyraldehyde	0.44	ND	0.46	0.56	2.03	0.14	0.32
Benzaldehyde	ND	ND	ND	0.28	0.11	ND	0.09
Isovaleraldehyde	ND	ND	ND	ND	ND	ND	0.07
Valeraldehyde	ND	0.11	0.05	0.05	ND	ND	ND
Tolualdehydes	ND	ND	ND	ND	ND	ND	ND
Hexaldehyde	ND	ND	0.15	0.09	0.06	ND	ND
2,5-Dimethylbenzaldehyde	ND	ND	ND	ND	ND	0.09	0.18

u - Concentration is below the detection limit

1998 SNMOC CARBONYLS

Sample Site: Fort Worth, Texas
Underivatized Concentration (ppbv)

SAMPLE #	14996	15020	15033 D1	15033 R1	15034 D2	15034 R2	15051
SAMPLE DATE	9/24/98	9/25/98	9/28/98	9/28/98	9/28/98	9/28/98	9/30/98
EXTRACTION DATE	11/9/98	11/9/98	11/9/98	11/9/98	11/9/98	11/9/98	11/9/98
ANALYSIS DATE	11/12/98	11/12/98	11/12/98	11/12/98	11/13/98	11/13/98	11/12/98
FILE NAME	Q8KK030	Q8KK031	Q8KK048	Q8KK049	Q8KK051	Q8KK052	Q8KK032
UNITS	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Formaldehyde	2.43	1.97	2.92	3.15	1.59	1.60	4.64
Acetaldehyde	0.86	0.93	1.42	1.40	0.85	0.83	2.55
Acrolein	ND	ND	0.13	0.11	0.05	0.08	0.34
Acetone	0.66	0.67	0.56	0.85	0.52	0.32	6.07
Propionaldehyde	0.12	0.18	0.23	0.34	0.20	0.13	0.36
Crotonaldehyde	ND	ND	ND	ND	ND	ND	ND
Butyr/Isobutyraldehyde	0.25	0.33	0.59	0.64	0.26	0.33	0.53
Benzaldehyde	0.10	0.14	0.26	0.21	0.21	0.19	0.26
Isovaleraldehyde	0.07	ND	ND	ND	0.07	ND	0.14
Valeraldehyde	ND	ND	ND	ND	ND	ND	0.11
Tolualdehydes	ND	ND	ND	ND	ND	ND	ND
Hexaldehyde	0.14	0.12	0.26	0.33	0.17	0.17	0.12
2,5-Dimethylbenzaldehyde	0.18	0.30	0.36	0.34	0.24	0.20	ND

u - Concentration is below the detection limit

FIELD BLANK DATA

Sample Site: Fort Worth, TX CAMS13
RAW AMOUNT
Derivatized Conc. (ug/ml)

Sample Date	9/29/98
Data File ID	Q8KK016
FB ID	15031 FB
Date Analyzed	11/12/98
Formaldehyde	0.09
Acetaldehyde	0.11
Acrolein	0.00
Acetone	0.39
Propionaldehyde	0.00
Crotonaldehyde	0.00
Butyr/Isobutyraldehyde	0.71
Benzaldehyde	0.00
Isovaleraldehyde	0.00
Valeraldehyde	0.00
Tolualdehydes	0.00
Hexaldehyde	0.00
2,5-Dimethylbenzaldehyde	0.00

FIELD BLANK
Underivatized Conc.(total ug)

Data File ID	Q8KK016
FB ID	15031 FB
Date Analyzed	11/12/98
Formaldehyde	0.05
Acetaldehyde	0.08
Acrolein	ND
Acetone	0.38
Propionaldehyde	ND
Crotonaldehyde	ND
Butyr/Isobutyraldehyde	0.82
Benzaldehyde	ND
Isovaleraldehyde	ND
Valeraldehyde	ND
Tolualdehydes	ND
Hexaldehyde	ND
2,5-Dimethylbenzaldehyde	ND

1998 SNMOC CARBONYLS

Sample Site: Dallas, Texas **CAMS5**
Underivatized Concentration (ppbv)

SAMPLE #	13213	13616	13902	14177	14256	14671	14783
SAMPLE DATE	7/3/98	7/20/98	7/29/98	8/11/98	8/19/98	9/2/98	9/10/98
EXTRACTION DATE	8/3/98	8/3/98	8/3/98	8/18/98	9/25/98	10/22/98	9/10/98
ANALYSIS DATE	8/11/98	8/12/98	8/12/98	8/22/98	10/3/98	10/28/98	10/29/98
FILE NAME	Q8HK015	Q8HK018	Q8HK019	Q8HU024	Q8JB023	Q8J~015	Q8J#015
UNITS	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Formaldehyde	7.54	5.31	2.95	4.78	4.50	7.71	14.95
Acetaldehyde	2.89	2.27	1.00	1.67	ND	2.79	13.94
Acrolein	0.12	0.05	ND	0.07	0.13	0.22	0.17
Acetone	5.03	3.41	2.42	4.13	6.79	7.11	13.93
Propionaldehyde	0.25	ND	ND	0.25	0.16	0.36	3.13
Crotonaldehyde	ND	0.33	0.12	ND	ND	ND	ND
Butyr/Isobutyraldehyde	0.31	0.07	0.14	0.55	0.63	1.18	2.73
Benzaldehyde	ND	ND	ND	ND	0.12	0.42	0.45
Isovaleraldehyde	ND	0.04	ND	ND	0.17	ND	0.24
Valeraldehyde	ND	ND	ND	ND	ND	0.07	0.43
Tolualdehydes	ND	0.39	ND	ND	0.22	ND	0.24
Hexaldehyde	0.13	0.10	ND	0.12	0.11	0.16	0.46
2,5-Dimethylbenzaldehyde	ND	ND	ND	ND	ND	ND	ND

u - Concentration is below the detection limit

1998 SNMOC CARBONYLS

Sample Site: Dallas, Texas
Underivatized Concentration (ppbv)

SAMPLE #	14999	15024 D1	15024 R1	15025 D2	15025 R2	15043
SAMPLE DATE	9/24/98	9/25/98	9/25/98	9/25/98	9/25/98	9/28/98
EXTRACTION DATE	11/9/98	11/9/98	11/9/98	11/9/98	11/9/98	11/9/98
ANALYSIS DATE	11/12/98	11/12/98	11/12/98	11/12/98	11/12/98	11/12/98
FILE NAME	Q8KK027	Q8KK044	Q8KK045	Q8KK046	Q8KK047	Q8KK028
UNITS	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Formaldehyde	VOID	VOID	VOID	2.99	2.97	3.39
Acetaldehyde	VOID	VOID	VOID	1.26	1.37	1.76
Acrolein	VOID	VOID	VOID	0.13	0.14	0.20
Acetone	VOID	VOID	VOID	1.23	1.25	1.97
Propionaldehyde	VOID	VOID	VOID	0.23	0.23	0.25
Crotonaldehyde	VOID	VOID	VOID	ND	ND	ND
Butyr/Isobutyraldehyde	VOID	VOID	VOID	0.46	0.59	0.61
Benzaldehyde	VOID	VOID	VOID	0.14	0.15	0.22
Isovaleraldehyde	VOID	VOID	VOID	0.10	0.10	ND
Valeraldehyde	VOID	VOID	VOID	ND	0.09	0.10
Tolualdehydes	VOID	VOID	VOID	ND	ND	ND
Hexaldehyde	VOID	VOID	VOID	0.15	ND	0.24
2,5-Dimethylbenzaldehyde	VOID	VOID	VOID	0.18	0.14	0.33

u - Concentration is below the detection limit

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Sample Site: Dallas, TX **CAMS5**
RAW AMOUNT
Derivatized Conc. (ug/ml)

Sample Date	9/29/98
Data File ID	Q8KK017
FB ID	15082 FB
Date Analyzed	11/12/98
Formaldehyde	0.03
Acetaldehyde	0.08
Acrolein	0.00
Acetone	0.35
Propionaldehyde	0.00
Crotonaldehyde	0.00
Butyr/Isobutyraldehyde	0.41
Benzaldehyde	0.04
Isovaleraldehyde	0.02
Valeraldehyde	0.00
Tolualdehydes	0.00
Hexaldehyde	0.00
2,5-Dimethylbenzaldehyde	0.00

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Underivatized Conc.(total ug)

Data File ID	Q8KK017
FB ID	15082 FB
Date Analyzed	11/12/98
Formaldehyde	0.02
Acetaldehyde	0.06
Acrolein	ND
Acetone	0.35
Propionaldehyde	ND
Crotonaldehyde	ND
Butyr/Isobutyraldehyde	0.46
Benzaldehyde	0.06
Isovaleraldehyde	0.03
Valeraldehyde	ND
Tolualdehydes	ND
Hexaldehyde	ND
2,5-Dimethylbenzaldehyde	ND

1998 SNMOC CARBONYLS

Sample Site: Dallas, Texas **DLTX**

Underivatized Concentration (ppbv)

SAMPLE #	13215	13613	13904	14257	14258	14583	14789
SAMPLE DATE	7/3/98	7/20/98	7/29/98	8/11/98	8/20/98	9/2/98	9/10/98
EXTRACTION DATE	8/3/98	8/3/98	8/3/98	9/25/98	9/25/98	10/22/98	10/28/98
ANALYSIS DATE	8/11/98	8/11/98	8/12/98	10/2/98	10/3/98	10/28/98	10/29/98
FILE NAME	Q8HK016	Q8HK017	Q8HK020	Q8JB021	Q8JB024	Q8J~017	Q8J#017
UNITS	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Formaldehyde	3.29	4.37	2.75	3.40	3.15	5.93	4.69
Acetaldehyde	1.12	1.45	0.86	1.66	1.61	2.45	1.42
Acrolein	0.19	0.29	0.12	0.07	0.21	0.23	ND
Acetone	3.15	3.47	2.68	3.28	2.91	2.40	3.46
Propionaldehyde	0.16	0.19	ND	0.21	0.19	0.29	0.15
Crotonaldehyde	ND	ND	ND	0.08	ND	ND	ND
Butyr/Isobutyraldehyde	0.15	0.31	ND	0.36	0.69	0.43	1.38
Benzaldehyde	0.09	0.11	ND	0.13	0.14	0.20	0.12
Isovaleraldehyde	ND	ND	ND	0.10	0.10	0.15	ND
Valeraldehyde	ND	ND	ND	ND	0.13	ND	ND
Tolualdehydes	ND	ND	ND	0.15	ND	0.14	ND
Hexaldehyde	0.25	0.13	0.09	0.14	0.13	0.17	0.05
2,5-Dimethylbenzaldehyde	ND	ND	ND	0.09	ND	0.19	ND

u - Concentration is below the detection limit

1998 SNMOC CARBONYLS

Sample Site: Dallas, Texas
Underivatized Concentration (ppbv)

SAMPLE #	14975	14993 D1	14993 R1	14994 D2	14994 R2
SAMPLE DATE	9/18/98	9/24/98	9/24/98	9/24/98	9/24/98
EXTRACTION DATE	10/28/98	11/9/98	11/9/98	11/9/98	11/9/98
ANALYSIS DATE	10/30/98	11/13/98	11/13/98	11/13/98	11/13/98
FILE NAME	Q8J#030	Q8KK053	Q8KK054	Q8KK055	Q8KK056
UNITS	ppbv	ppbv	ppbv	ppbv	ppbv
Formaldehyde	2.44	2.15	1.91	1.78	1.95
Acetaldehyde	1.30	0.68	0.70	0.62	0.59
Acrolein	0.08	0.09	0.08	0.06	0.07
Acetone	3.06	3.81	3.88	3.30	3.20
Propionaldehyde	0.11	0.11	0.11	0.11	0.08
Crotonaldehyde	ND	ND	ND	ND	ND
Butyr/Isobutyraldehyde	0.40	0.53	0.46	0.36	0.21
Benzaldehyde	0.10	0.11	0.11	0.10	0.10
Isovaleraldehyde	0.08	0.17	0.12	0.09	0.11
Valeraldehyde	ND	ND	ND	ND	ND
Tolualdehydes	ND	ND	ND	ND	ND
Hexaldehyde	0.15	0.13	ND	ND	0.11
2,5-Dimethylbenzaldehyde	ND	0.10	0.14	0.08	0.09

u - Concentration is below the detection limit

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Sample Site: Dallas, TX **DLTX**

RAW AMOUNT

Derivatized Conc. (ug/ml)

Sample Date	8/27/98
Data File ID	Q8JB020
FB ID	14526 FB
Date Analyzed	10/2/98
Formaldehyde	0.23
Acetaldehyde	0.09
Acrolein	0.00
Acetone	0.44
Propionaldehyde	0.00
Crotonaldehyde	0.00
Butyr/Isobutyraldehyde	0.82
Benzaldehyde	0.00
Isovaleraldehyde	0.00
Valeraldehyde	0.00
Tolualdehydes	0.00
Hexaldehyde	0.00
2,5-Dimethylbenzaldehyde	0.00

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Underivatized Conc.(total ug)

Data File ID	Q8JB020
FB ID	14526 FB
Date Analyzed	10/2/98
Formaldehyde	0.13
Acetaldehyde	0.07
Acrolein	ND
Acetone	0.43
Propionaldehyde	ND
Crotonaldehyde	ND
Butyr/Isobutyraldehyde	0.94
Benzaldehyde	ND
Isovaleraldehyde	ND
Valeraldehyde	ND
Tolualdehydes	ND
Hexaldehyde	ND
2,5-Dimethylbenzaldehyde	ND

1998 SNMOC CARBONYLS

Sample Site: Juarez, Mexico **JUMX**

Underivatized Concentration (ppbv)

SAMPLE #	**14831**	**15029**	**15090**	**15092**
SAMPLE DATE	**9/9/98**	**9/22/98**	**9/25/98**	**9/29/98**
EXTRACTION DATE	**10/22/98**	**11/9/98**	**11/9/98**	**11/9/98**
ANALYSIS DATE	**10/28/98**	**11/12/98**	**11/12/98**	**11/12/98**
FILE NAME	**Q8J~028**	**Q8KK037**	**Q8KK038**	**Q8KK040**
UNITS	**ppbv**	**ppbv**	**ppbv**	**ppbv**
Formaldehyde	3.24	2.66	2.09	2.18
Acetaldehyde	2.18	1.39	1.07	1.40
Acrolein	0.20	0.06	0.11	0.08
Acetone	5.01	1.62	3.10	2.93
Propionaldehyde	0.29	0.24	0.21	0.22
Crotonaldehyde	ND	ND	ND	ND
Butyr/Isobutyraldehyde	0.57	0.31	0.44	0.48
Benzaldehyde	0.10	0.16	0.16	0.17
Isovaleraldehyde	ND	0.09	0.11	0.09
Valeraldehyde	0.06	0.27	0.30	0.30
Tolualdehydes	ND	ND	ND	ND
Hexaldehyde	0.07	0.05	ND	0.06
2,5-Dimethylbenzaldehyde	ND	0.19	0.22	0.23

u - Concentration is below the detection limit

TECHNICAL REPORT DATA

(PLEASE READ INSTRUCTIONS ON THE REVERSE BEFORE COMPLETING)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA-454/R-00-053		

4. TITLE AND SUBTITLE	5. REPORT DATE
1998 NONMETHANE ORGANIC COMPOUNDS (NMOC) AND SPECIATED NONMETHANE ORGANIC COMPOUNDS (SNMOC) MONITORING PROGRAM	9/1/99
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT NO.
	11. CONTRACT/GRANT NO. 68-D3-0095
12. SPONSORING AGENCY NAME AND ADDRESS OFFICE OF AIR QUALITY PLANNING AND STANDARDS U.S. ENVIRONMENTAL PROTECTION AGENCY RESEARCH TRIANGLE PARK, NC 27711	13. TYPE OF REPORT AND PERIOD COVERED
	14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

16. ABSTRACT

IN CERTAIN AREAS OF THE COUNTRY WHERE THE NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS) FOR OZONE IS BEING EXCEEDED, ADDITIONAL MEASUREMENTS OF AMBIENT NONMETHANE ORGANIC COMPOUNDS (NMOC) ARE NEEDED TO ASSIST IN THE AFFECTED STATES IN DEVELOPING REVISED OZONE CONTROL STRATEIGES. BECAUSE OF PREVIOUS DIFFICULTY ON OBTAINING ACCURANGE NMOC MEASUREMENTS, THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) HAS PROVIDED MONITORING AND ANALYTICAL ASSISTANCE TO THESE STATES, BEGINNING IN 1984 AND CONTINUING THROUGH THE 1998 NMOC MONITORING PROGRAM.

17 KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI FIELD/GROUP
OZONE CONTROL STRATEGIES NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) 1998 NMOC MONITORING PROGRAM NONMETHANE ORGANIC COMPOUND MONITORING ANALYSIS		
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