1984

STATE OF CONNECTICUT
ANNUAL AIR QUALITY SUMMARY

QUI TRANSTULIT SUSTINET

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I. INTRODUCTION

The 1984 Air Quality Summary of Ambient Air Quality in Connecticut is a compilation of all air pollutant measurements made at the Department of Environmental Protection (DEP) air monitoring network sites.

A. Overview of Air Pollutant Concentrations in Connecticut

The assessment of ambient air quality in Connecticut is made by comparing the measured concentrations of a pollutant to each of two Federal air quality standards. The first is the primary standard which is established to protect public health with an adequate margin of safety. The second is the secondary standard which is established to protect plants and animals and to prevent economic damage. The specific air quality standards are listed in Table 1 along with the time constraints imposed on each.

The following section briefly describes the status of Connecticut's air quality for the year 1984. More detailed discussions of each of the six pollutants are provided in subsequent sections of this Air Quality Summary.

1. Total Suspended Particulates (TSP)

Measured total suspended particulate (TSP) levels did not exceed the primary annual standard of 75 ug/m^3 or the secondary annual standard of 60 ug/m^3 in Connecticut during 1984. No site exceeded the primary 24-hour standard of 260 ug/m^3 in 1984. Nor did any site exceed the secondary 24-hour standard of 150 ug/m^3, whereas such exceedances were recorded at two (2) sites in 1982 and at fourteen (14) sites in 1981. Two (2) exceedances of a standard are required at a particular site for the standard to be violated. No site recorded violations of any particulate standard in 1984.

In general, measured TSP levels in Connecticut were higher in 1984 in terms of annual average concentration values than they were in 1983 (see Table 3).

2. Sulfur Dioxide (SO_2)

None of the air quality standards for sulfur dioxide were exceeded in Connecticut in 1984. Measured concentrations were below the 80 ug/m^3 primary annual standard, the 365 ug/m^3 primary 24-hour standard, and the 1300 ug/m^3 secondary 3-hour standard.

The results of continuous SO_2 monitoring indicate that sulfur dioxide levels in 1984 were not significantly different from those in 1983 (see Table 4). Temperature is an important factor in determining SO_2 emissions. The lack of change in measured SO_2 levels may have been due to the fact that, for coastal Connecticut, 1984 was not appreciably warmer than 1983. This can be shown by the number of "degree days" : a measure of heating requirement (see Tables 31 and 32). As the number of degree days increases, the amount of fuel that must be burned to heat buildings also increases. Consequently, as more fossil fuel is burned, the emissions of sulfur oxides are proportionately increased. There was only about a 1% increase in degree days for Connecticut as a whole from 1983 to 1984.

3. Ozone (O_3)

National Ambient Air Quality Standards - (NAAQS) - On February 8, 1979, the U.S. Environmental Protection Agency (EPA) established an ambient air quality standard for ozone of 0.12 ppm for a one-hour average. That level is not to be exceeded more than once per year. Furthermore, in order to determine compliance with the 0.12 ppm ozone standard, EPA directs the states to record the number of daily exceedances of 0.12 ppm at a given monitoring site over a consecutive 3-year period and then calculate the average number of daily exceedances for this interval. If the resulting average value is less than or equal to 1.0; that is, if the fourth highest daily value in a consecutive 3-year period is less than or equal to 0.12 ppm, the ozone standard is considered to be attained. The definition of the pollutant was also changed, along with the numerical value of the standard, partly because the instruments used to measure photochemical oxidants in the air really measure only ozone. Ozone is one of a group of chemicals which are formed photochemically in the air and are called photochemical oxidants. In the past, the two terms have often been used interchangeably. This 1984 Air Quality Summary uses the term "ozone" in conjunction with the new NAAQS to reflect the changes in both the numerical value of the NAAQS and the definition of the pollutant.

The primary 1-hour ozone standard was exceeded at all the DEP monitoring sites in 1984 (see Table 2).

The incidence of ozone levels in excess of the 1-hour 0.12 ppm ozone standard decreased significantly from 1983 to 1984 (see Tables 18 and 19). Most of this difference is attributable to the changes in meteorological factors which occur from year-to-year. The formation of ozone is facilitated by high temperatures and strong sunlight in the presence of hydrocarbons and oxides of nitrogen. The prevailing southwest wind transports hydrocarbons and nitrogen oxides generated in the New Jersey - New York City Metropolitan Area into Connecticut. Along the way, these chemicals react in the presence of strong sunlight, forming ozone. Consequently, the ozone levels across Connecticut are highest when the prevailing wind flow is out of the southwest (see Table 21). However, there are recorded exceedences of the NAAQS for ozone on non-southwest wind days. This suggests that pollution control programs currently being implemented in this state are needed to protect the public health of Connecticut's citizenry on days when Connecticut is responsible for its own pollution.

4. Nitrogen Dioxide (NO_2)

The method by which the DEP measures NO_2 was changed in 1981. 1984 was the third full year the DEP used continuous electronic analyzers to measure NO_2 levels. The annual average NO_2 standard, 100 ug/m^3, was not exceeded in 1984 at any site in Connecticut.

5. Carbon Monoxide (CO)

The primary eight-hour standard of 9 ppm was exceeded at two of the five carbon monoxide monitoring sites in Connecticut during 1984 (see Table 2). The standard was exceeded ~~three~~ two times at Stamford-020 and ~~twelve~~ seven times at Hartford 017. Two exceedances at a particular site are required for a standard to be violated. For comparison, there were exceedances at all five sites in 1983 and violations of the eight-hour standard at New Britain 002 and Hartford 012.

There were no violations of the primary one-hour standard of 35 ppm.

6. Lead (Pb)

The primary and secondary ambient air quality standard for lead is 1.5 ug/m^3, maximum arithmetic mean averaged over three consecutive calendar months. As was the case in 1983, the lead standard was not exceeded at any site in Connecticut during 1984.

A downward trend in measured concentrations of lead has been observed since 1978. This trend is probably due to the decreasing use of leaded, relative to unleaded, gasoline.

TABLE 1

ASSESSMENT OF AMBIENT AIR QUALITY

POLLUTANT	SAMPLING PERIOD	DATA REDUCTION	STATISTICAL BASE	AMBIENT AIR QUALITY STANDARDS: PRIMARY STANDARD ug/m3	PRIMARY STANDARD ppm	SECONDARY STANDARD ug/m3	SECONDARY STANDARD ppm
Total Suspended Particulates	24-Hours Every Sixth Day[1]	24-Hour Average	Annual Geometric Mean	75		60*	
			24-Hour Average[3]	260		150	
Sulfur Oxides (Measured as Sulfur Dioxide)	Continuous[2]	1-Hour Average	Annual Arithmetic Mean	80	0.03		
			24-Hour Average[3]	365	0.14		
			3-Hour Average[3]			1300	0.50
Nitrogen Dioxide	Continuous[2]	1-Hour Average	Annual Arithmetic Mean	100	0.05	Same as Primary	
Ozone	Continuous[2]	1-Hour Average	1-Hour Average[4]	235	0.12	Same as Primary	
Lead	24 Hours Every Sixth Day[5]	Monthly Composite	Weighted 3-Month Average	1.5		Same as Primary	
Carbon Monoxide	Continuous[2]	1-Hour Average	8-Hour Average[3]	10**	9	Same as Primary	
			1-Hour Average[3]	40**	35	Same as Primary	

1 EPA assessment criteria require at least 5 samples per calendar quarter, and, if one month has no samples, then the other two months in that quarter must have at least two samples each.
2 EPA assessment criteria require 75% of possible data to compute valid averages.
3 Not to be exceeded more than once per year.
4 Not to be exceeded more than an average of once per year in three years.
5 State of Connecticut assessment criteria require 75% of possible data to compute valid averages.
* A guide to be used in assessing implementation plans to achieve the 24-hour standard.
** Units are mg/m^3

Units: ug/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; ppm = parts per million

TABLE 2

AIR QUALITY STANDARDS EXCEEDED IN CONNECTICUT IN 1984 BASED SOLELY UPON MEASURED CONCENTRATIONS

		OZONE		CARBON MONOXIDE	
		Level Exceeding 1-Hour Standard		Level Exceeding 8-Hour/1-Hour Standard	
Town	Site	Highest Observed Level (ppm)	Number of Days Standard Exceeded	Highest Observed Level 8-Hour/1-Hour (ppm)	Number of Times Standard Exceeded
Bridgeport	123	0.197	12	X	X
Danbury	123	0.215	13	X	X
East Hartford	003	0.167	7	X	X
Greenwich	017	0.196	17	X	X
Groton	005	0.226	22	X	X
Hartford	017	X	X	13.3/-	12/-
Madison	002	0.241	18	X	X
Middletown	007	0.177	14	X	X
New Haven	123	0.218	12	X	X
Stafford	001	0.181	7	X	X
Stamford	020	X	X	10.7/-	3/-
Stratford	007	0.232	28	X	X

X: Pollutant not monitored at site
-: No violation

B. Trends

Any attempt to assess statewide trends in air pollution levels must account for the tendency of local changes to obscure the statewide pattern. In order to reach some statistically valid conclusions concerning trends in pollutant levels in Connecticut, the DEP has applied a statistical test called a paired *t* test (referred to hereafter as the *t* test) to the annual average data for two pollutants. The *t* test has been applied to 1975-1984 total suspended particulate (TSP) data and to 1978-1984 continuous SO_2 data.

The *t* test is a parametric test which can ascertain statistically significant changes (increases or decreases) in the annual average pollutant concentrations at all the monitoring sites in Connecticut. The *t* test makes it possible to overcome the trend analysis problems which arise due to the changes in the number and location of monitoring sites from year-to-year, as well as problems associated with making equitable comparisons among sites. The annual mean pollutant concentrations for consecutive years are compared at each site; there is no inter-site comparison. Data for two consecutive years are required and the size of the change (increase or decrease) is noted. For example, if a high proportion of sites experienced an increase and/or if the magnitude of the increases at several sites is of much greater importance than the magnitude of the decreases at other sites, the *t* test will show that the increase was statistically significant for those two years.

The results of the *t* test for TSP and continuous SO_2 data are presented in Tables 3 and 4, respectively. These analyses were performed only on data computed for sites at which the EPA's minimum sampling criteria were met. The years of data that were paired, the number of sites used, and the statewide average and standard deviation of the geometric mean pollutant concentrations at the sites are provided in the first four columns of each table. The statistical significance of any change in the statewide pollutant average is provided in the remaining columns. The significance of a change is indicated by an arrow for each confidence limit, and is also given numerically as the number of chances in 10,000 of *not* occurring under the heading "actual significance of change". For example, the statewide annual average for TSP decreased between 1977 and 1978 from 54.8 to 52.7. This change represented a significant decrease at the 95% confidence level, but it did not represent a significant change at the 99% confidence level. The "actual significance of change" is given as 0.0216, meaning that there are 216 chances in 10,000 that this measured decrease in TSP levels did not occur.

1. TSP

The results of the *t* test for TSP (see Table 3) show that total suspended particulate levels in Connecticut remained relatively constant from 1975 to 1977, decreased from 1977 to 1978, and remained unchanged from 1978 to 1979. Between 1979 and 1980 there was a significant drop in measured TSP levels. This has been attributed to the elimination of passive sampling error through the use of retractable lids on the hi-vol monitors. TSP levels again fell significantly from 1980 to 1981. TSP levels increased from 1981 to 1982, decreased from 1982 to 1983 and then increased from 1983 to 1984.

These trend analyses do not account for the uncertainty associated with the individual annual mean computed for each TSP site. Most TSP sampling is conducted only every sixth day, producing a maximum possible total of 61 samples per year. Therefore, the *t* test really compares year-to-year averages of the sampled concentrations, not actual annual averages. However, the every-sixth-day sampling schedule is believed to be sufficient to produce representative annual averages. The every-sixth-day schedule for TSP sampling began in 1971.

Significant changes in annual TSP levels can also be caused simply by changes of weather, particularly the wind. Such changes may explain most of the increase observed between 1974 and 1975, and the decrease from 1977 to 1978.

Figure 1 shows the long-term trend of TSP concentrations in Connecticut in graphical form. The trend chart is based on data obtained from high volume sampling devices. High volume sampler data at a site are included only if there was a sufficient number of samples taken in a year to compute a valid annual geometric mean concentration.

2. SO_2

Connecticut has been measuring ambient levels of sulfur dioxide since prior to the inception of the SO_2 standards in 1971. Several monitoring methods have been employed including bubblers, sulfation plates, and various types of continuous instruments. The bubblers became the EPA reference method, but unfortunately the field data have turned out to be very unreliable. The sulfation plates were in use for 15 years, but they do not measure SO_2 directly. Sulfation rate-derived SO_2 values were thought to be reliable, but recent information has cast doubt on their reliability. Continuous monitors presently yield reliable data, but this has not always been the case. The earliest continuous monitors (conductometric and coulometric) were subject to interference from many chemicals other than SO_2 and also had difficulties with quality control. Later generations of instruments (flame photometric and pulsed fluorescent) alleviated these problems, and there has been a corresponding increase in the reliability of the data, especially since 1978.

In order to perform a valid trend analysis, the data for the period of interest must be adequate, reliable and from similar sampling methods. Up until 1978, the only method which consistently fit these criteria was the sulfation plate. Between 1978 and 1982 there were approximately three times as much sulfation rate data as continuous SO_2 data and the former method was used for the purpose of analyzing SO_2 trends. However, recent information now indicates that sulfation rate-derived SO_2 values may not be as accurate as once thought. Sulfation rate data are dependent on relative humidity and wind speed -- being extremely sensitive to the latter -- and the precision of the data suffers even under uniform conditions. Furthermore, EPA has requested that DEP use continuous SO_2 data in order to analyze SO_2 trends. Consequently, the SO_2 trend analysis uses only continuous SO_2 data. The data are restricted to the period 1976-1983 because earlier data are judged not to be adequate or reliable. The results are summarized in Table 4 and Figure 2. Table 4 does not present a trend analysis for the period 1976-1977 or the period 1977-1978 because the number of monitors that operated for the duration of each period was 2 and 3, respectively -- too few to establish an accurate statewide trend.

In response to the skyrocketing prices of low sulfur fuels in the late 1970's, most states relaxed their sulfur-in-fuel requirements to the full extent the law allowed, creating considerable pressure on Connecticut to follow suit. This caused Connecticut to reevaluate its philosophy for controlling sulfur oxide emissions in 1981. To meet the challenge of increased costs of fuel in the economy, DEP restructured its air pollution control requirements for fuel burning sources. Under this new "three-pronged" program Connecticut's businesses and industries are (1) now allowed (effective November 1981) to burn a less expensive grade of oil with a higher sulfur content -- one percent (1.0%) sulfur oil and (2) are allowed to burn higher sulfur content oil in exchange for reductions in energy use. The third aspect of the program was the repeal of the 24-hour secondary air quality standard for sulfur oxides.

TABLE 3

TSP TRENDS, 1975-1984
(PAIRED t TEST)

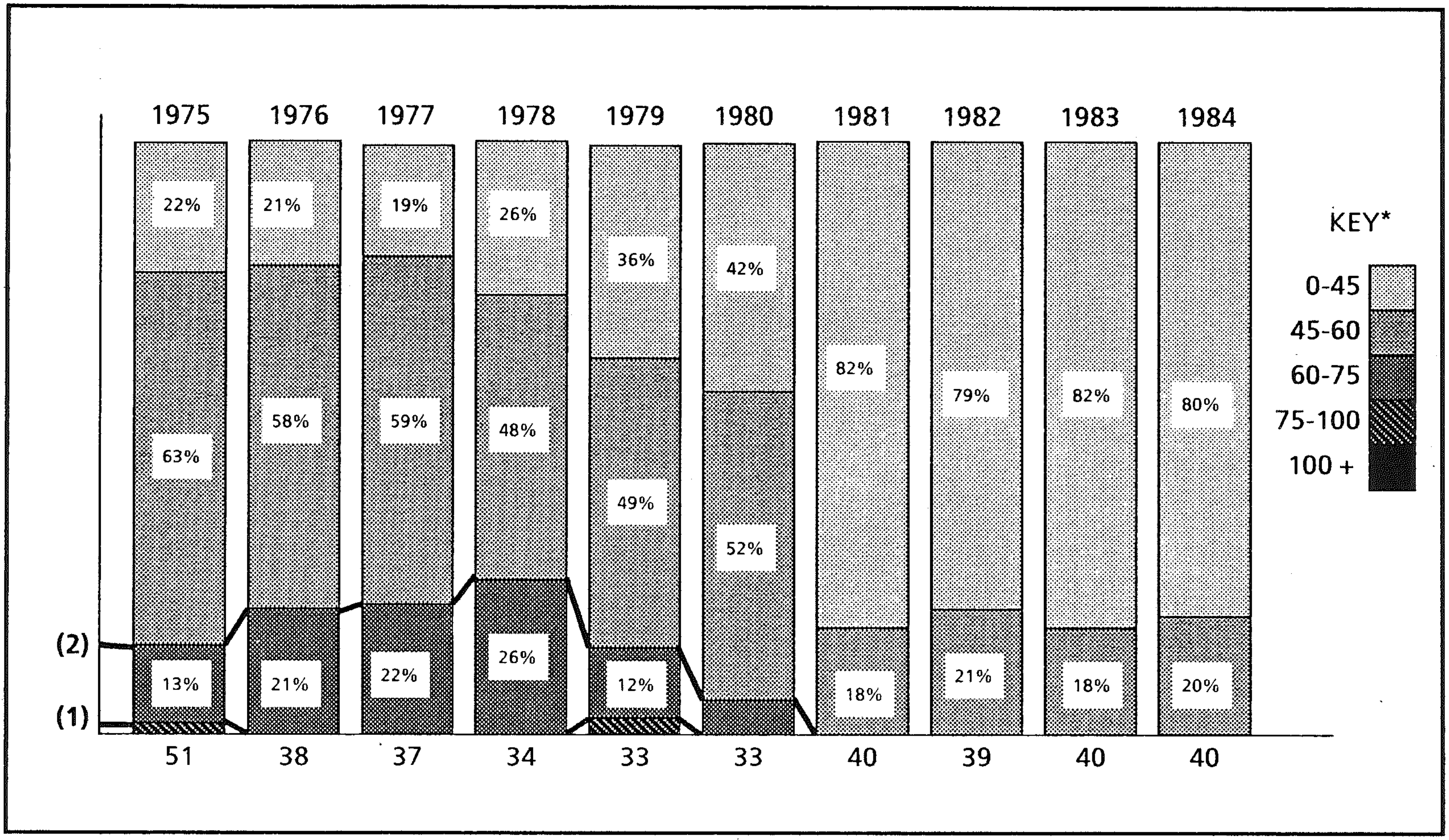
Paired Years	Number Of Sites	Average Of Annual Geometric Means (ug/m³)	Standard Deviation (ug/m³)	Significance Level: Trend at 95% Level*	Significance Level: Trend at 99% Level*	Significance Level: Probability That Change Is Not Significant
75	29	53.3	9.8			
76	29	53.3	9.5	N.C.	N.C.	0.9588
76	35	53.6	8.8			
77	35	53.7	9.2	N.C.	N.C.	0.8715
77	30	54.8	9.8			
78	30	52.7	9.3	↓	N.C.	0.0216
78	32	51.4	12.1			
79	32	49.9	12.5	N.C.	N.C.	0.1530
79	32	49.3	13.2			
80	32	45.4	10.0	↓	↓	0.0001
80	26	45.2	10.1			
81	26	38.0	8.4	↓	↓	0.0001
81	37	38.3	6.8			
82	37	40.5	8.0	↑	↑	0.0001
82	36	41.3	7.3			
83	36	39.5	6.7	↓	↓	0.0001
83	38	39.6	6.7			
84	38	40.5	6.5	↑	↑	0.0008

* Key to Symbols: ↓ = Significant Downward Trend
↑ = Significant Upward Trend
N.C. = No Significant Change

FIGURE 1

TOTAL SUSPENDED PARTICULATE MATTER TRENDS

"PERCENT OF SITES WITHIN EACH RANGE"



NUMBER OF SITES

(1) PRIMARY ANNUAL STANDARD 75 μg/m³

(2) SECONDARY ANNUAL STANDARD 60 μg/m³

* ANNUAL GEOMETRIC MEAN μg/m³

TABLE 4

SO_2 TRENDS FROM CONTINUOUS DATA, 1978-1984
(PAIRED *t* TEST)

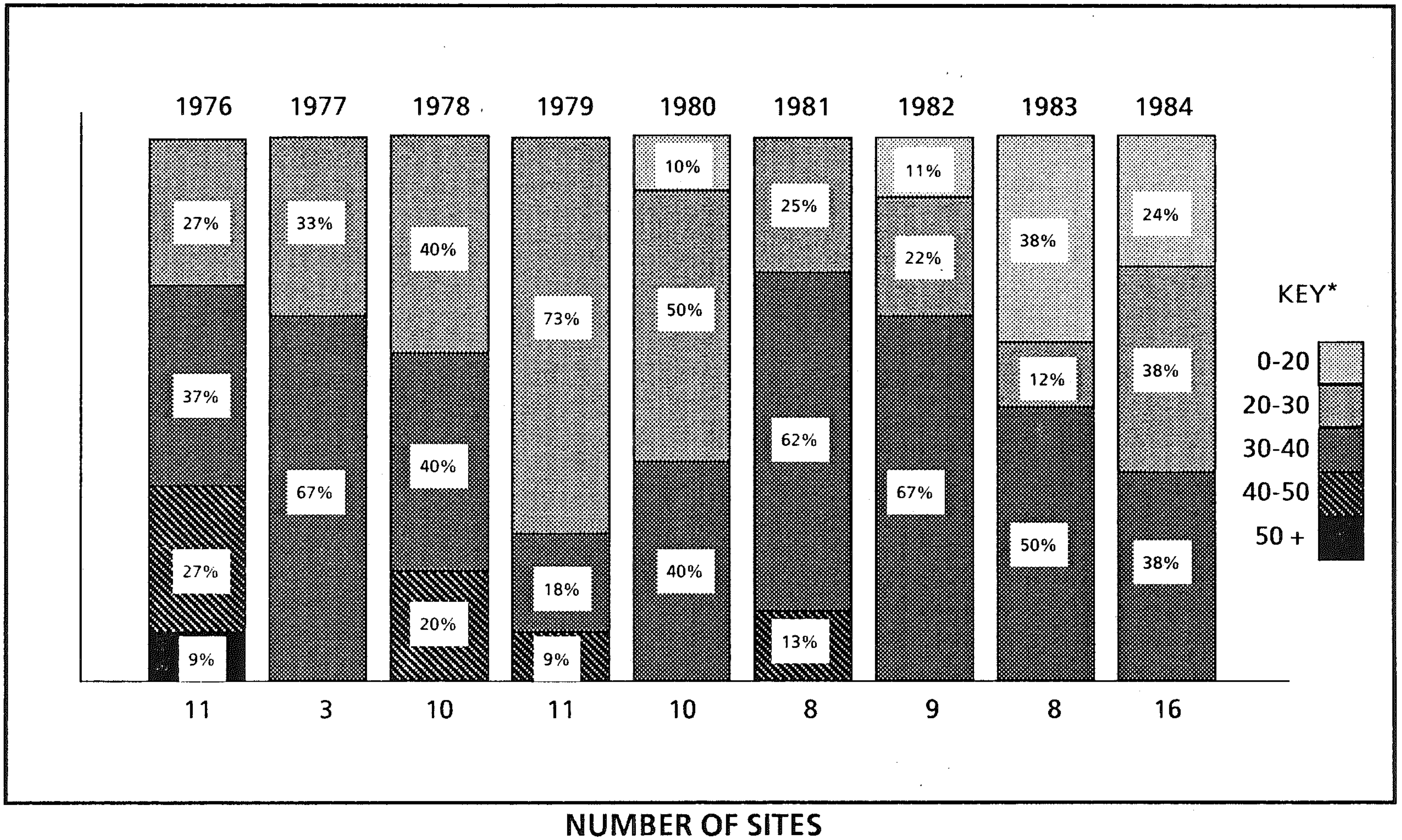
Paired Years	Number Of Sites	Average Of Annual Geometric Means (ug/m³)	Standard Deviation (ug/m³)	Significance Level: Trend at 95% Level*	Significance Level: Trend at 99% Level*	Significance Level: Probability That Change Is Not Significant
78	9	23.8	6.1			
79	9	21.3	5.3	N.C.	N.C.	0.1238
79	10	21.8	4.5			
80	10	19.8	5.2	↓	N.C.	0.0215
80	8	21.1	4.1			
81	8	20.9	4.4	N.C	N.C.	0.9100
81	8	20.9	4.4			
82	8	21.0	4.5	N.C.	N.C.	0.9522
82	8	20.0	5.0			
83	8	18.1	5.1	↓	↓	0.0002
83	8	18.1	5.1			
84	8	18.2	4.5	N.C.	N.C.	0.9237

* Key to Symbols: N.C. = No Significant Change
↓ = Significant Downward Trend
↑ = Significant Upward Trend

FIGURE 2

SULFUR DIOXIDE TREND FROM CONTINUOUS DATA

"PERCENT OF SITES WITHIN EACH RANGE"



PRIMARY ANNUAL STANDARD = 80 μg/m³

* ANNUAL ARITHMETIC MEAN μg/m³

FIGURE 2A

ANNUAL GEOMETRIC MEAN CONCENTRATION OF SO_2 (PPB) FROM 1979-1984

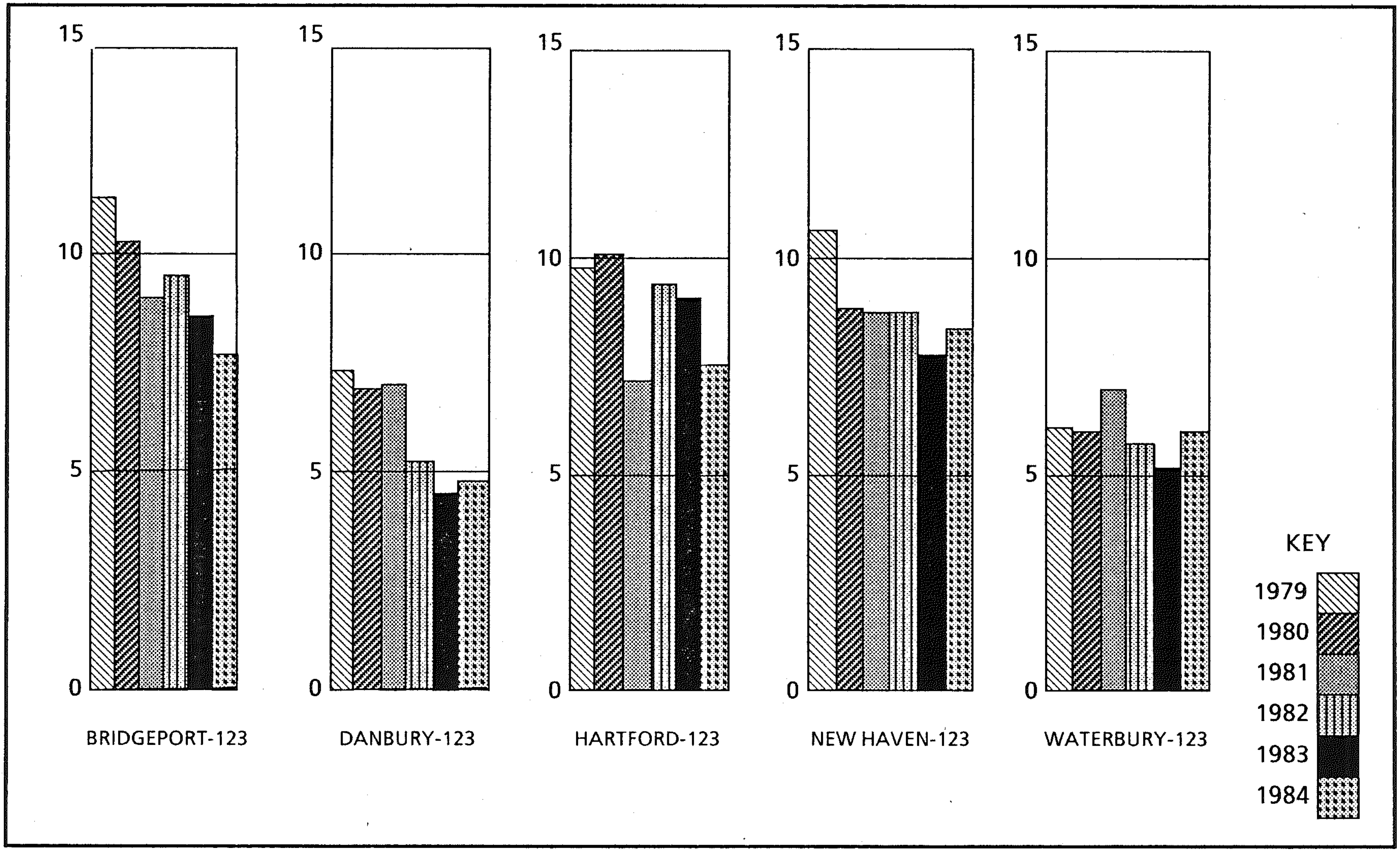


FIGURE 2B

THE AVERAGE OF THE ANNUAL GEOMETRIC MEAN SO_2 CONCENTRATIONS AT 5 CONCURRENTLY OPERATING SO_2 SITES WITH CONTINUOUS MONITORS

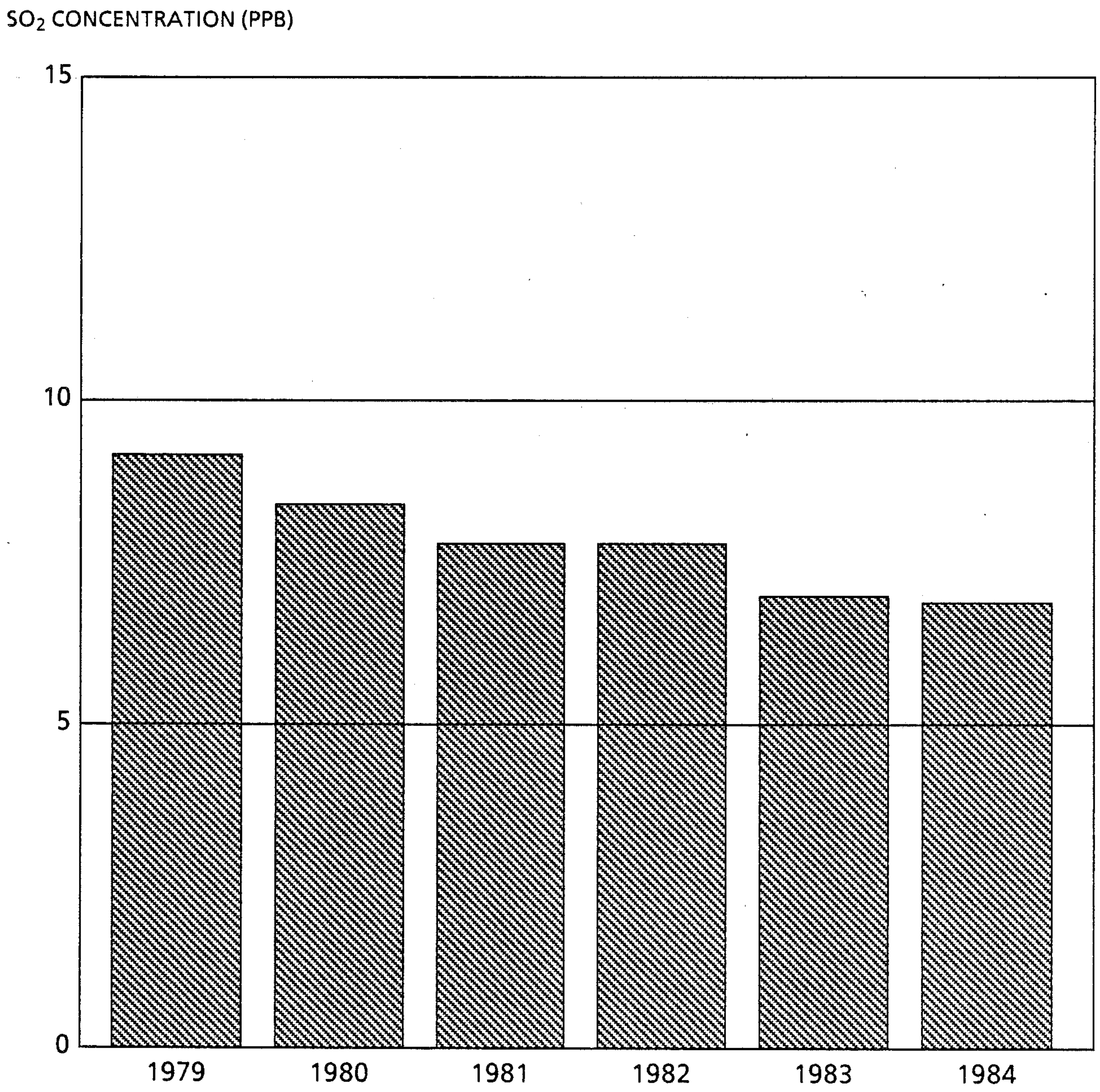


FIGURE 2C

THREE-YEAR RUNNING AVERAGE OF THE ANNUAL GEOMETRIC MEAN SO_2 CONCENTRATIONS AT 5 CONCURRENTLY OPERATING SO_2 SITES WITH CONTINUOUS MONITORS

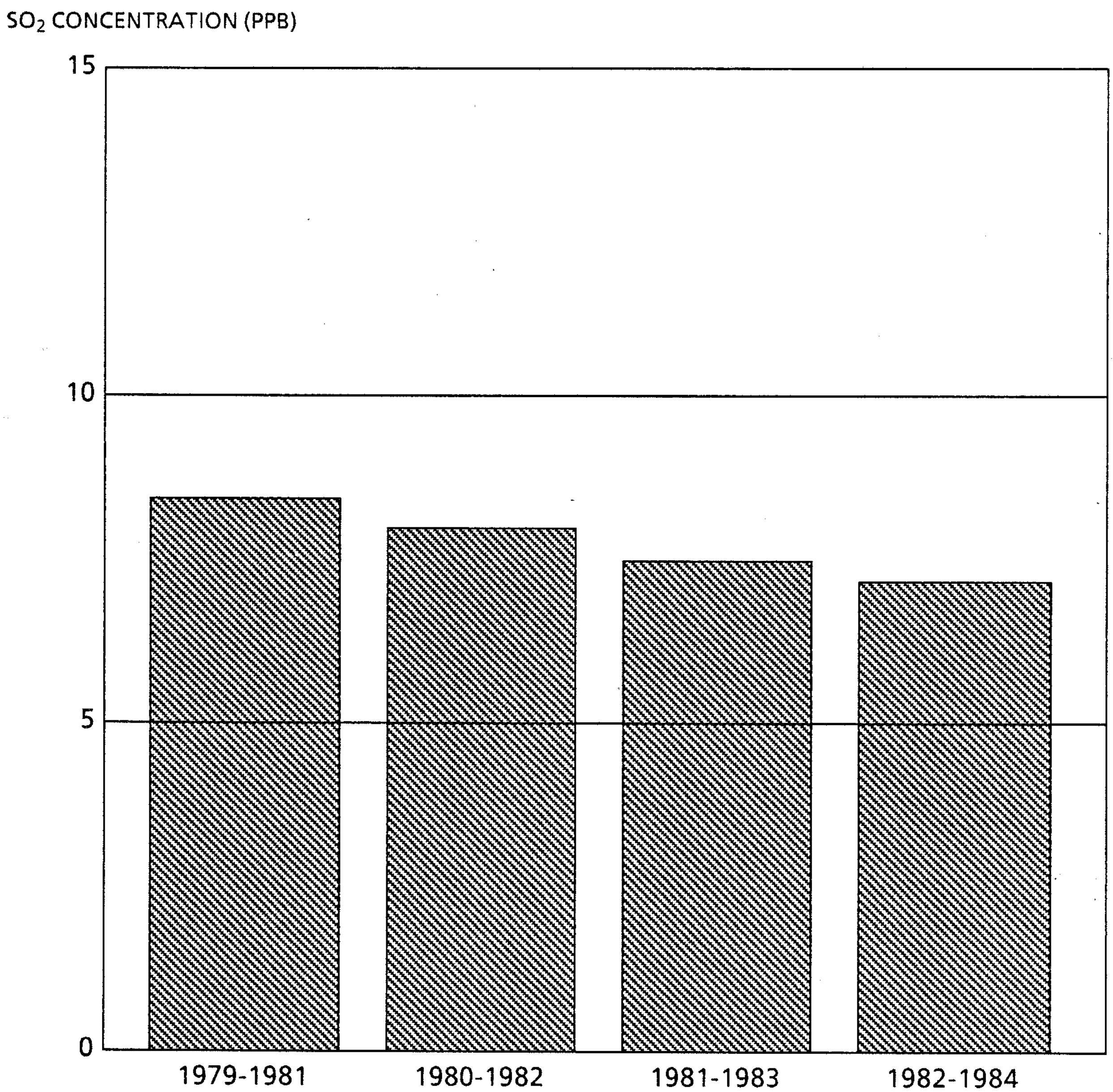
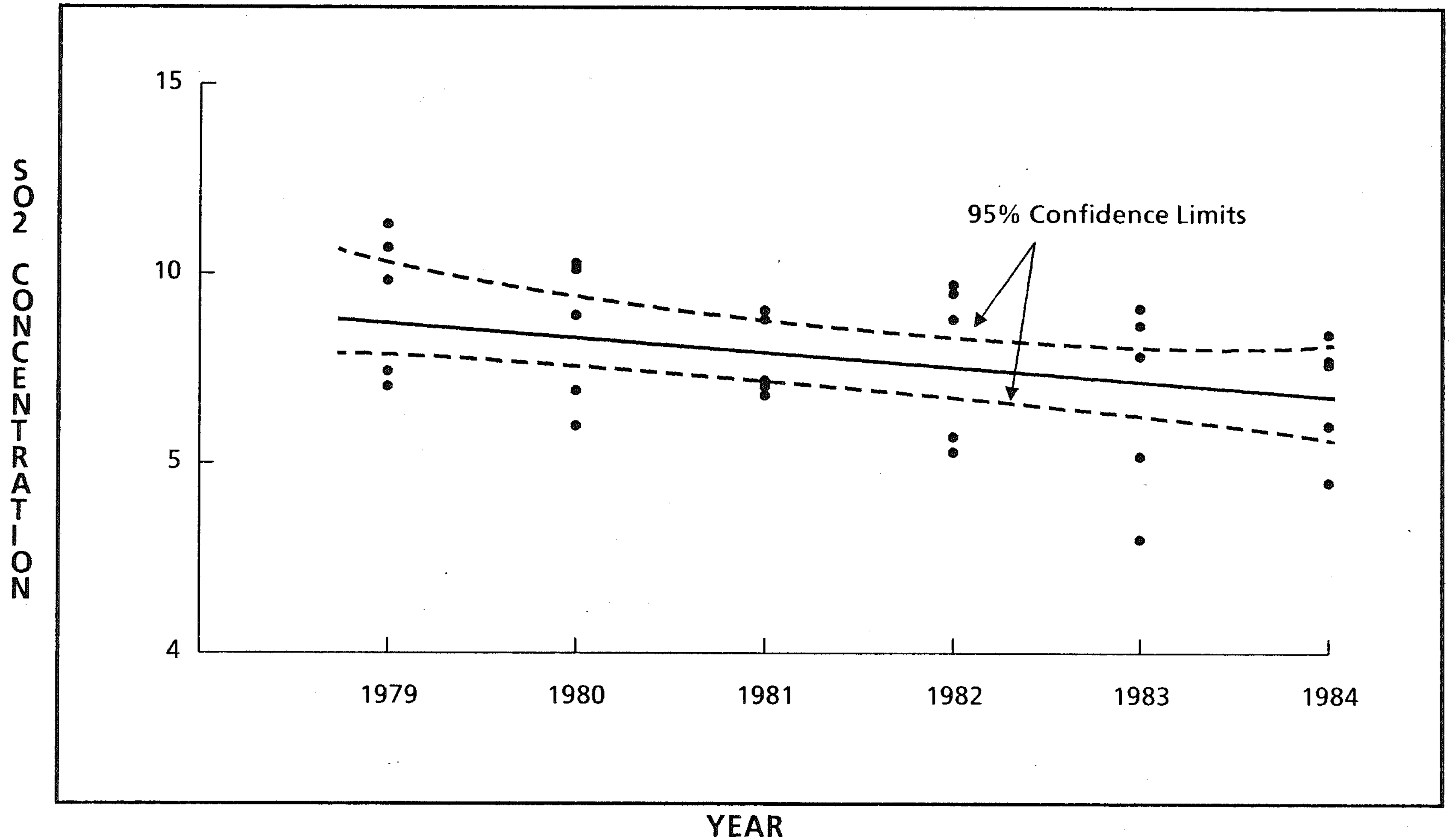


FIGURE 2D

TREND OF ANNUAL GEOMETRIC MEAN CONCENTRATIONS OF SO2 (PPB) AT FIVE CONCURRENTLY OPERATING SITES FROM 1979-1984



This action increased statewide allowable sulfur oxide emissions by almost 60%. (Sulfur oxide emissions were not doubled by going from 0.5% to 1.0% sulfur-in-fuel since residential fuel users, which account for almost one-third of annual statewide sulfur oxide emissions, use distillate fuel oil with a sulfur content of 0.5%.) One would expect measured SO_2 levels to increase in 1982 and subsequent years, as compared to 1981, due to the use of 1.0% sulfur oil. However, no significant trend was apparent in 1982; and in 1983 SO_2 levels actually declined (see Table 4). This may be attributable to the year-to-year fluctuations in meteorology or the decreased fuel use caused by the increased price of this energy source.

The long-term trend of SO_2 concentrations is shown in graphical form in Figure 2. An improvement in SO_2 levels is demonstrated by the decrease over time of concentrations in excess of 40 ug/m^3. Table 4 shows the year-to-year trend in ambient SO_2 levels. Decreases in SO_2 concentrations from 1979 to 1980 and from 1982 to 1983 are evident.

Continuous SO_2 monitors were operated each year at five (5) sites between 1978 and 1984. Based on measurements at these five (5) locations, mean SO_2 levels are depicted in Figures 2A and 2B. Figure 2A shows SO_2 levels clearly decreasing at the Bridgeport and Danbury sites and exhibiting a slight trend downward at the other three sites. Figure 2B shows the average of the mean SO_2 concentrations for all the sites steadily decreasing over the 5-year period. Figure 2D is a linear regression analysis of this data which also shows a downward trend in SO_2 levels since 1979. Using the data presented in Figure 2B, Figure 2C shows the three-year running average of the mean SO_2 concentrations. Three-year running averages tend to smooth out the year-to-year effects of meteorology on pollutant levels. Like Figures 2A and 2B, Figure 2C illustrates again that SO_2 levels appear to be decreasing. This long term trend analysis also demonstrates that SO_2 levels are declining even though fuel burning sources have been allowed to use 1% sulfur oil since 1982.

C. Air Monitoring Network

A computerized Air Monitoring Network consisting of an IBM System 7 computer and 25 telemetered monitoring sites was operated in 1984. As many as 12 measurement parameters are transmitted from a site via telephone lines to the System 7 unit located in the DEP Hartford office. The data are then compiled twice daily into 24-hour summaries. The telemetered sites are located in the towns of Bridgeport, Danbury, East Hartford, East Haven, Enfield, Greenwich, Groton, Hartford, Madison, Middletown, Milford, New Britain, New Haven, Norwalk, Preston, Stafford, Stamford, Stratford and Waterbury.

Continuously measured parameters include the pollutants sulfur dioxide, particulates (measured as the coefficient of haze), carbon monoxide, nitrogen dioxide and ozone. Meteorological data consists of wind speed and direction, wind horizontal sigma, temperature, dew point, precipitation, barometric pressure and solar radiation (insolation).

The real-time capabilities of the System 7 telemetry network have enabled the Air Monitoring Unit to report the Pollutant Standards Index for a number of towns on a daily basis while continuously keeping a close watch for high pollution levels which may occur during adverse weather conditions.

The complete monitoring network used in 1984 consisted of:

43	Total suspended particulate hi-vol sites
2	Total suspended particulate lo-vol sites
16	Lead hi-vol sites
5	Lead lo-vol sites

19 Sulfur dioxide sites (continuous monitors)
10 Ozone sites
3 Nitrogen dioxide sites
5 Carbon monoxide sites

A complete description of all permanent air monitoring sites in Connecticut operated by DEP in 1984 is available from the Department of Environmental Protection, Air Compliance Unit, Monitoring Section, State Office Building, Hartford, Connecticut, 06106.

D. Pollutant Standards Index

The Pollutant Standards Index (PSI) is a daily air quality index recommended for common use in state and local agencies by the U.S. Environmental Protection Agency. Starting on November 15, 1976, Connecticut began reporting the PSI on a 7-day basis, but is currently reporting the PSI on a 5-day basis. The PSI incorporates three pollutants - sulfur dioxide, total suspended particulates and ozone. The index converts each air pollutant concentration into a normalized number where the National Ambient Air Quality Standard for each pollutant corresponds to PSI = 100 and the Significant Harm Level corresponds to PSI = 500.

Figure 3 shows the breakdown of index values for the commonly reported pollutants (TSP, SO_2, and O_3)in Connecticut. For the winter of 1984, Connecticut reported the total suspended particulate PSI for the towns of Ansonia, Bridgeport, Danbury, Greenwich, Hartford, New Britain, New Haven, Norwalk, Stamford, Stratford, Wallingford, and Waterbury; and reported the sulfur dioxide PSI for the towns of Bridgeport, East Haven, Greenwich, Hartford, Milford, New Haven, Stamford, and Waterbury. For the summer, the ozone PSI was reported for the towns of Bridgeport, Danbury, East Hartford, Greenwich, Groton, Madison, Middletown, New Haven, Stafford, and Stratford. Each day the pollutant with the highest PSI value of all the pollutants being monitored is reported for each town, along with the dimensionless PSI number and a descriptor word to characterize the daily air quality.

A telephone recording of the PSI is taped each afternoon at approximately 3 PM, five days a week, and can be heard by dialing 566-3449. Predictions for weekends are included on the Friday recordings. For residents outside of the Hartford telephone exchange, the PSI is now available toll-free from the DEP representative at the Governor's State Information Bureau. The number is 1-800-842-2220. This information is also available to the public during weekday afternoons from the American Lung Association of Connecticut in East Hartford. The number there is 289-5401 or 1-800-992-2263.

E. Quality Assurance

Quality Assurance requirements for State and Local Air Monitoring Stations (SLAMS) and the National Air Monitoring Stations (NAMS) which, as part of the (SLAMS) network, are specified by the code of Federal Regulations, Title 40, Part 58, Appendix A.

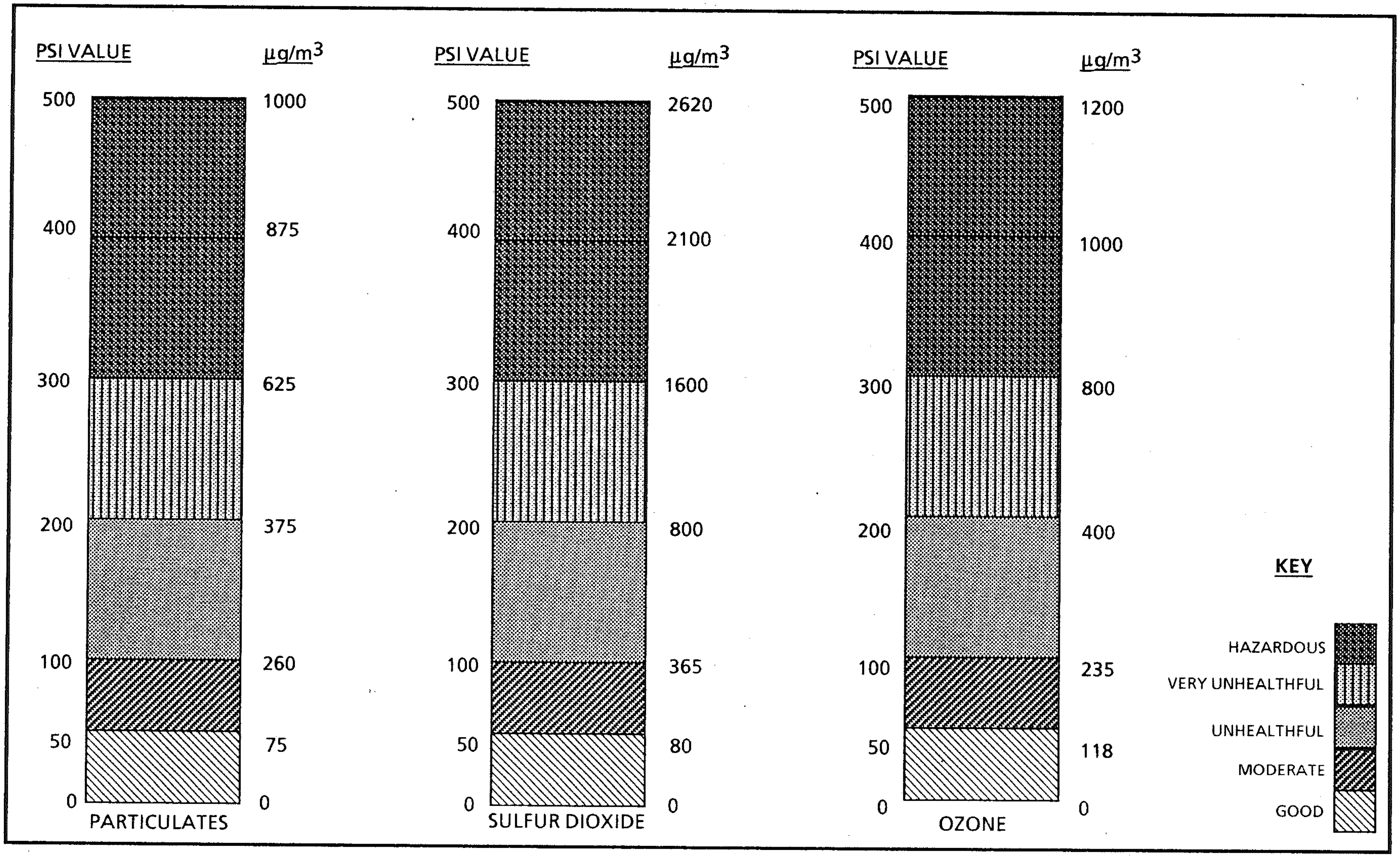
The regulations were enacted to provide a consistent approach to Quality Assurance activities across the country so that ambient data with a defined precision and accuracy is produced.

A Quality Assurance program was initiated in Connecticut with written procedures covering, but not limited to, the following:

Equipment Procurement
Equipment Installation
Equipment Calibration
Equipment Operation
Sample Analysis

FIGURE 3

POLLUTANT STANDARDS INDEX



Maintenance Audits
Performance Audits
Data Handling and Assessment

Quality Assurance procedures for the above activities were fully operational on January 1, 1981 for all NAMS monitoring sites. On January 1, 1983 the above procedures were fully operational for all SLAMS monitoring sites.

Data precision and accuracy values are reported in the form of 95% probability limits as defined by equations found in Appendix A of the Federal regulations cited above.

1. **Precision**

Precision is a measure of data repeatability (grouping) and is determined in the following manner:

a. **Manual Samplers** (TSP and Lead)

A second (co-located) TSP hi-vol sampler is placed alongside a regular TSP network sampler and operated concurrently. The concentration values from the co-located hi-vol sampler are compared to the network sampler and precision values are generated from the comparison.

b. **Automated Analyzers** (SO_2, O_3, CO and NO_2)

All NAMS and SLAMS analyzers are challenged with a low level pollutant concentration (.08 to .10 PPM) a minimum of once every two weeks. The comparison of analyzer response to input concentration is used to generate automated analyzer precision values.

2. **Accuracy**

Accuracy is an estimate of the closeness of a measured value to a known value (i.e., how close each value is to the "bull's eye").

a. **Manual Methods (TSP)**

TSP accuracy is assessed by auditing the flow measurement phase of the TSP sampling method. In Connecticut, this is accomplished by attaching a secondary standard calibrated orifice to the hi-vol inlet and comparing the flow rates. A minimum of 25% of the TSP network samplers are audited each quarter.

b. **Manual Methods (Lead)**

Lead accuracy is assessed by analyzing spiked audit strips and comparing the analyzed results to the known spiked values. A low- and a high-valued spike are analyzed during lead filter processing -- approximately once per month.

c. **Automated Analyzers** (SO_2, O_3, CO and NO_2)

Automated analyzer data accuracy is determined by challenging each analyzer with three predetermined concentration levels. Accuracy values are calculated for a number of analyzers, in a pollutant sampling network, at each concentration level. Automated analyzer response is audited at three concentration levels and zero. The results for each concentration for a particular pollutant are used to assess automated analyzer accuracy. The audit concentration levels are as follows:

SO_2, O_3, and NO_2 (PPM)	CO (PPM)
0.03 to 0.08	3 to 8
0.15 to 0.20	15 to 20
0.35 to 0.45	35 to 45

Statistical computations are performed on the results of the precision and span checks.

II. TOTAL SUSPENDED PARTICULATES

Health Effects

Particulates are solid particles or liquid droplets small enough to remain suspended in air. They include dust, soot, and smoke -- particles that may be irritating but are usually not poisonous -- and bits of solid or liquid substances that may be highly toxic. The smaller the particles, the more likely they are to reach the innermost parts of the lungs and work their damage.

The harm may be physical: clogging the lung sacs, as in anthracosis, or coal miners' "black lung" from inhaling coal dust; asbestosis or silicosis in people exposed to asbestos fibers or dusts from silicate rocks; and byssinosis, or textile workers' "brown lung" from inhaling cotton fibers.

The harm may also be chemical: changes in the human body caused by chemical reactions with pollution particles that pass through the lung membranes to poison the blood or be carried by the blood to other organs. This can happen with inhaled lead, cadmium, beryllium, and other metals, and with certain complex organic compounds that can cause cancer.

Many studies indicate that particulates and sulfur oxides (they often occur together) increase the incidence and severity of respiratory disease.

Conclusions

Measured TSP levels did not exceed the primary annual standard of 75 ug/m^3 or the secondary annual standard of 60 ug/m^3 during 1984. No site had a measured value exceeding the primary 24-hour standard of 260 ug/m^3. And the 24-hour secondary standard of 150 ug/m^3 was not exceeded at any monitoring site in 1984. In order for the secondary standard to be *violated*, the second highest TSP level at a site must exceed 150 ug/m^3. No site violated the standard in 1984, which was also the case in 1983.

Sample Collection and Analysis

High Volume Sampler (Hi-vol) - "Hi-vols" resemble vacuum cleaners in their operation, with an 8" x 10" piece of fiberglass filter paper replacing the vacuum bag. Retractable lids have been installed on the hi-vols in order to eliminate the passive sampling error. The samplers operate (from midnight to midnight) every sixth day at most sites and every third day at certain urban stations.

The matter collected on the filters is analyzed for weight and chemical composition. The air flow through the filter is recorded during sampling. The weight in micrograms (ug) divided by the volume of air in cubic meters (m^3) yields the pollutant concentration for the day, in micrograms per cubic meter.

The chemical composition of the suspended particulate matter is determined at each hi-vol site as follows. Three standardized strips of every hi-vol filter are cut out and prepared for three different analyses. In the first analysis, a composite sample composed of a strip from each of several filters collected in a quarter-year is digested in acid, and the resulting solution is analyzed for metals by means of an atomic absorption spectrophotometer. The results are reported for each individual metal in ug/m^3. In the second analysis, a composite sample is dissolved in water, filtered and the resulting solution is analyzed by means of wet chemistry techniques to determine the concentration of the particular water soluble components. The results are reported for each individual constituent of the water soluble fraction in ug/m^3. In the third analysis, total sulfates are determined by means of the same procedure used in the second analysis, but each of several samples collected in the quarter-year is analyzed *individually* and the results from all the samples are averaged. This is the second year that individual, rather than composite, samples have been used to determine total sulfates. Future sulfate analyses will be done in this manner.

Low Volume Sampler (Lo-vol) - The low volume sampler is a 30-day continuous sampler. It is enclosed in a shelter similar to a hi-vol, uses the same glass fiber filter paper, but operates at an air sampling flow rate approximately one-tenth that used by a standard hi-vol (i.e., 4 cfm as opposed to 40-60 cfm). The air flow through the lo-vol is measured by a temperature compensating dry gas meter. The lo-vol measurement is essentially an arithmetic average for the 30-day sampling interval. The filters are chemically analyzed in the same manner as those from the hi-vol sampler.

Discussion of Data

Monitoring Network - In 1984 both hi-vol and lo-vol particulate samplers were operated in Connecticut (see Figure 4). Because the Federal EPA does not recognize the lo-vol instrument as an equivalent to the reference (hi-vol) method of sampling for TSP, only hi-vol data are analyzed for compliance with the National Ambient Air Quality Standards (NAAQS).

Precision and Accuracy - Precision checks were conducted at three hi-vol sampling sites which had co-located samplers. On the basis of 169 precision checks, the 95% probability limits for precision ranged from -10% to +10%. Accuracy is based on air flow through the monitor. The 95% probability limits for accuracy, based on 93 audits conducted on the hi-vol monitoring system network, ranged from -5% to +6%. (See section I.E. of this Air Quality Summary for a discussion of precision and accuracy.)

Annual Averages - The Federal EPA has established minimum sampling criteria (see Table 1) for use in determining compliance with either the primary or secondary annual NAAQS for TSP. Using the EPA criteria, one finds that neither the primary annual standard nor the secondary annual standard was exceeded. Of the 38 sites that had valid annual geometric means (as determined by EPA minimum sampling criteria) in both 1983 and 1984, ten (10) sites had lower annual geometric means when compared to 1983. Of the twenty-seven (27) sites whose annual geometric means increased, none increased more than 4.1 ug/m^3 (see Table 5).

Historical Data - A summary of annual average TSP data for 1982-1984 is presented in Table 5. For data going back to 1957, see the 1980 and 1981 versions of the Air Quality Summary. Table 5 also includes an indication of whether the aforementioned EPA minimum sampling criteria were met at each site for each year. If the sampling was insufficient to meet the EPA criteria, an asterisk appears next to the number of samples.

Statistical Projections - The statistical projections presented in Table 5 are prepared by a DEP computer program which analyzes data from all sites operated by DEP. Input to the program includes site location and year, the number of samples (usually a maximum of 61), the annual geometric mean concentration and the geometric standard deviation. The program lists the input and calculates the 95% confidence limits about the mean and the statistical projections of the number of days in each year the primary and secondary 24-hour NAAQS would have been exceeded if sampling had been conducted every day. This analysis, like the ambient standards, is based on the assumption that the particulate data are log-normally distributed.

Because manpower and economic limitations dictate that hi-vol sampling for particulate matter cannot be conducted every day, a degree of uncertainty is introduced as to whether the air quality at a site has either met or exceeded the national standards. This uncertainty for the annual standard can be quantified by determining 95% confidence limits about each of the annual geometric means. For example (see Table 5), in Danbury at site 002 in 1982, 58 samples were analyzed and a geometric mean of 48.7 ug/m^3 was then calculated. The columns labeled "95-PCT-LIMITS" show the lower and upper limits for a 95% confidence interval of 43 and 55 ug/m^3 respectively. This means that if a larger sample set (i.e., greater than 58 samples) were collected in 1982 at this site there is a 95% chance that the geometric mean would fall between these limits. If the upper limit happened to be greater than 60 ug/m^3 the national ambient secondary standard for particulates, then one could not be confident that the secondary standard was met at the site.

In Table 6, one can examine the 1984 monitoring sites for compliance with air quality standards, using the State's hi-vol confidence limit criteria. The table shows with 95% confidence that no sites exceeded the primary annual standard. The table also shows that the DEP is 95% confident that the secondary standard was not exceeded at any site during 1984.

24-Hour Averages - Table 7 presents the 1st and 2nd high 24-hour concentrations recorded at each site. There were no violations of the primary 24-hour standard recorded in Connecticut during 1984. No measured violations of the secondary 24-hour standard were recorded at any site in 1984, which was also the case in 1983. The 2nd high 24-hour average increased at 25 of the 38 paired sites which met the minimum EPA sampling criteria in both 1983 and 1984. Five (5) of these increases were greater than or equal to 20 ug/m^3. The 2nd high 24-hour average decreased at 13 of the sites, and all of these decreases were less than or equal to 12 ug/m^3.

Table 8 summarizes the statistical predictions from Table 5 regarding the number of days exceeding the 24-hour standards. This table shows that, if sampling had been conducted every day in 1984, there would have been no site with a violation of the primary 24-hour standard and four (4) sites with violations of the secondary 24-hour standard. In 1983, no site was predicted to have exceeded the primary 24-hour standard and two (2) sites were predicted to have exceeded the secondary 24-hour standard.

Hi-vol Averages - Quarterly and annual averages of fourteen components or characteristics of the particulate matter collected at each hi-vol sampling location have been computed for the year 1984 and are presented in Table 9.

Lo-vol Averages - For a number of years, the DEP has been experimenting and gathering data with the lo-vol particulate monitor. Lo-vols, which operate continuously for 30-day periods, have three advantages and one disadvantage in relation to hi-vols. First, the lo-vol's continuous operation can provide annual averages which include every day of the year, rather than the fractional portion of the year sampled by hi-vols every sixth day or every third day. Second, the lo-vol needs less frequent servicing (12 times/year) than the hi-vol (61 times/year for every-sixth-day sampling). Therefore, it is more cost-effective to operate. Third, the lo-vol has a higher collection efficiency than the hi-vol, especially for small, respirable particles. The disadvantage of the lo-vol is that it does not provide daily samples for direct comparison to the 24-hour TSP standards (although 24-hour averages can be obtained by statistical interpolation).

The two lo-vol sites are located at rural locations. One site is in Mansfield and the other is in Putnam. The use of the lo-vols made it possible to continue to obtain data on annual average particulate levels at these rural sites.

Monthly and annual averages of the chemical components from the lo-vol TSP monitors have been computed for 1984 and are presented in Table 10.

10 High Days with Wind Data - Table 11 lists the 10 highest 24-hour average TSP readings with the dates of occurrence for each TSP hi-vol site in Connecticut during 1984. This table also shows the average wind conditions which occurred on each of these dates. The resultant wind direction (DIR, in compass degrees clockwise from north) and velocity (VEL, in mph), the average wind speed (SPD, in mph), and the ratio between the velocity and the speed are presented for each of four National Weather Service stations located in or near Connecticut. The resultant wind direction and velocity are vector quantities and are computed from the individual wind direction and speed readings in each day. The closer the wind speed ratio is to 1.000, the more persistent the wind. Note that the Connecticut stations have local influences which change the speed and shift the direction of the near-surface air flow (e.g., the Bradley Field air flow is channeled north-south by the Connecticut River Valley and the Bridgeport air flow is frequently subject to sea breezes).

On a statewide basis, this table shows that approximately 63% of the high TSP days occur with winds out of the southwest quadrant and most of those days have persistent winds. This relationship between southwest winds and high TSP levels is more prevalent in southwestern Connecticut. However, many of the maximum levels at some urban sites do not occur with southwest winds, indicating that these sites are possibly influenced by local sources or transport from different out-of-state sources. As noted above, a large scale southwesterly air flow is often diverted into a southerly flow up the Connecticut River Valley. At many sites in the Connecticut River Valley most of the highest TSP days occur when the winds at Bradley Airport are from the south.

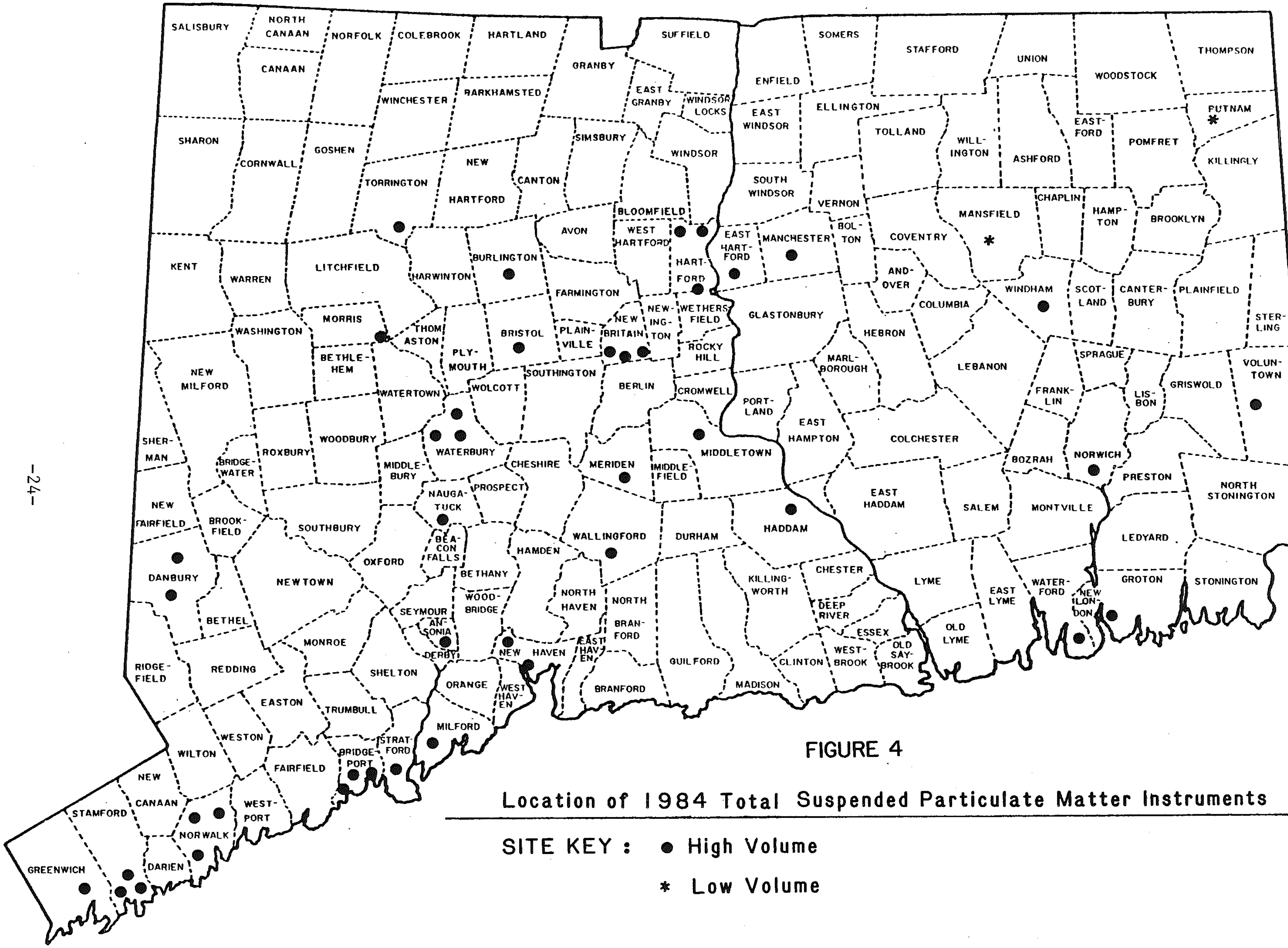


FIGURE 4

Location of 1984 Total Suspended Particulate Matter Instruments

SITE KEY : ● High Volume

* Low Volume

TABLE 5

1982-1984 TSP ANNUAL AVERAGES AND STATISTICAL PROJECTIONS

TOWN NAME	SITE	YEAR	SAMPLES	GEOM MEAN	95-PCT-LIMITS LOWER	95-PCT-LIMITS UPPER	GEOM STD DEV	DISTRIBUTION--LOGNORMAL PREDICTED DAYS OVER 150 UG/M3	DISTRIBUTION--LOGNORMAL PREDICTED DAYS OVER 260 UG/M3
ANSONIA	003	1982	116	43.4	40	47	1.651	2	
ANSONIA	003	1983	60	42.2	38	47	1.540	1	
ANSONIA	003	1984	60	42.7	39	47	1.503		
BRIDGEPORT	001	1982	60	42.4	38	47	1.507		
BRIDGEPORT	001	1983	60	41.0	37	46	1.594	1	
BRIDGEPORT	001	1984	58	42.8	39	47	1.422		
BRIDGEPORT	009	1982	61	39.8	36	44	1.551		
BRIDGEPORT	009	1983	57	39.1	35	43	1.539		
BRIDGEPORT	009	1984	58	41.6	37	46	1.556	1	
BRIDGEPORT	123	1982	115	56.3	53	60	1.530	4	
BRIDGEPORT	123	1983	59	54.1	49	60	1.530	3	
BRIDGEPORT	123	1984	57	52.6	48	58	1.514	2	
BRISTOL	001	1982	59	36.3	32	41	1.684	1	
BRISTOL	001	1983	58	32.2	29	36	1.528		
BRISTOL	001	1984	56	34.5	31	39	1.554		
BURLINGTON	001	1982	117	19.9	19	21	1.615		
BURLINGTON	001	1983	58	20.3	18	23	1.797		
BURLINGTON	001	1984	58	20.6	18	24	1.778		
DANBURY	002	1982	58	48.7	43	55	1.666	5	
DANBURY	002	1983	56	44.6	40	49	1.509	1	
DANBURY	002	1984	57	43.8	39	49	1.537	1	
DANBURY	123	1982	58	43.2	38	49	1.674	3	
DANBURY	123	1983	53	43.1	38	48	1.590	1	
DANBURY	123	1984	57	42.8	38	48	1.624	2	
EAST HARTFORD	004	1982	19*	32.9	26	42	1.677	1	
EAST HARTFORD	004	1983	60	38.8	35	43	1.504		
EAST HARTFORD	004	1984	57	41.2	37	46	1.507		

* SAMPLING NOT RANDOM OR OF INSUFFICIENT SIZE FOR REPRESENTATIVE ANNUAL STATISTICS.

N.B. THE GEOMETRIC MEAN HAS UNITS OF MICROGRAMS PER CUBIC METER.

TABLE 5, CONTINUED

1982-1984 TSP ANNUAL AVERAGES AND STATISTICAL PROJECTIONS

DISTRIBUTION--LOGNORMAL

TOWN NAME	SITE	YEAR	SAMPLES	GEOM MEAN	95-PCT-LIMITS LOWER	95-PCT-LIMITS UPPER	GEOM STD DEV	PREDICTED DAYS OVER 150 UG/M3	PREDICTED DAYS OVER 260 UG/M3
GREENWICH	008	1982	59	43.4	39	48	1.513		
GREENWICH	008	1983	46*	36.4	33	40	1.466		
GREENWICH	008	1984	61	40.9	37	45	1.450		
GROTON	006	1983	59	35.8	33	39	1.433		
GROTON	006	1984	56	37.3	33	42	1.659	1	
HADDAM	002	1982	57	26.9	24	30	1.516		
HADDAM	002	1983	28*	24.7	22	28	1.440		
HADDAM	002	1984	60	27.9	25	31	1.554		
HARTFORD	003	1982	91*	47.6	44	51	1.558	2	
HARTFORD	003	1983	57	46.3	42	51	1.513	1	
HARTFORD	003	1984	60	48.3	44	53	1.509	1	
HARTFORD	013	1982	59	40.9	37	45	1.511		
HARTFORD	013	1983	60	42.8	38	48	1.580	1	
HARTFORD	013	1984	57	44.2	40	49	1.539	1	
HARTFORD	014	1982	60	39.6	36	43	1.481		
HARTFORD	014	1983	57	40.3	36	45	1.512		
HARTFORD	014	1984	60	41.7	38	46	1.519		
MANCHESTER	001	1982	60	35.4	32	40	1.607		
MANCHESTER	001	1983	59	33.7	31	37	1.481		
MANCHESTER	001	1984	60	31.4	28	35	1.552		
MERIDEN	002	1982	57	44.7	41	49	1.444		
MERIDEN	002	1983	55	40.6	36	45	1.552		
MERIDEN	002	1984	60	42.4	38	47	1.510		
MERIDEN	008	1982	57	38.8	35	43	1.516		
MERIDEN	008	1983	59	37.2	34	41	1.532		

* SAMPLING NOT RANDOM OR OF INSUFFICIENT SIZE FOR REPRESENTATIVE ANNUAL STATISTICS.

N.B. THE GEOMETRIC MEAN HAS UNITS OF MICROGRAMS PER CUBIC METER.

TABLE 5, CONTINUED

1982-1984 TSP ANNUAL AVERAGES AND STATISTICAL PROJECTIONS

TOWN NAME	SITE	YEAR	SAMPLES	GEOM MEAN	95-PCT-LIMITS LOWER	95-PCT-LIMITS UPPER	GEOM STD DEV	DISTRIBUTION--LOGNORMAL PREDICTED DAYS OVER 150 UG/M3	DISTRIBUTION--LOGNORMAL PREDICTED DAYS OVER 260 UG/M3
MIDDLETOWN	003	1982	56	38.9	35	43	1.524		
MIDDLETOWN	003	1983	57	38.2	35	42	1.484		
MIDDLETOWN	003	1984	55	38.8	35	43	1.509		
MILFORD	002	1982	61	39.7	36	44	1.497		
MILFORD	002	1983	58	40.9	38	44	1.405		
MILFORD	002	1984	61	40.8	37	45	1.460		
MORRIS	001	1982	102	25.5	24	27	1.517		
MORRIS	001	1984	15*	27.0	22	33	1.483		
NAUGATUCK	001	1982	59	46.8	41	53	1.718	5	
NAUGATUCK	001	1983	59	40.2	36	44	1.506		
NAUGATUCK	001	1984	59	41.4	37	46	1.562	1	
NEW BRITAIN	007	1982	120	36.9	34	40	1.607		
NEW BRITAIN	007	1983	59	35.8	32	40	1.590		
NEW BRITAIN	007	1984	59	36.7	33	40	1.506		
NEW BRITAIN	008	1982	60	38.2	34	43	1.598	1	
NEW BRITAIN	008	1983	58	35.8	32	40	1.569		
NEW BRITAIN	008	1984	61	37.1	33	41	1.561		
NEW BRITAIN	009	1982	58	40.1	37	44	1.468		
NEW BRITAIN	009	1983	59	36.6	33	41	1.537		
NEW BRITAIN	009	1984	60	36.0	32	40	1.555		
NEW HAVEN	002	1982	49	48.2	43	54	1.519	1	
NEW HAVEN	002	1983	52	48.8	44	54	1.521	1	
NEW HAVEN	002	1984	54	45.5	41	51	1.523	1	
NEW HAVEN	013	1982	111	42.9	40	46	1.491		
NEW HAVEN	013	1983	58	43.8	40	48	1.438		
NEW HAVEN	013	1984	59	45.3	42	49	1.421		

* SAMPLING NOT RANDOM OR OF INSUFFICIENT SIZE FOR REPRESENTATIVE ANNUAL STATISTICS.

N.B. THE GEOMETRIC MEAN HAS UNITS OF MICROGRAMS PER CUBIC METER.

TABLE 5, CONTINUED

1982-1984 TSP ANNUAL AVERAGES AND STATISTICAL PROJECTIONS

DISTRIBUTION--LOGNORMAL

TOWN NAME	SITE	YEAR	SAMPLES	GEOM MEAN	95-PCT-LIMITS LOWER	95-PCT-LIMITS UPPER	GEOM STD DEV	PREDICTED DAYS OVER 150 UG/M3	PREDICTED DAYS OVER 260 UG/M3
NORWALK	001	1982	57	42.9	39	48	1.539	1	
NORWALK	001	1983	58	40.0	36	44	1.491		
NORWALK	001	1984	57	41.8	38	46	1.506		
NORWALK	005	1982	113	48.2	45	52	1.609	3	
NORWALK	005	1983	58	45.3	41	50	1.506	1	
NORWALK	005	1984	57	45.6	42	50	1.475		
NORWALK	012	1982	60	43.3	39	48	1.571	1	
NORWALK	012	1983	60	41.1	37	45	1.542		
NORWALK	012	1984	60	40.9	37	45	1.500		
NORWICH	001	1982	58	41.4	38	45	1.461		
NORWICH	001	1983	59	39.6	36	43	1.462		
NORWICH	001	1984	20*	39.6	33	47	1.485		
NORWICH	002	1984	41*	45.2	40	51	1.514	1	
STAMFORD	001	1982	58	51.6	46	58	1.642	5	
STAMFORD	001	1983	59	45.4	41	51	1.573	2	
STAMFORD	001	1984	58	45.4	41	51	1.600	2	
STAMFORD	007	1982	60	43.9	40	48	1.473		
STAMFORD	007	1983	59	44.7	41	49	1.462		
STAMFORD	007	1984	59	44.8	41	49	1.423		
STAMFORD	021	1982	57	44.4	41	48	1.418		
STAMFORD	021	1983	59	45.3	41	50	1.468		
STAMFORD	021	1984	57	49.4	45	54	1.457		
STRATFORD	005	1982	59	46.4	42	52	1.560	2	
STRATFORD	005	1983	58	44.4	41	48	1.435		
STRATFORD	005	1984	60	44.1	40	49	1.502		
TORRINGTON	001	1983	56	36.8	33	41	1.526		
TORRINGTON	001	1984	61	38.0	34	43	1.637	1	

* SAMPLING NOT RANDOM OR OF INSUFFICIENT SIZE FOR REPRESENTATIVE ANNUAL STATISTICS.

N.B. THE GEOMETRIC MEAN HAS UNITS OF MICROGRAMS PER CUBIC METER.

TABLE 5, CONTINUED

1982-1984 TSP ANNUAL AVERAGES AND STATISTICAL PROJECTIONS

TOWN NAME	SITE	YEAR	SAMPLES	GEOM MEAN	95-PCT-LIMITS LOWER	95-PCT-LIMITS UPPER	GEOM STD DEV	DISTRIBUTION--LOGNORMAL PREDICTED DAYS OVER 150 UG/M3	PREDICTED DAYS OVER 260 UG/M3
VOLUNTOWN	001	1982	117	21.1	20	23	1.558		
VOLUNTOWN	001	1983	59	23.7	21	27	1.624		
VOLUNTOWN	001	1984	59	23.2	21	26	1.618		
WALLINGFORD	001	1982	58	43.6	40	48	1.500		
WALLINGFORD	001	1983	57	40.4	37	45	1.512		
WALLINGFORD	001	1984	60	43.1	39	48	1.556	1	
WATERBURY	005	1982	61	43.5	38	49	1.703	4	
WATERBURY	005	1983	58	38.5	35	42	1.488		
WATERBURY	005	1984	57	41.4	37	46	1.541		
WATERBURY	006	1982	60	39.9	35	45	1.727	3	
WATERBURY	006	1983	60	34.2	31	38	1.523		
WATERBURY	006	1984	59	37.1	33	41	1.558		
WATERBURY	007	1982	117	49.3	46	53	1.639	4	
WATERBURY	007	1983	60	47.4	43	52	1.472		
WATERBURY	007	1984	59	47.5	43	53	1.545	2	
WATERFORD	001	1982	56	27.3	24	31	1.602		
WATERFORD	001	1983	55	25.6	23	29	1.646		
WATERFORD	001	1984	58	29.3	26	33	1.693		
WILLIMANTIC	002	1982	60	37.7	34	42	1.551		
WILLIMANTIC	002	1983	60	35.2	32	39	1.505		
WILLIMANTIC	002	1984	61	37.6	34	41	1.491		

* SAMPLING NOT RANDOM OR OF INSUFFICIENT SIZE FOR REPRESENTATIVE ANNUAL STATISTICS.

N.B. THE GEOMETRIC MEAN HAS UNITS OF MICROGRAMS PER CUBIC METER.

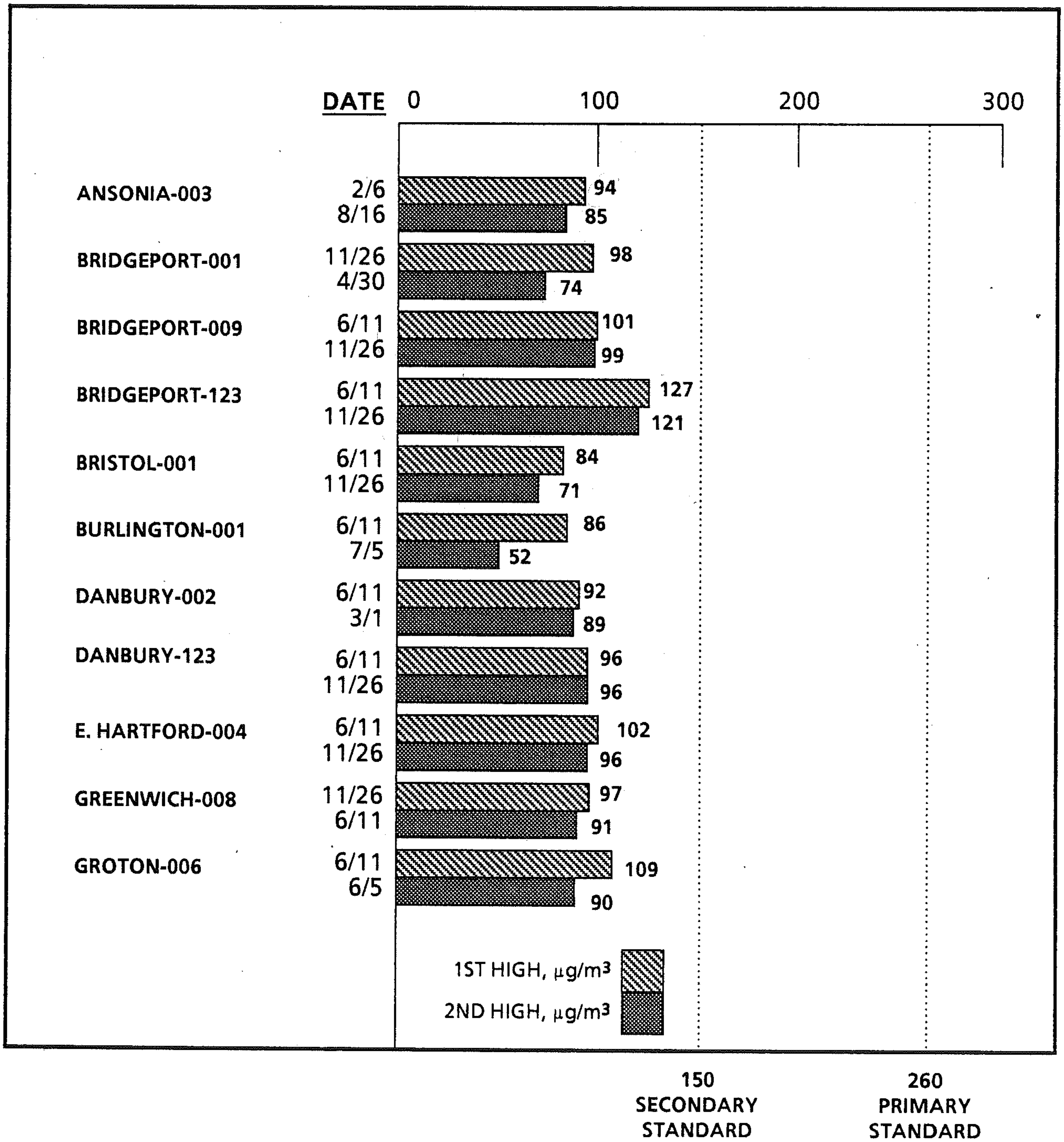
TABLE 6

CONFIDENCE OF COMPLIANCE WITH ANNUAL TSP STANDARDS DURING 1984

	95% CONFIDENT STANDARD HAS BEEN EXCEEDED	UNCERTAIN WHETHER STANDARD HAS BEEN ACHIEVED OR EXCEEDED
PRIMARY STANDARD (75 µg/m^3)	NO SITES	NO SITES
SECONDARY STANDARD (60 µg/m^3)	NO SITES	NO SITES

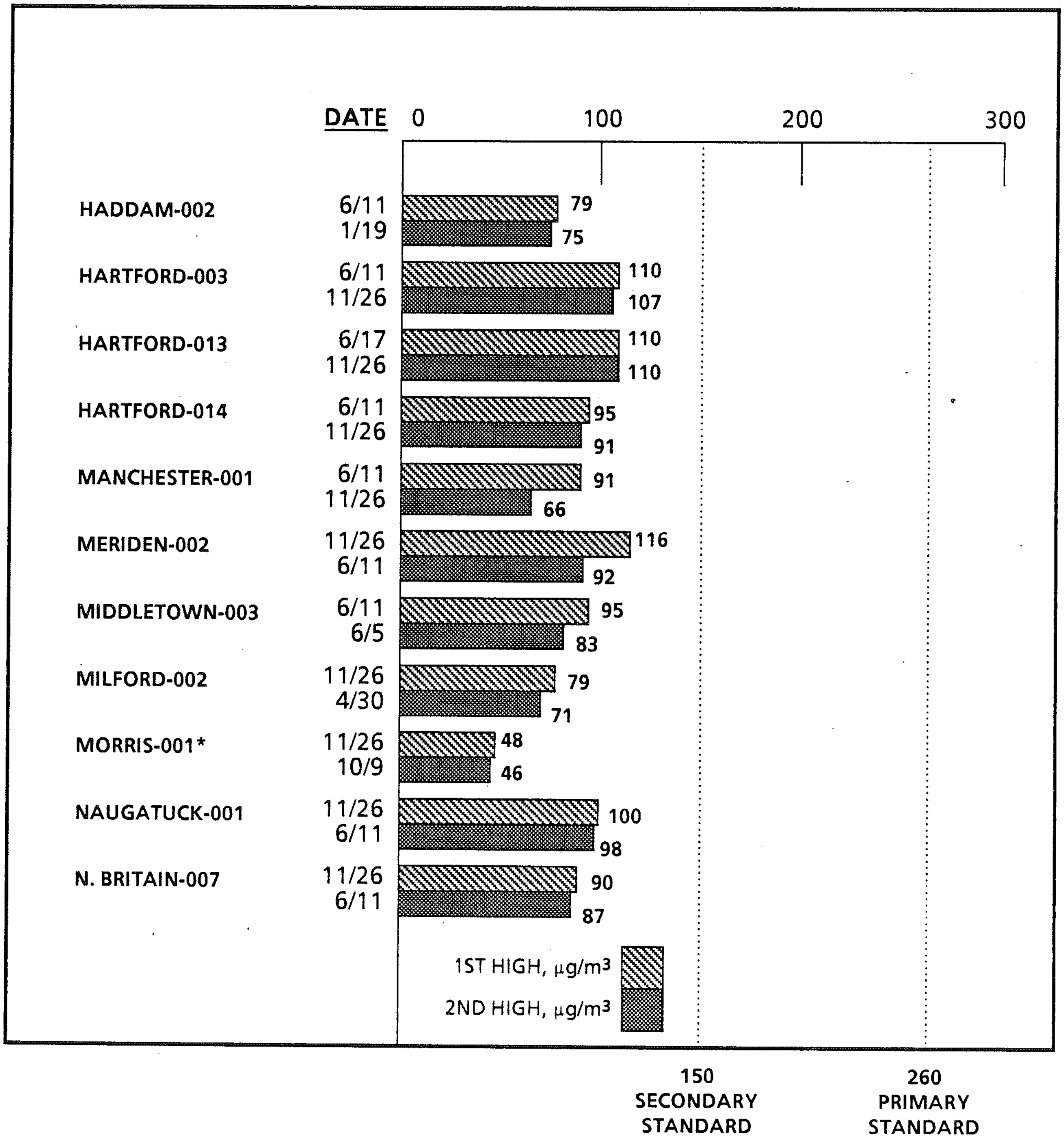
TABLE 7

1984 MAXIMUM 24-HOUR TSP CONCENTRATIONS



*	Database for the site is deficient in number or distribution of observations.
N.B.	When a listed concentration occurs more than once at a site, the earliest date of occurrence is given.

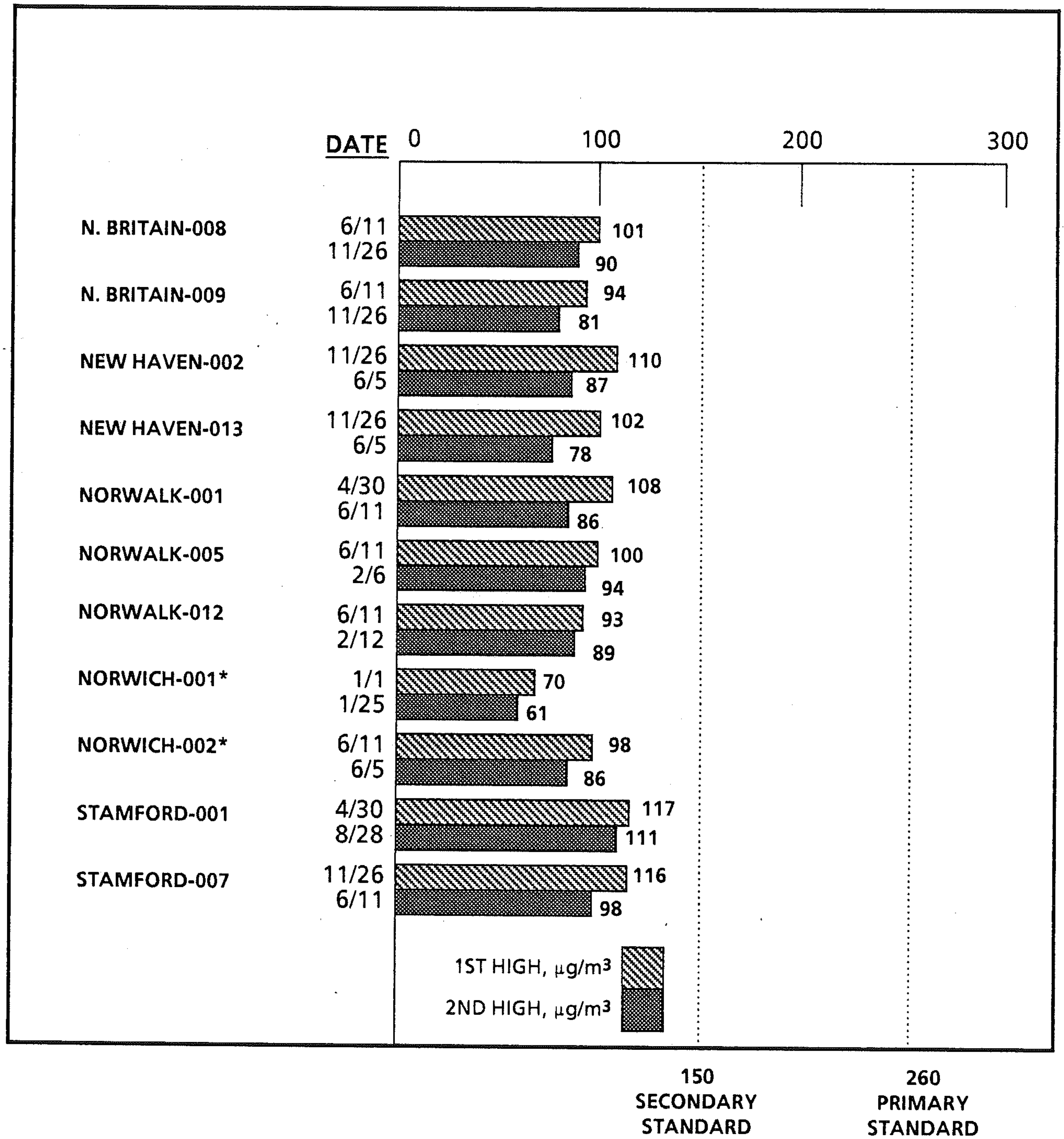
TABLE 7, CONTINUED



* Database for the site is deficient in number or distribution of observations.

N.B. When a listed concentration occurs more than once at a site, the earliest date of occurrence is given.

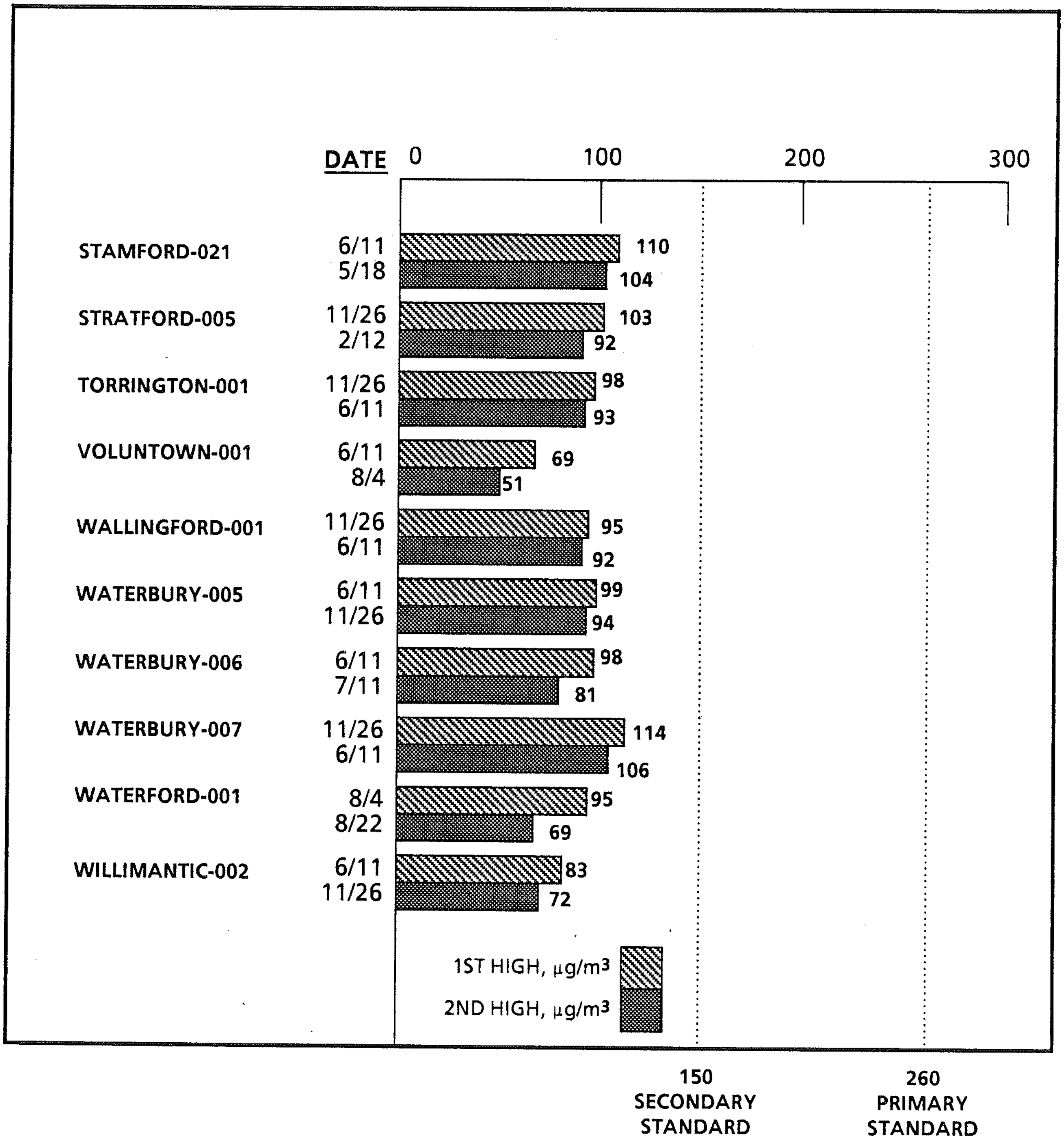
TABLE 7, CONTINUED



* Database for the site is deficient in number or distribution of observations.

N.B. When a listed concentration occurs more than once at a site, the earliest date of occurrence is given.

TABLE 7, CONTINUED



* Database for the site is deficient in number or distribution of observations.

N.B. When a listed concentration occurs more than once at a site, the earliest date of occurrence is given.

TABLE 8

Summary of the Statistically Predicted Number of Sites Exceeding the 24-Hour TSP Standards

YEAR	TOTAL OF HI-VOL SITES [1]	SITES WITH ≥ 2 DAYS EXCEEDING THE SECONDARY STANDARD (150 ug/m^3) Number of Sites	% of Total Sites	SITES WITH ≥ 2 DAYS EXCEEDING THE PRIMARY STANDARD (260 ug/m^3) Number of Sites	% of Total Sites
1971	44	37	84%	19	43%
1972	46	43	93%	13	28%
1973	44	31	70%	11	25%
1974	62	49	79%	5	8%
1975	51	38	75%	2	4%
1976	38	33	87%	1	3%
1977	37	25	68%	0	0%
1978	34	20	59%	5	15%
1979	33	20	61%	2	6%
1980	33	14	42%	0	0%
1981	40	14	35%	0	0%
1982	39	11	28%	0	0%
1983	40	2	5%	0	0%
1984	40	4	10%	0	0%

[1] Only those sites are used which have sufficient data to calculate a valid annual average concentration

TABLE 9

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
ANSONIA	0008	003

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	17.4	7.9	7.2	24.8	14.5
CHROMIUM	3	3	3	4	3
COPPER	80	120	290	220	180
IRON	650	520	550	620	590
LEAD	250	230	250	310	260
MANGANESE	12	13	13	14	13
NICKEL	15	15	8	16	13
VANADIUM	40	40	20	30	30
ZINC	780	500	310	640	560
WATER SOLUBLES (NG/M3)					
NITRATE	3480	3470	1600	1000	2390
SULFATE	5350	7620	6380	5040	6060
AMMONIUM	150	150	160	120	140
PH	8.9	9.6	9.4	9.3	9.3
TSP (UG/M3)	52	49	43	40	46
SAMPLE COUNT	16	14	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
BRIDGEPORT	0060	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	2.9	1.9	1.3	2.2	2.1
CHROMIUM	2	7	4	2	4
COPPER	40	80	90	80	70
IRON	460	550	510	430	480
LEAD	310	280	270	430	320
MANGANESE	19	18	15	21	18
NICKEL	15	16	8	12	13
VANADIUM	40	40	20	20	30
ZINC	120	80	50	40	70
WATER SOLUBLES (NG/M3)					
NITRATE	3300	3930	1760	1960	2690
SULFATE	4950	5920	6330	5490	5650
AMMONIUM	150	170	140	150	150
PH	9.0	9.5	9.5	9.3	9.3
TSP (UG/M3)	46	48	44	44	45
SAMPLE COUNT	16	12	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
BRIDGEPORT	0060	009

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	3.6	3.6	1.7	3.0	3.0
CHROMIUM	3	6	4	2	4
COPPER	40	40	80	100	70
IRON	360	600	530	430	480
LEAD	240	210	230	310	250
MANGANESE	13	19	15	17	16
NICKEL	15	15	8	12	12
VANADIUM	40	50	20	20	30
ZINC	90	60	50	60	60
WATER SOLUBLES (NG/M3)					
NITRATE	3670	4390	1470	3010	3100
SULFATE	8440	6460	6200	5440	6610
AMMONIUM	150	140	150	170	150
PH	9.1	9.5	9.5	9.5	9.4
TSP (UG/M3)	42	55	46	40	46
SAMPLE COUNT	14	14	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
BRIDGEPORT	0060	123

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	2.6	1.7	1.3	2.1	1.9
CHROMIUM	2	12	11	3	7
COPPER	20	40	60	40	40
IRON	540	1120	960	600	820
LEAD	310	320	350	320	330
MANGANESE	14	26	25	29	24
NICKEL	15	26	18	16	19
VANADIUM	40	50	30	30	40
ZINC	70	130	120	50	90
WATER SOLUBLES (NG/M3)					
NITRATE	3490	4380	3430	1460	3210
SULFATE	6370	7150	7230	6370	6800
AMMONIUM	170	150	180	150	160
PH	9.4	9.5	9.4	9.5	9.5
TSP (UG/M3)	51	67	58	52	57
SAMPLE COUNT	13	15	15	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
BRISTOL	0070	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.7	2.0	1.5	0.8	1.2
CHROMIUM	1	2	3	1	2
COPPER	20	20	50	60	40
IRON	280	370	390	320	340
LEAD	130	140	200	220	170
MANGANESE	11	11	12	12	11
NICKEL	10	5	5	7	7
VANADIUM	20	20	10	20	20
ZINC	60	40	40	30	40
WATER SOLUBLES (NG/M3)					
NITRATE	4010	4030	1230	1630	2820
SULFATE	5870	6000	8300	4650	6120
AMMONIUM	150	150	80	120	130
PH	9.5	9.4	9.0	9.5	9.4
TSP (UG/M3)	35	43	39	34	38
SAMPLE COUNT	16	14	12	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
BURLINGTON	0085	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.4	0.9	0.5	0.7	0.6
CHROMIUM	<.6	3	4	1	2*
COPPER	40	90	130	60	80
IRON	50	230	200	150	160
LEAD	40	70	130	60	80
MANGANESE	3	8	8	5	6
NICKEL	3	4	4	3	4
VANADIUM	<6	20	10	<6	9**
ZINC	30	30	20	10	20
WATER SOLUBLES (NG/M3)					
NITRATE	2850	2090	650	920	1630
SULFATE	2840	5710	6370	4310	4800
AMMONIUM	60	60	60	70	60
PH	9.2	9.8	9.6	9.8	9.6
TSP (UG/M3)	17	34	28	19	24
SAMPLE COUNT	15	14	15	14	

*The average was calculated using one-half the detectable limit in the 1st quarter.

**The average was calculated using one-half the detectable limit in the 1st and 4th quarters.

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
DANBURY	0175	002

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.8	1.1	0.7	1.3	1.0
CHROMIUM	1	5	5	2	3
COPPER	50	220	280	180	180
IRON	610	560	490	560	560
LEAD	240	190	200	230	220
MANGANESE	13	17	13	13	14
NICKEL	11	8	7	7	8
VANADIUM	30	20	10	20	20
ZINC	70	40	40	40	50
WATER SOLUBLES (NG/M3)					
NITRATE	3180	4000	1490	2240	2740
SULFATE	6840	4920	6160	5200	5800
AMMONIUM	180	160	180	150	170
PH	9.2	9.5	9.5	9.5	9.4
TSP (UG/M3)	56	54	42	37	47
SAMPLE COUNT	15	14	14	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
DANBURY	0175	123

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.5	1.0	0.5	0.9	0.7
CHROMIUM	1	4	3	3	3
COPPER	60	80	120	150	100
IRON	510	530	460	760	560
LEAD	210	210	230	340	240
MANGANESE	12	13	12	16	13
NICKEL	8	7	6	7	7
VANADIUM	20	20	10	10	20
ZINC	40	30	50	50	40
WATER SOLUBLES (NG/M3)					
NITRATE	3950	3650	1320	2240	2870
SULFATE	5190	5940	6680	5680	5860
AMMONIUM	180	150	190	140	170
PH	9.2	9.5	9.5	9.5	9.4
TSP (UG/M3)	47	53	43	47	48
SAMPLE COUNT	16	15	14	12	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
EAST HARTFORD	0220	004

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.6	1.0	1.0	1.2	1.0
CHROMIUM	3	6	3	3	4
COPPER	60	40	50	70	50
IRON	460	540	620	710	590
LEAD	290	260	280	350	300
MANGANESE	9	12	15	16	13
NICKEL	9	7	7	9	8
VANADIUM	20	20	20	10	20
ZINC	50	30	30	90	50
WATER SOLUBLES (NG/M3)					
NITRATE	3990	3750	1770	2900	3070
SULFATE	5520	4430	6280	5630	5460
AMMONIUM	120	120	150	140	130
PH	9.3	9.5	9.5	9.4	9.4
TSP (UG/M3)	43	51	42	42	45
SAMPLE COUNT	12	15	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
GREENWICH	0330	008

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.7	2.1	0.5	1.0	1.1
CHROMIUM	1	6	3	2	3
COPPER	20	50	50	60	40
IRON	470	580	490	650	550
LEAD	190	170	160	280	200
MANGANESE	10	12	12	14	12
NICKEL	6	8	5	8	7
VANADIUM	10	20	10	10	10
ZINC	60	40	40	70	50
WATER SOLUBLES (NG/M3)					
NITRATE	3500	2760	1480	4660	3110
SULFATE	6250	5050	6300	4590	5560
AMMONIUM	150	170	140	110	140
PH	9.4	9.4	9.0	9.4	9.3
TSP (UG/M3)	43	47	43	42	44
SAMPLE COUNT	16	15	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
GROTON	0350	006

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.8	0.6	0.5	0.8	0.7
CHROMIUM	2	5	3	2	3
COPPER	50	80	90	80	80
IRON	410	480	460	460	450
LEAD	210	100	90	210	150
MANGANESE	8	12	14	12	12
NICKEL	25	18	11	18	18
VANADIUM	60	60	30	30	40
ZINC	150	40	50	40	70
WATER SOLUBLES (NG/M3)					
NITRATE	1460	3040	850	2010	1800
SULFATE	7990	5670	6340	5040	6270
AMMONIUM	120	160	140	120	130
PH	9.5	9.3	9.2	9.3	9.3
TSP (UG/M3)	41	51	40	36	42
SAMPLE COUNT	14	13	15	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
HADDAM	0380	002

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.6	0.8	0.5	0.7	0.6
CHROMIUM	1	3	2	1	2
COPPER	30	40	70	90	60
IRON	190	230	270	360	260
LEAD	260	80	100	150	150
MANGANESE	6	8	9	11	8
NICKEL	7	5	6	7	6
VANADIUM	20	10	10	20	10
ZINC	30	20	20	40	30
WATER SOLUBLES (NG/M3)					
NITRATE	2010	2010	750	1930	1680
SULFATE	4140	4300	4090	3980	4130
AMMONIUM	80	60	60	70	70
PH	9.5	9.7	9.6	9.2	9.5
TSP (UG/M3)	28	37	32	27	31
SAMPLE COUNT	16	15	15	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
HARTFORD	0420	003

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.4	1.2	0.7	0.9	0.8
CHROMIUM	2	5	4	4	4
COPPER	40	150	190	210	150
IRON	570	720	690	790	690
LEAD	300	260	240	410	300
MANGANESE	13	17	17	17	16
NICKEL	12	7	6	11	9
VANADIUM	40	20	10	30	30
ZINC	60	50	40	110	60
WATER SOLUBLES (NG/M3)					
NITRATE	3540	4200	1250	2500	2860
SULFATE	4030	5020	5930	5450*	5180
AMMONIUM	160	160	160	120	150
PH	9.3	9.5	9.5	9.4	9.4
TSP (UG/M3)	53	58	48	50	52
SAMPLE COUNT	16	14	15	15*	

*For sulfate, the 4th quarter sample count is 14.

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
HARTFORD	0420	013

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	1.0	1.9	0.7	1.1	1.2
CHROMIUM	3	7	5	7	6
COPPER	30	30	40	80	50
IRON	370	630	650	770	610
LEAD	260	190	180	390	260
MANGANESE	10	15	16	17	15
NICKEL	9	8	7	10	9
VANADIUM	20	20	20	20	20
ZINC	60	50	40	80	60
WATER SOLUBLES (NG/M3)					
NITRATE	3150	3510	1020	1720	2340
SULFATE	4550	5390	6710	5720	5590
AMMONIUM	170	160	150	130	150
PH	9.2	9.5	9.5	9.2	9.3
TSP (UG/M3)	40	55	53	46	48
SAMPLE COUNT	14	14	14	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
HARTFORD	0420	014

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.6	0.8	0.5	1.1	0.7
CHROMIUM	2	3	3	3	3
COPPER	40	80	100	110	80
IRON	950	510	490	610	650
LEAD	270	210	200	420	280
MANGANESE	11	13	13	14	13
NICKEL	11	7	5	7	8
VANADIUM	30	20	10	20	20
ZINC	30	40	50	70	50
WATER SOLUBLES (NG/M3)					
NITRATE	3940	3620	1470	2460	2880
SULFATE	4020	4730	6980	4970	5160
AMMONIUM	160	160	150	110	140
PH	9.4	9.5	9.5	9.4	9.4
TSP (UG/M3)	45	50	45	41	45
SAMPLE COUNT	16	14	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
MANCHESTER	0510	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.5	0.4	0.4	0.7	0.5
CHROMIUM	1	3	2	1	2
COPPER	30	50	60	80	50
IRON	220	370	270	350	300
LEAD	180	120	120	230	160
MANGANESE	9	10	9	9	9
NICKEL	8	5	5	5	6
VANADIUM	10	10	10	10	10
ZINC	50	20	20	30	30
WATER SOLUBLES (NG/M3)					
NITRATE	3860	2230	1360	1830	2360
SULFATE	5160	5310	4860	4570	4980
AMMONIUM	110	110	150	110	120
PH	9.3	9.5	9.6	9.2	9.4
TSP (UG/M3)	31	42	34	30	34
SAMPLE COUNT	16	15	14	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
MERIDEN	0540	002

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	1.0	1.5	1.6	1.8	1.5
CHROMIUM	2	3	3	3	3
COPPER	70	130	100	110	100
IRON	650	500	500	680	580
LEAD	250	170	200	400	260
MANGANESE	10	14	14	15	13
NICKEL	11	9	7	12	10
VANADIUM	20	20	20	20	20
ZINC	170	220	360	190	230
WATER SOLUBLES (NG/M3)					
NITRATE	3220	3750	1380	2430	2730
SULFATE	5750	6190	5900	6260	6020
AMMONIUM	140	120	160	160	140
PH	9.6	9.7	9.6	9.6	9.6
TSP (UG/M3)	42	49	48	46	46
SAMPLE COUNT	16	15	14	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
MIDDLETOWN	0570	003

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.9	0.8	0.4	0.6	0.7
CHROMIUM	2	4	2	2	3
COPPER	120	100	100	90	100
IRON	340	530	390	540	450
LEAD	250	200	220	320	250
MANGANESE	9	13	11	14	12
NICKEL	8	7	5	6	7
VANADIUM	10	20	20	10	20
ZINC	60	50	40	40	50
WATER SOLUBLES (NG/M3)					
NITRATE	3020	3760	1610	2420	2710
SULFATE	5990	5130	6140	4480	5450
AMMONIUM	150	160	170	140	160
PH	9.4	8.8	8.9	9.0	9.0
TSP (UG/M3)	41	48	43	35	42
SAMPLE COUNT	14	14	14	13	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN MILFORD | AREA 0590 | SITE 002

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	1.1	1.5	0.5	2.2	1.3
CHROMIUM	2	3	3	4	3
COPPER	20	40	60	50	40
IRON	420	500	400	590	480
LEAD	210	220	180	320	230
MANGANESE	9	12	10	17	12
NICKEL	37	16	12	45	28
VANADIUM	100	40	30	120	70
ZINC	100	60	60	120	90
WATER SOLUBLES (NG/M3)					
NITRATE	2630	3050	1640	2570	2480
SULFATE	7180	5280	5580	7240	6330
AMMONIUM	130	140	150	120	130
PH	9.2	9.4	9.4	9.3	9.3
TSP (UG/M3)	44	46	43	42	44
SAMPLE COUNT	16	15	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
MORRIS	0478	001

	QUARTERLY AVG 1ST	2ND	3RD	4TH	ANNUAL AVG
METALS (NG/M3)					
BERYLLIUM				<.2	
CADMIUM				0.5	
CHROMIUM				1	
COPPER				80	
IRON				430	
LEAD				120	
MANGANESE				9	
NICKEL				3	
VANADIUM				10	
ZINC				10	
WATER SOLUBLES (NG/M3)					
NITRATE				2280	
SULFATE				4290	
AMMONIUM				90	
PH				9.4	
TSP (UG/M3)				29	
SAMPLE COUNT				15*	

*For sulfate, the fourth quarter sample count is 13.

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NAUGATUCK	0660	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	1.1	1.6	1.6	1.7	1.5
CHROMIUM	2	5	4	6	4
COPPER	60	110	150	90	100
IRON	610	1110	620	730	760
LEAD	200	210	210	480	270
MANGANESE	17	24	21	21	21
NICKEL	7	10	6	7	8
VANADIUM	10	20	20	20	20
ZINC	140	80	70	100	100
WATER SOLUBLES (NG/M3)					
NITRATE	3150	3620	1300	2800	2710
SULFATE	6140	5290	4700	6780	5720
AMMONIUM	180	160	140	130	150
PH	9.2	9.5	9.5	9.4	9.4
TSP (UG/M3)	45	52	43	42	45
SAMPLE COUNT	16	14	15	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NEW BRITAIN	0680	007

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.5	1.7	0.3	0.9	0.8
CHROMIUM	1	4	3	3	3
COPPER	40	30	40	50	40
IRON	340	400	330	540	400
LEAD	170	160	160	350	210
MANGANESE	9	10	10	11	10
NICKEL	6	8	5	7	6
VANADIUM	20	20	20	10	20
ZINC	30	50	30	60	40
WATER SOLUBLES (NG/M3)					
NITRATE	4140	4030	1340	2660	3030
SULFATE	4100	5610	5600	5390	5140
AMMONIUM	180	160	160	120	160
PH	9.4	9.5	9.4	9.5	9.4
TSP (UG/M3)	38	43	40	38	40
SAMPLE COUNT	16	13	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NEW BRITAIN	0680	008

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.4	1.2	0.4	0.8	0.7
CHROMIUM	2	3	3	2	2
COPPER	90	160	230	230	180
IRON	330	420	350	590	420
LEAD	160	200	170	390	230
MANGANESE	8	11	11	14	11
NICKEL	4	5	4	7	5
VANADIUM	10	20	20	10	10
ZINC	30	40	30	40	30
WATER SOLUBLES (NG/M3)					
NITRATE	3460	4450	1310	2840	3020
SULFATE	4710	5010	5800	4910	5100
AMMONIUM	150	150	150	110	140
PH	9.6	9.5	9.4	9.5	9.5
TSP (UG/M3)	37	46	41	39	41
SAMPLE COUNT	16	15	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NEW BRITAIN	0680	009

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	1.7	0.9	0.9	0.8	1.0
CHROMIUM	1	4	3	2	2
COPPER	60	130	80	70	80
IRON	260	460	380	460	390
LEAD	140	170	150	250	180
MANGANESE	7	12	12	11	10
NICKEL	5	8	4	6	6
VANADIUM	10	20	20	20	20
ZINC	30	60	40	80	50
WATER SOLUBLES (NG/M3)					
NITRATE	3270	3530	1240	2290	2580
SULFATE	3840	4460	5050	5070	4610
AMMONIUM	150	130	170	110	140
PH	9.6	9.5	9.5	9.5	9.5
TSP (UG/M3)	37	47	39	34	39
SAMPLE COUNT	15	15	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NEW HAVEN	0700	002

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.8	1.0	0.6	1.3	0.9
CHROMIUM	2	3	4	3	3
COPPER	190	180	200	250	210
IRON	450	610	1680	820	650
LEAD	280	230	270	510	320
MANGANESE	10	11	16	15	13
NICKEL	10	8	7	16	10
VANADIUM	20	30	20	30	20
ZINC	80	60	50	90	70
WATER SOLUBLES (NG/M3)					
NITRATE	2770	3250	1880	3650	2870
SULFATE	6160	5230	6730	6770	6250
AMMONIUM	140	130	140	100	130
PH	9.5	9.5	9.4	9.4	9.4
TSP (UG/M3)	46	53	49	50	50
SAMPLE COUNT	12	13	15	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NEW HAVEN	0700	013

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.5	1.0	0.5	1.2	0.8
CHROMIUM	2	3	3	3	3
COPPER	30	40	30	60	40
IRON	430	610	550	680	570
LEAD	230	240	220	360	260
MANGANESE	10	12	13	16	13
NICKEL	16	9	8	17	12
VANADIUM	30	30	20	30	30
ZINC	80	50	40	60	60
WATER SOLUBLES (NG/M3)					
NITRATE	3880	4360	1500	3300	3260
SULFATE	7540	5310	7280	6870	6750
AMMONIUM	180	160	150	130	160
PH	9.5	9.5	9.4	9.4	9.5
TSP (UG/M3)	45	53	48	46	48
SAMPLE COUNT	15	15	15	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NORWALK	0820	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	1.0	1.6	0.8	1.0	1.1
CHROMIUM	2	3	3	1	2
COPPER	60	110	160	140	110
IRON	480	670	390	450	500
LEAD	170	210	160	250	190
MANGANESE	12	14	10	10	12
NICKEL	18	7	8	14	12
VANADIUM	50	20	10	30	30
ZINC	220	120	60	80	120
WATER SOLUBLES (NG/M3)					
NITRATE	3180	3400	1660	1950	2610
SULFATE	6360	5350	4060	5470	5340
AMMONIUM	160	130	160	130	150
PH	9.5	9.7	9.6	9.6	9.6
TSP (UG/M3)	45	57	42	35	45
SAMPLE COUNT	16	15	14	12	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NORWALK	0820	005

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.6	1.4	0.7	1.3	1.0
CHROMIUM	2	4	3	2	3
COPPER	40	60	60	50	50
IRON	520	580	580	680	580
LEAD	200	230	220	330	240
MANGANESE	13	12	13	13	13
NICKEL	16	7	6	12	10
VANADIUM	50	20	10	20	30
ZINC	90	80	60	80	80
WATER SOLUBLES (NG/M3)					
NITRATE	3450	3780	1380	2820	2850
SULFATE	6540	5690	6360	5230	6010
AMMONIUM	170	190	130	140	160
PH	9.4	9.6	9.7	9.6	9.6
TSP (UG/M3)	52	56	46	41	49
SAMPLE COUNT	16	14	15	12	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NORWALK	0820	012

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.8	1.4	0.8	1.3	1.1
CHROMIUM	2	4	3	2	3
COPPER	20	80	120	70	70
IRON	580	510	510	590	550
LEAD	280	230	210	340	270
MANGANESE	13	11	12	12	12
NICKEL	10	6	6	8	8
VANADIUM	20	20	10	10	10
ZINC	150	60	40	60	80
WATER SOLUBLES (NG/M3)					
NITRATE	3350	3990	1370	2640	2830
SULFATE	5490	5240	4990	5160	5220
AMMONIUM	180	160	160	130	160
PH	9.4	9.7	9.7	9.7	9.6
TSP (UG/M3)	47	51	43	37	44
SAMPLE COUNT	16	14	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NORWICH	0840	001

	QUARTERLY AVG 1ST	2ND	3RD	4TH	ANNUAL AVG
METALS (NG/M3)					
BERYLLIUM	<.2	<.2			
CADMIUM	0.5	1.0			
CHROMIUM	1	2			
COPPER	50	60			
IRON	350	270			
LEAD	180	100			
MANGANESE	8	5			
NICKEL	10	9			
VANADIUM	30	20			
ZINC	80	20			
WATER SOLUBLES (NG/M3)					
NITRATE	3790	4060			
SULFATE	5550	6950			
AMMONIUM	120	150			
PH	9.6	9.0			
TSP (UG/M3)	43	41			
SAMPLE COUNT	16	4			

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
NORWICH	0840	002

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM		<.2	<.2	<.2	
CADMIUM		0.5	0.4	0.8	
CHROMIUM		2	3	2	
COPPER		110	120	150	
IRON		500	410	790	
LEAD		170	170	300	
MANGANESE		14	10	14	
NICKEL		7	7	8	
VANADIUM		20	10	10	
ZINC		30	30	50	
WATER SOLUBLES (NG/M3)					
NITRATE		3800	1590	2200	
SULFATE		6080	5400	6170	
AMMONIUM		120	150	110	
PH		9.0	9.1	9.2	
TSP (UG/M3)		60	40	50	
SAMPLE COUNT		12	15	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
STAMFORD	1080	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.6	1.4	0.8	0.9	0.9
CHROMIUM	2	2	3	2	2
COPPER	80	140	130	60	100
IRON	390	690	750	640	610
LEAD	200	190	180	270	210
MANGANESE	11	14	19	14	14
NICKEL	9	7	6	11	8
VANADIUM	30	10	10	30	20
ZINC	80	60	50	60	60
WATER SOLUBLES (NG/M3)					
NITRATE	3290	3830	1470	2520	2780
SULFATE	4630	3910	5010	5590	4800
AMMONIUM	160	140	140	110	140
PH	9.2	8.8	8.8	9.0	9.0
TSP (UG/M3)	44	57	58	45	51
SAMPLE COUNT	15	14	14	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
STAMFORD	1080	007

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	1.2	1.4	2.6	2.4	1.9
CHROMIUM	3	2	4	3	3
COPPER	20	60	130	140	80
IRON	360	430	540	750	510
LEAD	170	140	140	280	180
MANGANESE	12	11	15	15	13
NICKEL	11	7	8	14	10
VANADIUM	20	20	10	40	20
ZINC	110	70	70	150	100
WATER SOLUBLES (NG/M3)					
NITRATE	3460	4620	1250	2850	3090
SULFATE	5600	6970	5690	5800	6020
AMMONIUM	160	170	150	150	160
PH	9.0	8.8	8.8	8.9	8.9
TSP (UG/M3)	42	51	52	47	48
SAMPLE COUNT	16	15	14	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
STAMFORD	1080	021

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	1.0	1.4	1.5	2.5	1.6
CHROMIUM	3	4	3	2	3
COPPER	40	80	170	160	110
IRON	510	880	730	800	730
LEAD	210	180	170	280	210
MANGANESE	13	16	16	15	15
NICKEL	14	8	8	12	11
VANADIUM	20	20	20	30	20
ZINC	90	60	50	60	70
WATER SOLUBLES (NG/M3)					
NITRATE	3850	4190	1260	3010	3140
SULFATE	5250	5950	5400	4870	5380
AMMONIUM	170	160	150	120	150
PH	9.2	9.0	9.8	9.0	9.2
TSP (UG/M3)	47	63	55	47	53
SAMPLE COUNT	15	15	13	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
STRATFORD	1110	005

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	1.2	1.7	1.0	1.7	1.4
CHROMIUM	2	3	3	3	3
COPPER	60	150	190	160	140
IRON	500	530	410	670	530
LEAD	280	240	220	410	290
MANGANESE	13	12	11	16	13
NICKEL	12	9	7	6	11
VANADIUM	20	20	10	40	20
ZINC	90	50	30	80	60
WATER SOLUBLES (NG/M3)					
NITRATE	3610	3990	1390	3010	3000
SULFATE	5050	3320	6990	5530	5220
AMMONIUM	150	150	130	130	140
PH	9.3	8.8	8.9	8.9	9.0
TSP (UG/M3)	52	50	43	45	48
SAMPLE COUNT	15	15	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
TORRINGTON	1160	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.5	0.7	0.6	1.4	0.8
CHROMIUM	1	3	4	3	3
COPPER	40	50	60	110	60
IRON	420	550	320	620	480
LEAD	230	220	170	250	220
MANGANESE	10	12	10	12	11
NICKEL	5	4	4	6	5
VANADIUM	<6	20	10	10	11*
ZINC	50	40	30	50	40
WATER SOLUBLES (NG/M3)					
NITRATE	2300	3640	1110	1500	2140
SULFATE	4320	5010	6930	5490	5420
AMMONIUM	140	140	120	120	130
PH	9.4	9.0	9.0	8.8	9.1
TSP (UG/M3)	41	50	36	43	43
SAMPLE COUNT	16	15	15	15	

*The average was calculated using one-half the detectable limit in the 1st quarter.

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
VOLUNTOWN	1205	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.4	0.6	0.4	1.1	0.6
CHROMIUM	<.6	2	2	1	1*
COPPER	20	40	70	110	60
IRON	40	190	200	180	150
LEAD	60	70	60	80	70
MANGANESE	3	6	7	4	5
NICKEL	3	4	7	4	4
VANADIUM	<6	10	10	10	8*
ZINC	50	20	10	80	40
WATER SOLUBLES (NG/M3)					
NITRATE	1620	2750	1300	1610	1830
SULFATE	3270	2870	7670	3150	4110
AMMONIUM	120	90	60	60	80
PH	9.5	9.7	9.6	9.5	9.6
TSP (UG/M3)	20	32	32	21	26
SAMPLE COUNT	16	15	13	15	

*The average was calculated using one-half the detectable limit in the 1st quarter.

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
WALLINGFORD	1210	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.3	0.8	0.7	1.1	0.7
CHROMIUM	1	2	4	3	2
COPPER	20	30	50	40	30
IRON	450	510	410	740	520
LEAD	180	190	200	340	220
MANGANESE	11	10	11	16	12
NICKEL	10	7	6	11	8
VANADIUM	30	20	10	30	20
ZINC	60	40	30	100	60
WATER SOLUBLES (NG/M3)					
NITRATE	2620	2400	1670	1610	2090
SULFATE	5550	4460	7400	5820	5800
AMMONIUM	140	160	140	130	140
PH	9.5	9.5	9.5	9.5	9.5
TSP (UG/M3)	50	49	43	46	47
SAMPLE COUNT	16	15	15	14	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
WATERBURY	1240	005

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.5	1.3	3.2	3.5	2.2
CHROMIUM	2	6	5	6	5
COPPER	30	120	220	120	120
IRON	360	530	420	640	490
LEAD	160	230	240	350	250
MANGANESE	8	11	9	15	11
NICKEL	7	7	4	10	7
VANADIUM	20	20	10	20	20
ZINC	120	180	230	260	200
WATER SOLUBLES (NG/M3)					
NITRATE	4020	4100	1390	2100	2840
SULFATE	4700	6410	4690	5930	5410
AMMONIUM	170	160	160	120	150
PH	9.4	9.6	9.5	9.5	9.5
TSP (UG/M3)	37	55	45	45	45
SAMPLE COUNT	14	13	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
WATERBURY	1240	006

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.5	1.3	1.6	1.3	1.2
CHROMIUM	2	4	2	3	3
COPPER	40	110	220	190	140
IRON	750	450	320	350	470
LEAD	100	210	180	200	170
MANGANESE	8	10	9	12	10
NICKEL	4	5	5	5	5
VANADIUM	10	20	10	10	10
ZINC	70	130	60	160	100
WATER SOLUBLES (NG/M3)					
NITRATE	4020	3910	1450	1210	2630
SULFATE	5390	7160	7100	5180	6190
AMMONIUM	180	160	140	150	160
PH	9.4	9.4	9.5	9.5	9.5
TSP (UG/M3)	31	55	43	35	41
SAMPLE COUNT	15	14	15	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
WATERBURY	1240	007

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.9	1.6	2.7	2.8	2.0
CHROMIUM	4	4	8	7	6
COPPER	30	40	70	210	90
IRON	480	610	510	850	610
LEAD	270	290	300	460	330
MANGANESE	12	13	14	20	15
NICKEL	8	7	5	11	8
VANADIUM	30	20	20	20	20
ZINC	130	220	150	280	200
WATER SOLUBLES (NG/M3)					
NITRATE	3680	4260	1320	1220	2680
SULFATE	4830	5840	6210	5840	5650
AMMONIUM	170	150	150	150	160
PH	9.4	9.5	9.5	9.5	9.5
TSP (UG/M3)	49	57	48	53	52
SAMPLE COUNT	16	15	13	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
WATERFORD	1260	001

	QUARTERLY AVG				ANNUAL AVG
	1ST	2ND	3RD	4TH	
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.4	0.4	0.5	0.5	0.4
CHROMIUM	1	3	3	1	2
COPPER	90	90	80	60	80
IRON	80	340	300	280	250
LEAD	80	120	90	90	100
MANGANESE	4	8	8	7	7
NICKEL	5	4	5	8	6
VANADIUM	20	10	10	20	20
ZINC	40	20	40	70	40
WATER SOLUBLES (NG/M3)					
NITRATE	2110	2190	1350	1180	1720
SULFATE	5010	4710	5340	4490	4870
AMMONIUM	60	100	70	60	70
PH	9.2	9.4	9.0	9.2	9.2
TSP (UG/M3)	27	39	42	28	34
SAMPLE COUNT	15	15	13	15	

TABLE 9, CONTINUED

QUARTERLY CHEMICAL CHARACTERIZATION OF 1984 HI-VOL TSP

TOWN	AREA	SITE
WILLIMANTIC	1410	002

	QUARTERLY AVG 1ST	2ND	3RD	4TH	ANNUAL AVG
METALS (NG/M3)					
BERYLLIUM	<.2	<.2	<.2	<.2	<.2
CADMIUM	0.4	0.5	0.5	1.0	0.6
CHROMIUM	1	1	1	2	1
COPPER	20	70	80	30	50
IRON	350	340	300	440	360
LEAD	170	130	130	270	170
MANGANESE	7	8	8	9	8
NICKEL	11	6	4	22	11
VANADIUM	30	10	10	80	30
ZINC	20	20	50	60	40
WATER SOLUBLES (NG/M3)					
NITRATE	2180	2560	1200	1090	1760
SULFATE	4880	5620	4740	5890	5280
AMMONIUM	110	110	140	80	110
PH	9.2	9.6	9.5	9.4	9.4
TSP (UG/M3)	41	43	36	41	40
SAMPLE COUNT	16	15	15	15	

TABLE 10

MONTHLY CHEMICAL CHARACTERIZATION OF 1984 LO-VOL TSP

TOWN MANSFIELD | AREA 0520 | SITE 001

	MONTHLY AVERAGE											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
METALS (NG/M3)												
BERYLLIUM	<.2	<.2	<.2	<.2	<.2	<.2	<.2		<.2	<.2	<.2	
CADMIUM	0.6	0.6	0.2	1.4	0.5	0.8	0.4		0.3	1.4	0.7	
CHROMIUM	1	2	2	6	2	3	2		2	1	2	
COPPER	10	10	10	20	10	10	10		10	<6	<6	
IRON	300	670	460	830	520	600	260		340	190	350	
LEAD	130	90	60	140	80	100	80		80	80	120	
MANGANESE	8	10	7	20	13	15	7		9	4	8	
NICKEL	10	5	4	17	4	8	9		10	5	10	
VANADIUM	30	20	10	30	20	30	30		20	10	20	
ZINC	60	20	10	130	30	40	20		30	30	20	
WATER SOLUBLES (NG/M3)												
NITRATE	1970	2260	2320	2220	2070	2000	800		700	2110	1770	
SULFATE	9310	8360	5310	5050	4720	7270	6260		7840	3910	5350	
AMMONIUM	60	80	80	90	70	110	70		70	80	100	
PH	8.2	8.2	8.2	9.7	9.7	9.6	9.5		9.5	9.5	9.5	
TSP (UG/M3)	50	51	44	52	54	57	33		34	31	26	

TABLE 10, CONTINUED

MONTHLY CHEMICAL CHARACTERIZATION OF 1984 LO-VOL TSP

TOWN PUTNAM   AREA 0900   SITE 002

	MONTHLY AVERAGE											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
METALS (NG/M3)												
BERYLLIUM	<.2	<.2	<.2	<.2	<.2	<.2	<.2				<.2	
CADMIUM	0.5	0.5	0.3	0.6	0.3	0.3	0.2				0.5	
CHROMIUM	3	3	2	5	2	4	2				4	
COPPER	<6	10	10	10	<6	<6	10				<6	
IRON	470	1340	430	690	440	480	250				720	
LEAD	180	120	60	90	90	100	80				160	
MANGANESE	9	12	7	16	12	11	6				10	
NICKEL	7	5	4	10	5	5	6				5	
VANADIUM	20	10	10	20	20	10	10				20	
ZINC	60	20	20	150	30	30	20				20	
WATER SOLUBLES (NG/M3)												
NITRATE	2840	2500	2430	2160	1030	1030	560				1260	
SULFATE	7800	5730	2800	3170	4350	6570	5220				4750	
AMMONIUM	60	70	70	60	70	100	80				70	
PH	8.2	8.2	8.2	9.6	9.6	9.6	9.4				9.4	
TSP (UG/M3)	58	42	40	42	47	42	17				27	

TABLE 11

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
ANSONIA-003 (60)	TSP	94	85	71	71	70	69	69	66	65	63
	DATE	2/ 6/84	8/16/84	2/12/84	6/ 5/84	1/ 1/84	4/30/84	12/20/84	1/ 7/84	3/31/84	7/11/84
METEOROLOGICAL SITE	DIR (DEG)	290	330	270	220	20	210	260	310	330	230
NEWARK	VEL (MPH)	6.3	7.1	1.9	6.7	6.4	9.4	5.6	13.3	11.7	7.6
	SPD (MPH)	9.5	8.3	2.2	7.9	7.8	11.1	9.3	13.9	12.5	9.6
	RATIO	0.665	0.853	0.881	0.849	0.819	0.849	0.597	0.954	0.935	0.791
METEOROLOGICAL SITE	DIR (DEG)	280	340	240	250	20	200	290	320	360	180
BRADLEY	VEL (MPH)	7.5	3.8	2.5	1.6	5.2	10.6	4.4	8.4	6.0	7.1
	SPD (MPH)	9.8	4.7	3.3	4.6	6.0	11.1	6.0	9.1	6.8	7.3
	RATIO	0.772	0.800	0.759	0.338	0.864	0.955	0.727	0.929	0.882	0.973
METEOROLOGICAL SITE	DIR (DEG)	290	250	240	240	30	200	280	320	330	170
BRIDGEPORT	VEL (MPH)	5.2	6.0	3.3	6.4	8.3	4.8	7.3	9.5	8.1	5.1
	SPD (MPH)	9.8	8.1	5.6	6.6	8.5	7.0	7.8	9.9	8.9	5.6
	RATIO	0.530	0.748	0.581	0.961	0.980	0.682	0.944	0.953	0.905	0.911
METEOROLOGICAL SITE	DIR (DEG)	280	320	290	290	10	230	260	300	330	230
WORCESTER	VEL (MPH)	9.1	5.9	8.1	8.3	6.5	8.7	9.5	12.4	7.8	2.8
	SPD (MPH)	10.1	6.8	8.3	8.5	8.1	9.8	9.9	12.5	7.9	7.9
	RATIO	0.904	0.879	0.969	0.976	0.812	0.888	0.958	0.989	0.983	0.348
BRIDGEPORT-001 (58)	TSP	98	74	74	70	69	67	64	62	61	60
	DATE	11/26/84	4/30/84	6/ 5/84	2/12/84	2/ 6/84	7/11/84	3/31/84	8/22/84	10/15/84	7/ 5/84
METEOROLOGICAL SITE	DIR (DEG)	210	210	220	270	290	230	330	220	30	210
NEWARK	VEL (MPH)	6.3	9.4	6.7	1.9	6.3	7.6	11.7	9.4	5.5	13.6
	SPD (MPH)	6.8	11.1	7.9	2.2	9.5	9.6	12.5	10.2	8.6	14.4
	RATIO	0.939	0.849	0.849	0.881	0.665	0.791	0.935	0.916	0.636	0.948
METEOROLOGICAL SITE	DIR (DEG)	190	200	250	240	280	180	360	220	10	200
BRADLEY	VEL (MPH)	3.0	10.6	1.6	2.5	7.5	7.1	6.0	5.1	7.1	9.9
	SPD (MPH)	3.2	11.1	4.6	3.3	9.8	7.3	6.8	5.3	7.6	10.1
	RATIO	0.934	0.955	0.338	0.759	0.772	0.973	0.882	0.967	0.934	0.982
METEOROLOGICAL SITE	DIR (DEG)	250	200	240	240	290	170	330	220	40	210
BRIDGEPORT	VEL (MPH)	7.7	4.8	6.4	3.3	5.2	5.1	8.1	8.8	5.7	8.8
	SPD (MPH)	8.1	7.0	6.6	5.6	9.8	5.6	8.9	9.3	6.8	9.9
	RATIO	0.959	0.682	0.961	0.581	0.530	0.911	0.905	0.937	0.847	0.882
METEOROLOGICAL SITE	DIR (DEG)	260	230	290	290	280	230	330	280	30	260
WORCESTER	VEL (MPH)	9.6	8.7	8.3	8.1	9.1	2.8	7.8	4.5	7.4	5.7
	SPD (MPH)	9.6	9.8	8.5	8.3	10.1	7.9	7.9	7.8	7.8	10.1
	RATIO	0.992	0.888	0.976	0.969	0.904	0.348	0.983	0.584	0.958	0.562
BRIDGEPORT-009 (58)	TSP	101	99	80	76	76	73	72	72	70	66
	DATE	6/11/84	11/26/84	4/30/84	1/19/84	8/22/84	6/ 5/84	2/12/84	7/11/84	7/ 5/84	10/ 9/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	210	330	220	220	270	230	210	220
NEWARK	VEL (MPH)	9.8	6.3	9.4	10.0	9.4	6.7	1.9	7.6	13.6	4.6
	SPD (MPH)	11.6	6.8	11.1	11.9	10.2	7.9	2.2	9.6	14.4	6.0
	RATIO	0.840	0.939	0.849	0.834	0.916	0.849	0.881	0.791	0.948	0.758
METEOROLOGICAL SITE	DIR (DEG)	260	190	200	340	220	250	240	180	200	60
BRADLEY	VEL (MPH)	6.4	3.0	10.6	7.1	5.1	1.6	2.5	7.1	9.9	1.5
	SPD (MPH)	9.5	3.2	11.1	7.3	5.3	4.6	3.3	7.3	10.1	4.6
	RATIO	0.672	0.934	0.955	0.964	0.967	0.338	0.759	0.973	0.982	0.336

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	240	250	200	340	220	240	240	170	210	230
BRIDGEPORT	VEL (MPH)	7.3	7.7	4.8	10.7	8.8	6.4	3.3	5.1	8.8	3.3
	SPD (MPH)	7.5	8.1	7.0	11.4	9.3	6.6	5.6	5.6	9.9	4.0
	RATIO	0.977	0.959	0.682	0.943	0.937	0.961	0.581	0.911	0.882	0.816
METEOROLOGICAL SITE	DIR (DEG)	280	260	230	320	280	290	290	230	260	360
WORCESTER	VEL (MPH)	7.2	9.6	8.7	6.9	4.5	8.3	8.1	2.8	5.7	1.3
	SPD (MPH)	8.1	9.6	9.8	8.2	7.8	8.5	8.3	7.9	10.1	4.3
	RATIO	0.893	0.992	0.888	0.846	0.584	0.976	0.969	0.348	0.562	0.299
BRIDGEPORT-123 (57)	TSP	127	121	106	99	96	94	80	80	77	76
	DATE	6/11/84	11/26/84	4/30/84	8/22/84	6/ 5/84	7/11/84	8/28/84	10/ 3/84	6/23/84	7/23/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	210	220	220	230	200	230	210	240
NEWARK	VEL (MPH)	9.8	6.3	9.4	9.4	6.7	7.6	7.3	13.4	10.0	10.4
	SPD (MPH)	11.6	6.8	11.1	10.2	7.9	9.6	8.1	13.7	10.4	10.6
	RATIO	0.840	0.939	0.849	0.916	0.849	0.791	0.913	0.981	0.966	0.975
METEOROLOGICAL SITE	DIR (DEG)	260	190	200	220	250	180	200	230	220	210
BRADLEY	VEL (MPH)	6.4	3.0	10.6	5.1	1.6	7.1	7.1	8.6	2.8	7.6
	SPD (MPH)	9.5	3.2	11.1	5.3	4.6	7.3	7.2	8.9	4.9	8.3
	RATIO	0.672	0.934	0.955	0.967	0.338	0.973	0.983	0.970	0.579	0.909
METEOROLOGICAL SITE	DIR (DEG)	240	250	200	220	240	170	210	240	220	230
BRIDGEPORT	VEL (MPH)	7.3	7.7	4.8	8.8	6.4	5.1	7.6	13.6	6.1	8.5
	SPD (MPH)	7.5	8.1	7.0	9.3	6.6	5.6	7.9	13.9	6.2	8.9
	RATIO	0.977	0.959	0.682	0.937	0.961	0.911	0.957	0.973	0.990	0.955
METEOROLOGICAL SITE	DIR (DEG)	280	260	230	280	290	230	240	250	340	280
WORCESTER	VEL (MPH)	7.2	9.6	8.7	4.5	8.3	2.8	5.5	9.8	2.1	4.7
	SPD (MPH)	8.1	9.6	9.8	7.8	8.5	7.9	5.9	10.8	7.5	11.2
	RATIO	0.893	0.992	0.888	0.584	0.976	0.348	0.932	0.914	0.285	0.420
BRISTOL-001 (56)	TSP	84	71	64	64	62	58	55	54	52	50
	DATE	6/11/84	11/26/84	1/ 1/84	7/11/84	4/30/84	7/ 5/84	6/ 5/84	6/29/84	8/28/84	5/ 6/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	20	230	210	210	220	150	200	140
NEWARK	VEL (MPH)	9.8	6.3	6.4	7.6	9.4	13.6	6.7	6.6	7.3	2.1
	SPD (MPH)	11.6	6.8	7.8	9.6	11.1	14.4	7.9	7.2	8.1	6.9
	RATIO	0.840	0.939	0.819	0.791	0.849	0.948	0.849	0.924	0.913	0.302
METEOROLOGICAL SITE	DIR (DEG)	260	190	20	180	200	200	250	180	200	190
BRADLEY	VEL (MPH)	6.4	3.0	5.2	7.1	10.6	9.9	1.6	8.0	7.1	3.6
	SPD (MPH)	9.5	3.2	6.0	7.3	11.1	10.1	4.6	8.2	7.2	3.7
	RATIO	0.672	0.934	0.864	0.973	0.955	0.982	0.338	0.977	0.983	0.954
METEOROLOGICAL SITE	DIR (DEG)	240	250	30	170	200	210	240	110	210	190
BRIDGEPORT	VEL (MPH)	7.3	7.7	8.3	5.1	4.8	8.8	6.4	5.1	7.6	4.6
	SPD (MPH)	7.5	8.1	8.5	5.6	7.0	9.9	6.6	5.3	7.9	6.2
	RATIO	0.977	0.959	0.980	0.911	0.682	0.882	0.961	0.964	0.957	0.741
METEOROLOGICAL SITE	DIR (DEG)	280	260	10	230	230	260	290	220	240	310
WORCESTER	VEL (MPH)	7.2	9.6	6.5	2.8	8.7	5.7	8.3	4.5	5.5	6.3
	SPD (MPH)	8.1	9.6	8.1	7.9	9.8	10.1	8.5	5.0	5.9	7.3
	RATIO	0.893	0.992	0.812	0.348	0.888	0.562	0.976	0.894	0.932	0.854

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
BURLINGTON-001 (58)	TSP	86	52	52	44	44	43	43	37	37	37
	DATE	6/11/84	7/ 5/84	7/11/84	4/30/84	6/ 5/84	6/29/84	8/28/84	6/17/84	7/23/84	11/26/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	230	210	220	150	200	170	240	210
NEWARK	VEL (MPH)	9.8	13.6	7.6	9.4	6.7	6.6	7.3	7.6	10.4	6.3
	SPD (MPH)	11.6	14.4	9.6	11.1	7.9	7.2	8.1	8.2	10.6	6.8
	RATIO	0.840	0.948	0.791	0.849	0.849	0.924	0.913	0.924	0.975	0.939
METEOROLOGICAL SITE	DIR (DEG)	260	200	180	200	250	180	200	190	210	190
BRADLEY	VEL (MPH)	6.4	9.9	7.1	10.6	1.6	8.0	7.1	7.1	7.6	3.0
	SPD (MPH)	9.5	10.1	7.3	11.1	4.6	8.2	7.2	7.3	8.3	3.2
	RATIO	0.672	0.982	0.973	0.955	0.338	0.977	0.983	0.974	0.909	0.934
METEOROLOGICAL SITE	DIR (DEG)	240	210	170	200	240	110	210	180	230	250
BRIDGEPORT	VEL (MPH)	7.3	8.8	5.1	4.8	6.4	5.1	7.6	7.6	8.5	7.7
	SPD (MPH)	7.5	9.9	5.6	7.0	6.6	5.3	7.9	7.9	8.9	8.1
	RATIO	0.977	0.882	0.911	0.682	0.961	0.964	0.957	0.963	0.955	0.959
METEOROLOGICAL SITE	DIR (DEG)	280	260	230	230	290	220	240	230	280	260
WORCESTER	VEL (MPH)	7.2	5.7	2.8	8.7	8.3	4.5	5.5	6.5	4.7	9.6
	SPD (MPH)	8.1	10.1	7.9	9.8	8.5	5.0	5.9	6.9	11.2	9.6
	RATIO	0.893	0.562	0.348	0.888	0.976	0.894	0.932	0.943	0.420	0.992
DANBURY-002 (57)	TSP	92	89	85	73	73	72	71	70	63	63
	DATE	6/11/84	3/ 1/84	7/11/84	2/24/84	3/19/84	3/ 7/84	4/30/84	6/ 5/84	2/12/84	3/25/84
METEOROLOGICAL SITE	DIR (DEG)	260	270	230	340	10	330	210	220	270	50
NEWARK	VEL (MPH)	9.8	15.9	7.6	8.6	10.4	12.6	9.4	6.7	1.9	3.0
	SPD (MPH)	11.6	16.2	9.6	12.9	10.8	13.5	11.1	7.9	2.2	5.8
	RATIO	0.840	0.978	0.791	0.665	0.966	0.932	0.849	0.849	0.881	0.519
METEOROLOGICAL SITE	DIR (DEG)	260	280	180	360	360	340	200	250	240	180
BRADLEY	VEL (MPH)	6.4	9.3	7.1	9.4	7.2	10.4	10.6	1.6	2.5	2.5
	SPD (MPH)	9.5	10.1	7.3	11.2	7.3	10.6	11.1	4.6	3.3	3.0
	RATIO	0.672	0.925	0.973	0.840	0.977	0.979	0.955	0.338	0.759	0.812
METEOROLOGICAL SITE	DIR (DEG)	240	270	170	350	330	320	200	240	240	130
BRIDGEPORT	VEL (MPH)	7.3	14.6	5.1	9.1	9.9	9.1	4.8	6.4	3.3	2.9
	SPD (MPH)	7.5	14.7	5.6	10.6	10.2	9.5	7.0	6.6	5.6	4.7
	RATIO	0.977	0.997	0.911	0.857	0.969	0.964	0.682	0.961	0.581	0.608
METEOROLOGICAL SITE	DIR (DEG)	280	280	230	360	40	290	230	290	290	310
WORCESTER	VEL (MPH)	7.2	13.7	2.8	9.8	9.1	11.0	8.7	8.3	8.1	5.2
	SPD (MPH)	8.1	13.8	7.9	12.9	9.2	11.2	9.8	8.5	8.3	6.5
	RATIO	0.893	0.991	0.348	0.758	0.992	0.977	0.888	0.976	0.969	0.811
DANBURY-123 (57)	TSP	96	96	81	80	79	77	75	75	71	69
	DATE	6/11/84	11/26/84	2/24/84	4/30/84	3/ 1/84	8/28/84	7/11/84	10/ 9/84	3/31/84	6/ 5/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	340	210	270	200	230	220	330	220
NEWARK	VEL (MPH)	9.8	6.3	8.6	9.4	15.9	7.3	7.6	4.6	11.7	6.7
	SPD (MPH)	11.6	6.8	12.9	11.1	16.2	8.1	9.6	6.0	12.5	7.9
	RATIO	0.840	0.939	0.665	0.849	0.978	0.913	0.791	0.758	0.935	0.849
METEOROLOGICAL SITE	DIR (DEG)	260	190	360	200	280	200	180	60	360	250
BRADLEY	VEL (MPH)	6.4	3.0	9.4	10.6	9.3	7.1	7.1	1.5	6.0	1.6
	SPD (MPH)	9.5	3.2	11.2	11.1	10.1	7.2	7.3	4.6	6.8	4.6
	RATIO	0.672	0.934	0.840	0.955	0.925	0.983	0.973	0.336	0.882	0.338

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	240	250	350	200	270	210	170	230	330	240
	VEL (MPH)	7.3	7.7	9.1	4.8	14.6	7.6	5.1	3.3	8.1	6.4
	SPD (MPH)	7.5	8.1	10.6	7.0	14.7	7.9	5.6	4.0	8.9	6.6
	RATIO	0.977	0.959	0.857	0.682	0.997	0.957	0.911	0.816	0.905	0.961
METEOROLOGICAL SITE WORCESTER	DIR (DEG)	280	260	360	230	280	240	230	360	330	290
	VEL (MPH)	7.2	9.6	9.8	8.7	13.7	5.5	2.8	1.3	7.8	8.3
	SPD (MPH)	8.1	9.6	12.9	9.8	13.8	5.9	7.9	4.3	7.9	8.5
	RATIO	0.893	0.992	0.758	0.888	0.991	0.932	0.348	0.299	0.983	0.976
EAST HARTFORD-004 (57)	TSP	102	96	79	68	65	65	62	62	61	60
	DATE	6/11/84	11/26/84	6/ 5/84	4/30/84	1/25/84	4/12/84	7/11/84	7/23/84	7/ 5/84	2/12/84
METEOROLOGICAL SITE NEWARK	DIR (DEG)	260	210	220	210	250	190	230	240	210	270
	VEL (MPH)	9.8	6.3	6.7	9.4	10.8	3.3	7.6	10.4	13.6	1.9
	SPD (MPH)	11.6	6.8	7.9	11.1	11.1	7.6	9.6	10.6	14.4	2.2
	RATIO	0.840	0.939	0.849	0.849	0.975	0.438	0.791	0.975	0.948	0.881
METEOROLOGICAL SITE BRADLEY	DIR (DEG)	260	190	250	200	240	110	180	210	200	240
	VEL (MPH)	6.4	3.0	1.6	10.6	5.1	2.3	7.1	7.6	9.9	2.5
	SPD (MPH)	9.5	3.2	4.6	11.1	7.6	5.2	7.3	8.3	10.1	3.3
	RATIO	0.672	0.934	0.338	0.955	0.667	0.445	0.973	0.909	0.982	0.759
METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	240	250	240	200	250	140	170	230	210	240
	VEL (MPH)	7.3	7.7	6.4	4.8	10.2	5.3	5.1	8.5	8.8	3.3
	SPD (MPH)	7.5	8.1	6.6	7.0	10.5	8.5	5.6	8.9	9.9	5.6
	RATIO	0.977	0.959	0.961	0.682	0.971	0.623	0.911	0.955	0.882	0.581
METEOROLOGICAL SITE WORCESTER	DIR (DEG)	280	260	290	230	270	60	230	280	260	290
	VEL (MPH)	7.2	9.6	8.3	8.7	11.8	3.5	2.8	4.7	5.7	8.1
	SPD (MPH)	8.1	9.6	8.5	9.8	12.2	4.6	7.9	11.2	10.1	8.3
	RATIO	0.893	0.992	0.976	0.888	0.966	0.757	0.348	0.420	0.562	0.969
GREENWICH-008 (61)	TSP	97	91	69	65	64	62	61	58	58	57
	DATE	11/26/84	6/11/84	6/ 5/84	7/11/84	2/12/84	4/30/84	8/22/84	1/ 1/84	8/16/84	2/24/84
METEOROLOGICAL SITE NEWARK	DIR (DEG)	210	260	220	230	270	210	220	20	330	340
	VEL (MPH)	6.3	9.8	6.7	7.6	1.9	9.4	9.4	6.4	7.1	8.6
	SPD (MPH)	6.8	11.6	7.9	9.6	2.2	11.1	10.2	7.8	8.3	12.9
	RATIO	0.939	0.840	0.849	0.791	0.881	0.849	0.916	0.819	0.853	0.665
METEOROLOGICAL SITE BRADLEY	DIR (DEG)	190	260	250	180	240	200	220	20	340	360
	VEL (MPH)	3.0	6.4	1.6	7.1	2.5	10.6	5.1	5.2	3.8	9.4
	SPD (MPH)	3.2	9.5	4.6	7.3	3.3	11.1	5.3	6.0	4.7	11.2
	RATIO	0.934	0.672	0.338	0.973	0.759	0.955	0.967	0.864	0.800	0.840
METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	250	240	240	170	240	200	220	30	250	350
	VEL (MPH)	7.7	7.3	6.4	5.1	3.3	4.8	8.8	8.3	6.0	9.1
	SPD (MPH)	8.1	7.5	6.6	5.6	5.6	7.0	9.3	8.5	8.1	10.6
	RATIO	0.959	0.977	0.961	0.911	0.581	0.682	0.937	0.980	0.748	0.857
METEOROLOGICAL SITE WORCESTER	DIR (DEG)	260	280	290	230	290	230	280	10	320	360
	VEL (MPH)	9.6	7.2	8.3	2.8	8.1	8.7	4.5	6.5	5.9	9.8
	SPD (MPH)	9.6	8.1	8.5	7.9	8.3	9.8	7.8	8.1	6.8	12.9
	RATIO	0.992	0.893	0.976	0.348	0.969	0.888	0.584	0.812	0.879	0.758

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
GROTON-006 (56)	TSP	109	90	79	75	69	69	69	62	62	60
	DATE	6/11/84	6/ 5/84	8/ 4/84	5/24/84	1/25/84	2/ 6/84	12/ 8/84	7/11/84	11/26/84	8/16/84
METEOROLOGICAL SITE	DIR (DEG)	260	220	350	290	250	290	250	230	210	330
NEWARK	VEL (MPH)	9.8	6.7	1.0	11.0	10.8	6.3	10.1	7.6	6.3	7.1
	SPD (MPH)	11.6	7.9	7.0	11.5	11.1	9.5	12.7	9.6	6.8	8.3
	RATIO	0.840	0.849	0.147	0.952	0.975	0.665	0.797	0.791	0.939	0.853
METEOROLOGICAL SITE	DIR (DEG)	260	250	340	330	240	280	250	180	190	340
BRADLEY	VEL (MPH)	6.4	1.6	2.5	6.4	5.1	7.5	7.2	7.1	3.0	3.8
	SPD (MPH)	9.5	4.6	4.2	8.8	7.6	9.8	8.6	7.3	3.2	4.7
	RATIO	0.672	0.338	0.597	0.731	0.667	0.772	0.829	0.973	0.934	0.800
METEOROLOGICAL SITE	DIR (DEG)	240	240	140	300	250	290	260	170	250	250
BRIDGEPORT	VEL (MPH)	7.3	6.4	2.7	5.4	10.2	5.2	12.3	5.1	7.7	6.0
	SPD (MPH)	7.5	6.6	5.9	7.3	10.5	9.8	12.9	5.6	8.1	8.1
	RATIO	0.977	0.961	0.451	0.732	0.971	0.530	0.950	0.911	0.959	0.748
METEOROLOGICAL SITE	DIR (DEG)	280	290	310	300	270	280	240	230	260	320
WORCESTER	VEL (MPH)	7.2	8.3	3.4	10.3	11.8	9.1	9.2	2.8	9.6	5.9
	SPD (MPH)	8.1	8.5	4.9	11.1	12.2	10.1	9.6	7.9	9.6	6.8
	RATIO	0.893	0.976	0.687	0.930	0.966	0.904	0.958	0.348	0.992	0.879
HADDAM-002 (60)	TSP	79	75	56	56	53	51	48	46	45	42
	DATE	6/11/84	1/19/84	5/ 6/84	11/26/84	7/ 5/84	6/ 5/84	7/23/84	8/ 4/84	7/11/84	8/16/84
METEOROLOGICAL SITE	DIR (DEG)	260	330	140	210	210	220	240	350	230	330
NEWARK	VEL (MPH)	9.8	10.0	2.1	6.3	13.6	6.7	10.4	1.0	7.6	7.1
	SPD (MPH)	11.6	11.9	6.9	6.8	14.4	7.9	10.6	7.0	9.6	8.3
	RATIO	0.840	0.834	0.302	0.939	0.948	0.849	0.975	0.147	0.791	0.853
METEOROLOGICAL SITE	DIR (DEG)	260	340	190	190	200	250	210	340	180	340
BRADLEY	VEL (MPH)	6.4	7.1	3.6	3.0	9.9	1.6	7.6	2.5	7.1	3.8
	SPD (MPH)	9.5	7.3	3.7	3.2	10.1	4.6	8.3	4.2	7.3	4.7
	RATIO	0.672	0.964	0.954	0.934	0.982	0.338	0.909	0.597	0.973	0.800
METEOROLOGICAL SITE	DIR (DEG)	240	340	190	250	210	240	230	140	170	250
BRIDGEPORT	VEL (MPH)	7.3	10.7	4.6	7.7	8.8	6.4	8.5	2.7	5.1	6.0
	SPD (MPH)	7.5	11.4	6.2	8.1	9.9	6.6	8.9	5.9	5.6	8.1
	RATIO	0.977	0.943	0.741	0.959	0.882	0.961	0.955	0.451	0.911	0.748
METEOROLOGICAL SITE	DIR (DEG)	280	320	310	260	260	290	280	310	230	320
WORCESTER	VEL (MPH)	7.2	6.9	6.3	9.6	5.7	8.3	4.7	3.4	2.8	5.9
	SPD (MPH)	8.1	8.2	7.3	9.6	10.1	8.5	11.2	4.9	7.9	6.8
	RATIO	0.893	0.846	0.854	0.992	0.562	0.976	0.420	0.687	0.348	0.879
HARTFORD-003 (60)	TSP	110	107	89	87	74	74	73	72	68	67
	DATE	6/11/84	11/26/84	4/30/84	6/ 5/84	1/ 1/84	5/18/84	2/ 6/84	7/11/84	12/20/84	7/ 5/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	210	220	20	320	290	230	260	210
NEWARK	VEL (MPH)	9.8	6.3	9.4	6.7	6.4	6.5	6.3	7.6	5.6	13.6
	SPD (MPH)	11.6	6.8	11.1	7.9	7.8	10.9	9.5	9.6	9.3	14.4
	RATIO	0.840	0.939	0.849	0.849	0.819	0.592	0.665	0.791	0.597	0.948
METEOROLOGICAL SITE	DIR (DEG)	260	190	200	250	20	350	280	180	290	200
BRADLEY	VEL (MPH)	6.4	3.0	10.6	1.6	5.2	5.3	7.5	7.1	4.4	9.9
	SPD (MPH)	9.5	3.2	11.1	4.6	6.0	7.0	9.8	7.3	6.0	10.1
	RATIO	0.672	0.934	0.955	0.338	0.864	0.755	0.772	0.973	0.727	0.982

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	240	250	200	240	30	290	290	170	280	210
	VEL (MPH)	7.3	7.7	4.8	6.4	8.3	4.9	5.2	5.1	7.3	8.8
	SPD (MPH)	7.5	8.1	7.0	6.6	8.5	6.9	9.8	5.6	7.8	9.9
	RATIO	0.977	0.959	0.682	0.961	0.980	0.709	0.530	0.911	0.944	0.882
METEOROLOGICAL SITE WORCESTER	DIR (DEG)	280	260	230	290	10	330	280	230	260	260
	VEL (MPH)	7.2	9.6	8.7	8.3	6.5	7.4	9.1	2.8	9.5	5.7
	SPD (MPH)	8.1	9.6	9.8	8.5	8.1	8.1	10.1	7.9	9.9	10.1
	RATIO	0.893	0.992	0.888	0.976	0.812	0.923	0.904	0.348	0.958	0.562
HARTFORD-013 (57)	TSP	110	110	88	82	81	76	67	66	66	63
	DATE	6/11/84	11/26/84	4/30/84	7/11/84	7/ 5/84	6/ 6/84	1/ 1/84	8/22/84	8/28/84	9/ 9/84
METEOROLOGICAL SITE NEWARK	DIR (DEG)	260	210	210	230	210	230	20	220	200	180
	VEL (MPH)	9.8	6.3	9.4	7.6	13.6	6.8	6.4	9.4	7.3	7.3
	SPD (MPH)	11.6	6.8	11.1	9.6	14.4	7.9	7.8	10.2	8.1	8.5
	RATIO	0.840	0.939	0.849	0.791	0.948	0.856	0.819	0.916	0.913	0.859
METEOROLOGICAL SITE BRADLEY	DIR (DEG)	260	190	200	180	200	200	20	220	200	200
	VEL (MPH)	6.4	3.0	10.6	7.1	9.9	3.3	5.2	5.1	7.1	6.2
	SPD (MPH)	9.5	3.2	11.1	7.3	10.1	5.0	6.0	5.3	7.2	6.5
	RATIO	0.672	0.934	0.955	0.973	0.982	0.665	0.864	0.967	0.983	0.962
METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	240	250	200	170	210	220	30	220	210	210
	VEL (MPH)	7.3	7.7	4.8	5.1	8.8	5.4	8.3	8.8	7.6	5.0
	SPD (MPH)	7.5	8.1	7.0	5.6	9.9	6.0	8.5	9.3	7.9	6.2
	RATIO	0.977	0.959	0.682	0.911	0.882	0.900	0.980	0.937	0.957	0.804
METEOROLOGICAL SITE WORCESTER	DIR (DEG)	280	260	230	230	260	280	10	280	240	240
	VEL (MPH)	7.2	9.6	8.7	2.8	5.7	2.7	6.5	4.5	5.5	5.3
	SPD (MPH)	8.1	9.6	9.8	7.9	10.1	4.9	8.1	7.8	5.9	7.8
	RATIO	0.893	0.992	0.888	0.348	0.562	0.553	0.812	0.584	0.932	0.687
HARTFORD-014 (60)	TSP	95	91	85	75	71	70	67	67	66	62
	DATE	6/11/84	11/26/84	4/30/84	1/ 1/84	2/12/84	9/21/84	6/ 5/84	7/11/84	2/ 6/84	3/25/84
METEOROLOGICAL SITE NEWARK	DIR (DEG)	260	210	210	20	270	330	220	230	290	50
	VEL (MPH)	9.8	6.3	9.4	6.4	1.9	8.1	6.7	7.6	6.3	3.0
	SPD (MPH)	11.6	6.8	11.1	7.8	2.2	9.9	7.9	9.6	9.5	5.8
	RATIO	0.840	0.939	0.849	0.819	0.881	0.820	0.849	0.791	0.665	0.519
METEOROLOGICAL SITE BRADLEY	DIR (DEG)	260	190	200	20	240	330	250	180	280	180
	VEL (MPH)	6.4	3.0	10.6	5.2	2.5	8.4	1.6	7.1	7.5	2.5
	SPD (MPH)	9.5	3.2	11.1	6.0	3.3	8.9	4.6	7.3	9.8	3.0
	RATIO	0.672	0.934	0.955	0.864	0.759	0.944	0.338	0.973	0.772	0.812
METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	240	250	200	30	240	330	240	170	290	130
	VEL (MPH)	7.3	7.7	4.8	8.3	3.3	7.9	6.4	5.1	5.2	2.9
	SPD (MPH)	7.5	8.1	7.0	8.5	5.6	8.6	6.6	5.6	9.8	4.7
	RATIO	0.977	0.959	0.682	0.980	0.581	0.911	0.961	0.911	0.530	0.608
METEOROLOGICAL SITE WORCESTER	DIR (DEG)	280	260	230	10	290	310	290	230	280	310
	VEL (MPH)	7.2	9.6	8.7	6.5	8.1	6.0	8.3	2.8	9.1	5.2
	SPD (MPH)	8.1	9.6	9.8	8.1	8.3	6.3	8.5	7.9	10.1	6.5
	RATIO	0.893	0.992	0.888	0.812	0.969	0.950	0.976	0.348	0.904	0.811

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)		RANK	1	2	3	4	5	6	7	8	9	10
MANCHESTER-001 (60)		TSP	91	66	62	57	54	53	52	50	49	49
		DATE	6/11/84	11/26/84	6/ 5/84	4/30/84	5/18/84	1/ 1/84	7/11/84	7/ 5/84	5/ 6/84	6/23/84
	METEOROLOGICAL SITE NEWARK	DIR (DEG)	260	210	220	210	320	20	230	210	140	210
		VEL (MPH)	9.8	6.3	6.7	9.4	6.5	6.4	7.6	13.6	2.1	10.0
		SPD (MPH)	11.6	6.8	7.9	11.1	10.9	7.8	9.6	14.4	6.9	10.4
		RATIO	0.840	0.939	0.849	0.849	0.592	0.819	0.791	0.948	0.302	0.966
	METEOROLOGICAL SITE BRADLEY	DIR (DEG)	260	190	250	200	350	20	180	200	190	220
		VEL (MPH)	6.4	3.0	1.6	10.6	5.3	5.2	7.1	9.9	3.6	2.8
		SPD (MPH)	9.5	3.2	4.6	11.1	7.0	6.0	7.3	10.1	3.7	4.9
		RATIO	0.672	0.934	0.338	0.955	0.755	0.864	0.973	0.982	0.954	0.579
	METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	240	250	240	200	290	30	170	210	190	220
		VEL (MPH)	7.3	7.7	6.4	4.8	4.9	8.3	5.1	8.8	4.6	6.1
		SPD (MPH)	7.5	8.1	6.6	7.0	6.9	8.5	5.6	9.9	6.2	6.2
		RATIO	0.977	0.959	0.961	0.682	0.709	0.980	0.911	0.882	0.741	0.990
	METEOROLOGICAL SITE WORCESTER	DIR (DEG)	280	260	290	230	330	10	230	260	310	340
		VEL (MPH)	7.2	9.6	8.3	8.7	7.4	6.5	2.8	5.7	6.3	2.1
		SPD (MPH)	8.1	9.6	8.5	9.8	8.1	8.1	7.9	10.1	7.3	7.5
		RATIO	0.893	0.992	0.976	0.888	0.923	0.812	0.348	0.562	0.854	0.285
MERIDEN-002 (60)		TSP	116	92	72	72	72	67	64	64	63	63
		DATE	11/26/84	6/11/84	2/12/84	4/30/84	6/ 5/84	1/ 1/84	8/ 4/84	8/16/84	7/11/84	8/22/84
	METEOROLOGICAL SITE NEWARK	DIR (DEG)	210	260	270	210	220	20	350	330	230	220
		VEL (MPH)	6.3	9.8	1.9	9.4	6.7	6.4	1.0	7.1	7.6	9.4
		SPD (MPH)	6.8	11.6	2.2	11.1	7.9	7.8	7.0	8.3	9.6	10.2
		RATIO	0.939	0.840	0.881	0.849	0.849	0.819	0.147	0.853	0.791	0.916
	METEOROLOGICAL SITE BRADLEY	DIR (DEG)	190	260	240	200	250	20	340	340	180	220
		VEL (MPH)	3.0	6.4	2.5	10.6	1.6	5.2	2.5	3.8	7.1	5.1
		SPD (MPH)	3.2	9.5	3.3	11.1	4.6	6.0	4.2	4.7	7.3	5.3
		RATIO	0.934	0.672	0.759	0.955	0.338	0.864	0.597	0.800	0.973	0.967
	METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	250	240	240	200	240	30	140	250	170	220
		VEL (MPH)	7.7	7.3	3.3	4.8	6.4	8.3	2.7	6.0	5.1	8.8
		SPD (MPH)	8.1	7.5	5.6	7.0	6.6	8.5	5.9	8.1	5.6	9.3
		RATIO	0.959	0.977	0.581	0.682	0.961	0.980	0.451	0.748	0.911	0.937
	METEOROLOGICAL SITE WORCESTER	DIR (DEG)	260	280	290	230	290	10	310	320	230	280
		VEL (MPH)	9.6	7.2	8.1	8.7	8.3	6.5	3.4	5.9	2.8	4.5
		SPD (MPH)	9.6	8.1	8.3	9.8	8.5	8.1	4.9	6.8	7.9	7.8
		RATIO	0.992	0.893	0.969	0.888	0.976	0.812	0.687	0.879	0.348	0.584
MIDDLETOWN-003 (55)		TSP	95	83	63	61	60	59	58	58	56	56
		DATE	6/11/84	6/ 5/84	7/ 5/84	7/11/84	8/16/84	1/ 1/84	2/12/84	8/ 4/84	7/23/84	8/22/84
	METEOROLOGICAL SITE NEWARK	DIR (DEG)	260	220	210	230	330	20	270	350	240	220
		VEL (MPH)	9.8	6.7	13.6	7.6	7.1	6.4	1.9	1.0	10.4	9.4
		SPD (MPH)	11.6	7.9	14.4	9.6	8.3	7.8	2.2	7.0	10.6	10.2
		RATIO	0.840	0.849	0.948	0.791	0.853	0.819	0.881	0.147	0.975	0.916
	METEOROLOGICAL SITE BRADLEY	DIR (DEG)	260	250	200	180	340	20	240	340	210	220
		VEL (MPH)	6.4	1.6	9.9	7.1	3.8	5.2	2.5	2.5	7.6	5.1
		SPD (MPH)	9.5	4.6	10.1	7.3	4.7	6.0	3.3	4.2	8.3	5.3
		RATIO	0.672	0.338	0.982	0.973	0.800	0.864	0.759	0.597	0.909	0.967

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	240	240	210	170	250	30	240	140	230	220
	VEL (MPH)	7.3	6.4	8.8	5.1	6.0	8.3	3.3	2.7	8.5	8.8
	SPD (MPH)	7.5	6.6	9.9	5.6	8.1	8.5	5.6	5.9	8.9	9.3
	RATIO	0.977	0.961	0.882	0.911	0.748	0.980	0.581	0.451	0.955	0.937
METEOROLOGICAL SITE WORCESTER	DIR (DEG)	280	290	260	230	320	10	290	310	280	280
	VEL (MPH)	7.2	8.3	5.7	2.8	5.9	6.5	8.1	3.4	4.7	4.5
	SPD (MPH)	8.1	8.5	10.1	7.9	6.8	8.1	8.3	4.9	11.2	7.8
	RATIO	0.893	0.976	0.562	0.348	0.879	0.812	0.969	0.687	0.420	0.584
				NW				NW			
MILFORD-002 (61)	TSP	79	71	67	67	66	65	64	61	60	59
	DATE	11/26/84	4/30/84	1/31/84	2/12/84	7/11/84	6/ 5/84	8/16/84	8/22/84	1/25/84	6/11/84
METEOROLOGICAL SITE NEWARK	DIR (DEG)	210	210	320	270	230	220	330	220	250	260
	VEL (MPH)	6.3	9.4	17.3	1.9	7.6	6.7	7.1	9.4	10.8	9.8
	SPD (MPH)	6.8	11.1	18.4	2.2	9.6	7.9	8.3	10.2	11.1	11.6
	RATIO	0.939	0.849	0.942	0.881	0.791	0.849	0.853	0.916	0.975	0.840
METEOROLOGICAL SITE BRADLEY	DIR (DEG)	190	200	330	240	180	250	340	220	240	260
	VEL (MPH)	3.0	10.6	11.9	2.5	7.1	1.6	3.8	5.1	5.1	6.4
	SPD (MPH)	3.2	11.1	12.5	3.3	7.3	4.6	4.7	5.3	7.6	9.5
	RATIO	0.934	0.955	0.954	0.759	0.973	0.338	0.800	0.967	0.667	0.672
METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	250	200	320	240	170	240	250	220	250	240
	VEL (MPH)	7.7	4.8	14.0	3.3	5.1	6.4	6.0	8.8	10.2	7.3
	SPD (MPH)	8.1	7.0	16.1	5.6	5.6	6.6	8.1	9.3	10.5	7.5
	RATIO	0.959	0.682	0.867	0.581	0.911	0.961	0.748	0.937	0.971	0.977
METEOROLOGICAL SITE WORCESTER	DIR (DEG)	260	230	330	290	230	290	320	280	270	280
	VEL (MPH)	9.6	8.7	12.1	8.1	2.8	8.3	5.9	4.5	11.8	7.2
	SPD (MPH)	9.6	9.8	13.2	8.3	7.9	8.5	6.8	7.8	12.2	8.1
	RATIO	0.992	0.888	0.913	0.969	0.348	0.976	0.879	0.584	0.966	0.893
					SE	NE		NE	NE		NW
MORRIS-001 (15)	TSP	48	46	41	38	32	32	30	27	27	27
	DATE	11/26/84	10/ 9/84	10/ 3/84	10/21/84	11/ 8/84	12/ 8/84	10/15/84	12/14/84	12/20/84	12/26/84
METEOROLOGICAL SITE NEWARK	DIR (DEG)	210	220	230	90	30	250	30	30	260	280
	VEL (MPH)	6.3	4.6	13.4	5.1	4.3	10.1	5.5	10.8	5.6	7.9
	SPD (MPH)	6.8	6.0	13.7	7.0	6.9	12.7	8.6	11.9	9.3	11.8
	RATIO	0.939	0.758	0.981	0.720	0.617	0.797	0.636	0.903	0.597	0.672
METEOROLOGICAL SITE BRADLEY	DIR (DEG)	190	60	230	190	350	250	10	40	290	290
	VEL (MPH)	3.0	1.5	8.6	3.3	3.5	7.2	7.1	8.5	4.4	3.3
	SPD (MPH)	3.2	4.6	8.9	5.5	5.8	8.6	7.6	9.8	6.0	7.2
	RATIO	0.934	0.336	0.970	0.612	0.604	0.829	0.934	0.872	0.727	0.458
METEOROLOGICAL SITE BRIDGEPORT	DIR (DEG)	250	230	240	100	40	260	40	50	280	290
	VEL (MPH)	7.7	3.3	13.6	4.0	5.0	12.3	5.7	9.7	7.3	7.9
	SPD (MPH)	8.1	4.0	13.9	6.0	8.2	12.9	6.8	10.4	7.8	11.5
	RATIO	0.959	0.816	0.973	0.658	0.609	0.950	0.847	0.936	0.944	0.687
METEOROLOGICAL SITE WORCESTER	DIR (DEG)	260	360	250	240	50	240	30	40	260	270
	VEL (MPH)	9.6	1.3	9.8	2.8	3.9	9.2	7.4	7.6	9.5	13.1
	SPD (MPH)	9.6	4.3	10.8	7.2	5.6	9.6	7.8	9.5	9.9	14.7
	RATIO	0.992	0.299	0.914	0.392	0.701	0.958	0.958	0.805	0.958	0.891

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
NAUGATUCK-001 (59)	TSP	100	98	76	74	71	71	71	70	64	64
	DATE	11/26/84	6/11/84	7/11/84	1/ 1/84	2/12/84	3/31/84	4/30/84	6/ 5/84	7/ 5/84	8/22/84
METEOROLOGICAL SITE	DIR (DEG)	210	260	230	20	270	330	210	220	210	220
NEWARK	VEL (MPH)	6.3	9.8	7.6	6.4	1.9	11.7	9.4	6.7	13.6	9.4
	SPD (MPH)	6.8	11.6	9.6	7.8	2.2	12.5	11.1	7.9	14.4	10.2
	RATIO	0.939	0.840	0.791	0.819	0.881	0.935	0.849	0.849	0.948	0.916
METEOROLOGICAL SITE	DIR (DEG)	190	260	180	20	240	360	200	250	200	220
BRADLEY	VEL (MPH)	3.0	6.4	7.1	5.2	2.5	6.0	10.6	1.6	9.9	5.1
	SPD (MPH)	3.2	9.5	7.3	6.0	3.3	6.8	11.1	4.6	10.1	5.3
	RATIO	0.934	0.672	0.973	0.864	0.759	0.882	0.955	0.338	0.982	0.967
METEOROLOGICAL SITE	DIR (DEG)	250	240	170	30	240	330	200	240	210	220
BRIDGEPORT	VEL (MPH)	7.7	7.3	5.1	8.3	3.3	8.1	4.8	6.4	8.8	8.8
	SPD (MPH)	8.1	7.5	5.6	8.5	5.6	8.9	7.0	6.6	9.9	9.3
	RATIO	0.959	0.977	0.911	0.980	0.581	0.905	0.682	0.961	0.882	0.937
METEOROLOGICAL SITE	DIR (DEG)	260	280	230	10	290	330	230	290	260	280
WORCESTER	VEL (MPH)	9.6	7.2	2.8	6.5	8.1	7.8	8.7	8.3	5.7	4.5
	SPD (MPH)	9.6	8.1	7.9	8.1	8.3	7.9	9.8	8.5	10.1	7.8
	RATIO	0.992	0.893	0.348	0.812	0.969	0.983	0.888	0.976	0.562	0.584
NEW BRITAIN-007 (59)	TSP	90	87	68	68	59	58	56	56	55	53
	DATE	11/26/84	6/11/84	4/30/84	7/11/84	2/ 6/84	6/ 5/84	2/12/84	7/ 5/84	6/23/84	8/22/84
METEOROLOGICAL SITE	DIR (DEG)	210	260	210	230	290	220	270	210	210	220
NEWARK	VEL (MPH)	6.3	9.8	9.4	7.6	6.3	6.7	1.9	13.6	10.0	9.4
	SPD (MPH)	6.8	11.6	11.1	9.6	9.5	7.9	2.2	14.4	10.4	10.2
	RATIO	0.939	0.840	0.849	0.791	0.665	0.849	0.881	0.948	0.966	0.916
METEOROLOGICAL SITE	DIR (DEG)	190	260	200	180	280	250	240	200	220	220
BRADLEY	VEL (MPH)	3.0	6.4	10.6	7.1	7.5	1.6	2.5	9.9	2.8	5.1
	SPD (MPH)	3.2	9.5	11.1	7.3	9.8	4.6	3.3	10.1	4.9	5.3
	RATIO	0.934	0.672	0.955	0.973	0.772	0.338	0.759	0.982	0.579	0.967
METEOROLOGICAL SITE	DIR (DEG)	250	240	200	170	290	240	240	210	220	220
BRIDGEPORT	VEL (MPH)	7.7	7.3	4.8	5.1	5.2	6.4	3.3	8.8	6.1	8.8
	SPD (MPH)	8.1	7.5	7.0	5.6	9.8	6.6	5.6	9.9	6.2	9.3
	RATIO	0.959	0.977	0.682	0.911	0.530	0.961	0.581	0.882	0.990	0.937
METEOROLOGICAL SITE	DIR (DEG)	260	280	230	230	280	290	290	260	340	280
WORCESTER	VEL (MPH)	9.6	7.2	8.7	2.8	9.1	8.3	8.1	5.7	2.1	4.5
	SPD (MPH)	9.6	8.1	9.8	7.9	10.1	8.5	8.3	10.1	7.5	7.8
	RATIO	0.992	0.893	0.888	0.348	0.904	0.976	0.969	0.562	0.285	0.584
NEW BRITAIN-008 (61)	TSP	101	90	71	68	67	60	59	56	56	54
	DATE	6/11/84	11/26/84	7/11/84	2/12/84	6/ 5/84	3/25/84	7/ 5/84	5/24/84	8/22/84	6/23/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	230	270	220	50	210	290	220	210
NEWARK	VEL (MPH)	9.8	6.3	7.6	1.9	6.7	3.0	13.6	11.0	9.4	10.0
	SPD (MPH)	11.6	6.8	9.6	2.2	7.9	5.8	14.4	11.5	10.2	10.4
	RATIO	0.840	0.939	0.791	0.881	0.849	0.519	0.948	0.952	0.916	0.966
METEOROLOGICAL SITE	DIR (DEG)	260	190	180	240	250	180	200	330	220	220
BRADLEY	VEL (MPH)	6.4	3.0	7.1	2.5	1.6	2.5	9.9	6.4	5.1	2.8
	SPD (MPH)	9.5	3.2	7.3	3.3	4.6	3.0	10.1	8.8	5.3	4.9
	RATIO	0.672	0.934	0.973	0.759	0.338	0.812	0.982	0.731	0.967	0.579

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	240	250	170	240	240	130	210	300	220	220
BRIDGEPORT	VEL (MPH)	7.3	7.7	5.1	3.3	6.4	2.9	8.8	5.4	8.8	6.1
	SPD (MPH)	7.5	8.1	5.6	5.6	6.6	4.7	9.9	7.3	9.3	6.2
	RATIO	0.977	0.959	0.911	0.581	0.961	0.608	0.882	0.732	0.937	0.990
METEOROLOGICAL SITE	DIR (DEG)	280	260	230	290	290	310	260	300	280	340
WORCESTER	VEL (MPH)	7.2	9.6	2.8	8.1	8.3	5.2	5.7	10.3	4.5	2.1
	SPD (MPH)	8.1	9.6	7.9	8.3	8.5	6.5	10.1	11.1	7.8	7.5
	RATIO	0.893	0.992	0.348	0.969	0.976	0.811	0.562	0.930	0.584	0.285
NEW BRITAIN-009 (60)	TSP	94	81	68	66	61	60	57	57	55	53
	DATE	6/11/84	11/26/84	7/11/84	4/30/84	6/ 5/84	1/ 1/84	3/25/84	7/ 5/84	8/22/84	6/23/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	230	210	220	20	50	210	220	210
NEWARK	VEL (MPH)	9.8	6.3	7.6	9.4	6.7	6.4	3.0	13.6	9.4	10.0
	SPD (MPH)	11.6	6.8	9.6	11.1	7.9	7.8	5.8	14.4	10.2	10.4
	RATIO	0.840	0.939	0.791	0.849	0.849	0.819	0.519	0.948	0.916	0.966
METEOROLOGICAL SITE	DIR (DEG)	260	190	180	200	250	20	180	200	220	220
BRADLEY	VEL (MPH)	6.4	3.0	7.1	10.6	1.6	5.2	2.5	9.9	5.1	2.8
	SPD (MPH)	9.5	3.2	7.3	11.1	4.6	6.0	3.0	10.1	5.3	4.9
	RATIO	0.672	0.934	0.973	0.955	0.338	0.864	0.812	0.982	0.967	0.579
METEOROLOGICAL SITE	DIR (DEG)	240	250	170	200	240	30	130	210	220	220
BRIDGEPORT	VEL (MPH)	7.3	7.7	5.1	4.8	6.4	8.3	2.9	8.8	8.8	6.1
	SPD (MPH)	7.5	8.1	5.6	7.0	6.6	8.5	4.7	9.9	9.3	6.2
	RATIO	0.977	0.959	0.911	0.682	0.961	0.980	0.608	0.882	0.937	0.990
METEOROLOGICAL SITE	DIR (DEG)	280	260	230	230	290	10	310	260	280	340
WORCESTER	VEL (MPH)	7.2	9.6	2.8	8.7	8.3	6.5	5.2	5.7	4.5	2.1
	SPD (MPH)	8.1	9.6	7.9	9.8	8.5	8.1	6.5	10.1	7.8	7.5
	RATIO	0.893	0.992	0.348	0.888	0.976	0.812	0.811	0.562	0.584	0.285
NEW HAVEN-002 (54)	TSP	110	87	80	79	76	74	68	67	67	66
	DATE	11/26/84	6/ 5/84	6/11/84	4/12/84	8/22/84	8/ 4/84	12/20/84	4/30/84	5/24/84	10/ 9/84
METEOROLOGICAL SITE	DIR (DEG)	210	220	260	190	220	350	260	210	290	220
NEWARK	VEL (MPH)	6.3	6.7	9.8	3.3	9.4	1.0	5.6	9.4	11.0	4.6
	SPD (MPH)	6.8	7.9	11.6	7.6	10.2	7.0	9.3	11.1	11.5	6.0
	RATIO	0.939	0.849	0.840	0.438	0.916	0.147	0.597	0.849	0.952	0.758
METEOROLOGICAL SITE	DIR (DEG)	190	250	260	110	220	340	290	200	330	60
BRADLEY	VEL (MPH)	3.0	1.6	6.4	2.3	5.1	2.5	4.4	10.6	6.4	1.5
	SPD (MPH)	3.2	4.6	9.5	5.2	5.3	4.2	6.0	11.1	8.8	4.6
	RATIO	0.934	0.338	0.672	0.445	0.967	0.597	0.727	0.955	0.731	0.336
METEOROLOGICAL SITE	DIR (DEG)	250	240	240	140	220	140	280	200	300	230
BRIDGEPORT	VEL (MPH)	7.7	6.4	7.3	5.3	8.8	2.7	7.3	4.8	5.4	3.3
	SPD (MPH)	8.1	6.6	7.5	8.5	9.3	5.9	7.8	7.0	7.3	4.0
	RATIO	0.959	0.961	0.977	0.623	0.937	0.451	0.944	0.682	0.732	0.816
METEOROLOGICAL SITE	DIR (DEG)	260	290	280	60	280	310	260	230	300	360
WORCESTER	VEL (MPH)	9.6	8.3	7.2	3.5	4.5	3.4	9.5	8.7	10.3	1.3
	SPD (MPH)	9.6	8.5	8.1	4.6	7.8	4.9	9.9	9.8	11.1	4.3
	RATIO	0.992	0.976	0.893	0.757	0.584	0.687	0.958	0.888	0.930	0.299

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
NEW HAVEN-013 (59)	TSP	102	78	77	76	71	70	67	65	65	65
	DATE	11/26/84	6/ 5/84	9/15/84	2/12/84	6/11/84	3/25/84	4/30/84	4/18/84	6/29/84	8/22/84
METEOROLOGICAL SITE	DIR (DEG)	210	220	10	270	260	50	210	300	150	220
NEWARK	VEL (MPH)	6.3	6.7	10.2	1.9	9.8	3.0	9.4	2.2	6.6	9.4
	SPD (MPH)	6.8	7.9	11.6	2.2	11.6	5.8	11.1	7.6	7.2	10.2
	RATIO	0.939	0.849	0.880	0.881	0.840	0.519	0.849	0.283	0.924	0.916
METEOROLOGICAL SITE	DIR (DEG)	190	250	20	240	260	180	200	70	180	220
BRADLEY	VEL (MPH)	3.0	1.6	8.7	2.5	6.4	2.5	10.6	1.3	8.0	5.1
	SPD (MPH)	3.2	4.6	9.3	3.3	9.5	3.0	11.1	4.7	8.2	5.3
	RATIO	0.934	0.338	0.933	0.759	0.672	0.812	0.955	0.268	0.977	0.967
METEOROLOGICAL SITE	DIR (DEG)	250	240	10	240	240	130	200	90	110	220
BRIDGEPORT	VEL (MPH)	7.7	6.4	7.5	3.3	7.3	2.9	4.8	5.3	5.1	8.8
	SPD (MPH)	8.1	6.6	8.3	5.6	7.5	4.7	7.0	7.6	5.3	9.3
	RATIO	0.959	0.961	0.903	0.581	0.977	0.608	0.682	0.694	0.964	0.937
METEOROLOGICAL SITE	DIR (DEG)	260	290	20	290	280	310	230	50	220	280
WORCESTER	VEL (MPH)	9.6	8.3	9.0	8.1	7.2	5.2	8.7	3.8	4.5	4.5
	SPD (MPH)	9.6	8.5	9.6	8.3	8.1	6.5	9.8	6.0	5.0	7.8
	RATIO	0.992	0.976	0.932	0.969	0.893	0.811	0.888	0.625	0.894	0.584
NORWALK-001 (57)	TSP	108	86	82	82	79	65	65	60	60	59
	DATE	4/30/84	6/11/84	4/12/84	7/11/84	2/12/84	5/18/84	6/ 5/84	6/23/84	8/22/84	3/31/84
METEOROLOGICAL SITE	DIR (DEG)	210	260	190	230	270	320	220	210	220	330
NEWARK	VEL (MPH)	9.4	9.8	3.3	7.6	1.9	6.5	6.7	10.0	9.4	11.7
	SPD (MPH)	11.1	11.6	7.6	9.6	2.2	10.9	7.9	10.4	10.2	12.5
	RATIO	0.849	0.840	0.438	0.791	0.881	0.592	0.849	0.966	0.916	0.935
METEOROLOGICAL SITE	DIR (DEG)	200	260	110	180	240	350	250	220	220	360
BRADLEY	VEL (MPH)	10.6	6.4	2.3	7.1	2.5	5.3	1.6	2.8	5.1	6.0
	SPD (MPH)	11.1	9.5	5.2	7.3	3.3	7.0	4.6	4.9	5.3	6.8
	RATIO	0.955	0.672	0.445	0.973	0.759	0.755	0.338	0.579	0.967	0.882
METEOROLOGICAL SITE	DIR (DEG)	200	240	140	170	240	290	240	220	220	330
BRIDGEPORT	VEL (MPH)	4.8	7.3	5.3	5.1	3.3	4.9	6.4	6.1	8.8	8.1
	SPD (MPH)	7.0	7.5	8.5	5.6	5.6	6.9	6.6	6.2	9.3	8.9
	RATIO	0.682	0.977	0.623	0.911	0.581	0.709	0.961	0.990	0.937	0.905
METEOROLOGICAL SITE	DIR (DEG)	230	280	60	230	290	330	290	340	280	330
WORCESTER	VEL (MPH)	8.7	7.2	3.5	2.8	8.1	7.4	8.3	2.1	4.5	7.8
	SPD (MPH)	9.8	8.1	4.6	7.9	8.3	8.1	8.5	7.5	7.8	7.9
	RATIO	0.888	0.893	0.757	0.348	0.969	0.923	0.976	0.285	0.584	0.983
NORWALK-005 (57)	TSP	100	94	89	87	79	65	65	64	62	61
	DATE	6/11/84	2/ 6/84	2/12/84	6/ 5/84	4/30/84	7/11/84	8/22/84	5/24/84	1/31/84	8/16/84
METEOROLOGICAL SITE	DIR (DEG)	260	290	270	220	210	230	220	290	320	330
NEWARK	VEL (MPH)	9.8	6.3	1.9	6.7	9.4	7.6	9.4	11.0	17.3	7.1
	SPD (MPH)	11.6	9.5	2.2	7.9	11.1	9.6	10.2	11.5	18.4	8.3
	RATIO	0.840	0.665	0.881	0.849	0.849	0.791	0.916	0.952	0.942	0.853
METEOROLOGICAL SITE	DIR (DEG)	260	280	240	250	200	180	220	330	330	340
BRADLEY	VEL (MPH)	6.4	7.5	2.5	1.6	10.6	7.1	5.1	6.4	11.9	3.8
	SPD (MPH)	9.5	9.8	3.3	4.6	11.1	7.3	5.3	8.8	12.5	4.7
	RATIO	0.672	0.772	0.759	0.338	0.955	0.973	0.967	0.731	0.954	0.800

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	240	290	240	240	200	170	220	300	320	250
BRIDGEPORT	VEL (MPH)	7.3	5.2	3.3	6.4	4.8	5.1	8.8	5.4	14.0	6.0
	SPD (MPH)	7.5	9.8	5.6	6.6	7.0	5.6	9.3	7.3	16.1	8.1
	RATIO	0.977	0.530	0.581	0.961	0.682	0.911	0.937	0.732	0.867	0.748
METEOROLOGICAL SITE	DIR (DEG)	280	280	290	290	230	230	280	300	330	320
WORCESTER	VEL (MPH)	7.2	9.1	8.1	8.3	8.7	2.8	4.5	10.3	12.1	5.9
	SPD (MPH)	8.1	10.1	8.3	8.5	9.8	7.9	7.8	11.1	13.2	6.8
	RATIO	0.893	0.904	0.969	0.976	0.888	0.348	0.584	0.930	0.913	0.879
		✓		✓	✓	NW	✓	✓		✓	NE
NORWALK-012 (60)	TSP	93	89	79	72	71	70	70	64	64	58
	DATE	6/11/84	2/12/84	4/30/84	7/11/84	2/ 6/84	6/ 5/84	11/26/84	2/24/84	8/22/84	1/ 1/84
METEOROLOGICAL SITE	DIR (DEG)	260	270	210	230	290	220	210	340	220	20
NEWARK	VEL (MPH)	9.8	1.9	9.4	7.6	6.3	6.7	6.3	8.6	9.4	6.4
	SPD (MPH)	11.6	2.2	11.1	9.6	9.5	7.9	6.8	12.9	10.2	7.8
	RATIO	0.840	0.881	0.849	0.791	0.665	0.849	0.939	0.665	0.916	0.819
METEOROLOGICAL SITE	DIR (DEG)	260	240	200	180	280	250	190	360	220	20
BRADLEY	VEL (MPH)	6.4	2.5	10.6	7.1	7.5	1.6	3.0	9.4	5.1	5.2
	SPD (MPH)	9.5	3.3	11.1	7.3	9.8	4.6	3.2	11.2	5.3	6.0
	RATIO	0.672	0.759	0.955	0.973	0.772	0.338	0.934	0.840	0.967	0.864
METEOROLOGICAL SITE	DIR (DEG)	240	240	200	170	290	240	250	350	220	30
BRIDGEPORT	VEL (MPH)	7.3	3.3	4.8	5.1	5.2	6.4	7.7	9.1	8.8	8.3
	SPD (MPH)	7.5	5.6	7.0	5.6	9.8	6.6	8.1	10.6	9.3	8.5
	RATIO	0.977	0.581	0.682	0.911	0.530	0.961	0.959	0.857	0.937	0.980
METEOROLOGICAL SITE	DIR (DEG)	280	290	230	230	280	290	260	360	280	10
WORCESTER	VEL (MPH)	7.2	8.1	8.7	2.8	9.1	8.3	9.6	9.8	4.5	6.5
	SPD (MPH)	8.1	8.3	9.8	7.9	10.1	8.5	9.6	12.9	7.8	8.1
	RATIO	0.893	0.969	0.888	0.348	0.904	0.976	0.992	0.758	0.584	0.812
		NE	✓	NW	NW	NW		NW			✓
NORWICH-001 (20)	TSP	70	61	61	57	53	50	46	46	46	42
	DATE	1/ 1/84	1/25/84	3/31/84	1/19/84	2/ 6/84	2/12/84	1/ 7/84	3/25/84	4/18/84	4/ 6/84
METEOROLOGICAL SITE	DIR (DEG)	20	250	330	330	290	270	310	50	300	230
NEWARK	VEL (MPH)	6.4	10.8	11.7	10.0	6.3	1.9	13.3	3.0	2.2	11.3
	SPD (MPH)	7.8	11.1	12.5	11.9	9.5	2.2	13.9	5.8	7.6	12.2
	RATIO	0.819	0.975	0.935	0.834	0.665	0.881	0.954	0.519	0.283	0.923
METEOROLOGICAL SITE	DIR (DEG)	20	240	360	340	280	240	320	180	70	200
BRADLEY	VEL (MPH)	5.2	5.1	6.0	7.1	7.5	2.5	8.4	2.5	1.3	6.4
	SPD (MPH)	6.0	7.6	6.8	7.3	9.8	3.3	9.1	3.0	4.7	7.0
	RATIO	0.864	0.667	0.882	0.964	0.772	0.759	0.929	0.812	0.268	0.902
METEOROLOGICAL SITE	DIR (DEG)	30	250	330	340	290	240	320	130	90	190
BRIDGEPORT	VEL (MPH)	8.3	10.2	8.1	10.7	5.2	3.3	9.5	2.9	5.3	4.7
	SPD (MPH)	8.5	10.5	8.9	11.4	9.8	5.6	9.9	4.7	7.6	10.9
	RATIO	0.980	0.971	0.905	0.943	0.530	0.581	0.953	0.608	0.694	0.427
METEOROLOGICAL SITE	DIR (DEG)	10	270	330	320	280	290	300	310	50	220
WORCESTER	VEL (MPH)	6.5	11.8	7.8	6.9	9.1	8.1	12.4	5.2	3.8	6.1
	SPD (MPH)	8.1	12.2	7.9	8.2	10.1	8.3	12.5	6.5	6.0	6.9
	RATIO	0.812	0.966	0.983	0.866	0.904	0.969	0.989	0.811	0.625	0.887

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TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
NORWICH-002 (41)	TSP	98	86	85	79	77	74	74	69	63	59
	DATE	6/11/84	6/ 5/84	11/26/84	4/24/84	4/30/84	5/24/84	12/20/84	8/ 4/84	11/ 8/84	8/22/84
METEOROLOGICAL SITE	DIR (DEG)	260	220	210	250	210	290	260	350	30	220
NEWARK	VEL (MPH)	9.8	6.7	6.3	8.9	9.4	11.0	5.6	1.0	4.3	9.4
	SPD (MPH)	11.6	7.9	6.8	12.2	11.1	11.5	9.3	7.0	6.9	10.2
	RATIO	0.840	0.849	0.939	0.730	0.849	0.952	0.597	0.147	0.617	0.916
METEOROLOGICAL SITE	DIR (DEG)	260	250	190	10	200	330	290	340	350	220
BRADLEY	VEL (MPH)	6.4	1.6	3.0	4.8	10.6	6.4	4.4	2.5	3.5	5.1
	SPD (MPH)	9.5	4.6	3.2	5.9	11.1	8.8	6.0	4.2	5.8	5.3
	RATIO	0.672	0.338	0.934	0.820	0.955	0.731	0.727	0.597	0.604	0.967
METEOROLOGICAL SITE	DIR (DEG)	240	240	250	250	200	300	280	140	40	220
BRIDGEPORT	VEL (MPH)	7.3	6.4	7.7	5.8	4.8	5.4	7.3	2.7	5.0	8.8
	SPD (MPH)	7.5	6.6	8.1	8.3	7.0	7.3	7.8	5.9	8.2	9.3
	RATIO	0.977	0.961	0.959	0.697	0.682	0.732	0.944	0.451	0.609	0.937
METEOROLOGICAL SITE	DIR (DEG)	280	290	260	60	230	300	260	310	50	280
WORCESTER	VEL (MPH)	7.2	8.3	9.6	7.1	8.7	10.3	9.5	3.4	3.9	4.5
	SPD (MPH)	8.1	8.5	9.6	7.9	9.8	11.1	9.9	4.9	5.6	7.8
	RATIO	0.893	0.976	0.992	0.895	0.888	0.930	0.958	0.687	0.701	0.584
STAMFORD-001 (58)	TSP	117	111	106	93	86	84	83	81	73	69
	DATE	4/30/84	8/28/84	8/22/84	7/11/84	2/12/84	6/ 5/84	7/23/84	10/ 3/84	2/24/84	6/23/84
METEOROLOGICAL SITE	DIR (DEG)	210	200	220	230	270	220	240	230	340	210
NEWARK	VEL (MPH)	9.4	7.3	9.4	7.6	1.9	6.7	10.4	13.4	8.6	10.0
	SPD (MPH)	11.1	8.1	10.2	9.6	2.2	7.9	10.6	13.7	12.9	10.4
	RATIO	0.849	0.913	0.916	0.791	0.881	0.849	0.975	0.981	0.665	0.966
METEOROLOGICAL SITE	DIR (DEG)	200	200	220	180	240	250	210	230	360	220
BRADLEY	VEL (MPH)	10.6	7.1	5.1	7.1	2.5	1.6	7.6	8.6	9.4	2.8
	SPD (MPH)	11.1	7.2	5.3	7.3	3.3	4.6	8.3	8.9	11.2	4.9
	RATIO	0.955	0.983	0.967	0.973	0.759	0.338	0.909	0.970	0.840	0.579
METEOROLOGICAL SITE	DIR (DEG)	200	210	220	170	240	240	230	240	350	220
BRIDGEPORT	VEL (MPH)	4.8	7.6	8.8	5.1	3.3	6.4	8.5	13.6	9.1	6.1
	SPD (MPH)	7.0	7.9	9.3	5.6	5.6	6.6	8.9	13.9	10.6	6.2
	RATIO	0.682	0.957	0.937	0.911	0.581	0.961	0.955	0.973	0.857	0.990
METEOROLOGICAL SITE	DIR (DEG)	230	240	280	230	290	290	280	250	360	340
WORCESTER	VEL (MPH)	8.7	5.5	4.5	2.8	8.1	8.3	4.7	9.8	9.8	2.1
	SPD (MPH)	9.8	5.9	7.8	7.9	8.3	8.5	11.2	10.8	12.9	7.5
	RATIO	0.888	0.932	0.584	0.348	0.969	0.976	0.420	0.914	0.758	0.285
STAMFORD-007 (59)	TSP	116	98	76	72	72	67	67	66	65	64
	DATE	11/26/84	6/11/84	6/ 5/84	8/ 4/84	8/16/84	4/30/84	8/22/84	7/11/84	8/28/84	2/12/84
METEOROLOGICAL SITE	DIR (DEG)	210	260	220	350	330	210	220	230	200	270
NEWARK	VEL (MPH)	6.3	9.8	6.7	1.0	7.1	9.4	9.4	7.6	7.3	1.9
	SPD (MPH)	6.8	11.6	7.9	7.0	8.3	11.1	10.2	9.6	8.1	2.2
	RATIO	0.939	0.840	0.849	0.147	0.853	0.849	0.916	0.791	0.913	0.881
METEOROLOGICAL SITE	DIR (DEG)	190	260	250	340	340	200	220	180	200	240
BRADLEY	VEL (MPH)	3.0	6.4	1.6	2.5	3.8	10.6	5.1	7.1	7.1	2.5
	SPD (MPH)	3.2	9.5	4.6	4.2	4.7	11.1	5.3	7.3	7.2	3.3
	RATIO	0.934	0.672	0.338	0.597	0.800	0.955	0.967	0.973	0.983	0.759

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	250	240	240	140	250	200	220	170	210	240
BRIDGEPORT	VEL (MPH)	7.7	7.3	6.4	2.7	6.0	4.8	8.8	5.1	7.6	3.3
	SPD (MPH)	8.1	7.5	6.6	5.9	8.1	7.0	9.3	5.6	7.9	5.6
	RATIO	0.959	0.977	0.961	0.451	0.748	0.682	0.937	0.911	0.957	0.581
METEOROLOGICAL SITE	DIR (DEG)	260	280	290	310	320	230	280	230	240	290
WORCESTER	VEL (MPH)	9.6	7.2	8.3	3.4	5.9	8.7	4.5	2.8	5.5	8.1
	SPD (MPH)	9.6	8.1	8.5	4.9	6.8	9.8	7.8	7.9	5.9	8.3
	RATIO	0.992	0.893	0.976	0.687	0.879	0.888	0.584	0.348	0.932	0.969
STAMFORD-021 (57)	TSP	110	104	94	81	78	77	77	75	74	72
	DATE	6/11/84	5/18/84	6/ 5/84	2/12/84	4/30/84	4/18/84	8/16/84	7/11/84	5/24/84	2/24/84
METEOROLOGICAL SITE	DIR (DEG)	260	320	220	270	210	300	330	230	290	340
NEWARK	VEL (MPH)	9.8	6.5	6.7	1.9	9.4	2.2	7.1	7.6	11.0	8.6
	SPD (MPH)	11.6	10.9	7.9	2.2	11.1	7.6	8.3	9.6	11.5	12.9
	RATIO	0.840	0.592	0.849	0.881	0.849	0.283	0.853	0.791	0.952	0.665
METEOROLOGICAL SITE	DIR (DEG)	260	350	250	240	200	70	340	180	330	360
BRADLEY	VEL (MPH)	6.4	5.3	1.6	2.5	10.6	1.3	3.8	7.1	6.4	9.4
	SPD (MPH)	9.5	7.0	4.6	3.3	11.1	4.7	4.7	7.3	8.8	11.2
	RATIO	0.672	0.755	0.338	0.759	0.955	0.268	0.800	0.973	0.731	0.840
METEOROLOGICAL SITE	DIR (DEG)	240	290	240	240	200	90	250	170	300	350
BRIDGEPORT	VEL (MPH)	7.3	4.9	6.4	3.3	4.8	5.3	6.0	5.1	5.4	9.1
	SPD (MPH)	7.5	6.9	6.6	5.6	7.0	7.6	8.1	5.6	7.3	10.6
	RATIO	0.977	0.709	0.961	0.581	0.682	0.694	0.748	0.911	0.732	0.857
METEOROLOGICAL SITE	DIR (DEG)	280	330	290	290	230	50	320	230	300	360
WORCESTER	VEL (MPH)	7.2	7.4	8.3	8.1	8.7	3.8	5.9	2.8	10.3	9.8
	SPD (MPH)	8.1	8.1	8.5	8.3	9.8	6.0	6.8	7.9	11.1	12.9
	RATIO	0.893	0.923	0.976	0.969	0.888	0.625	0.879	0.348	0.930	0.758
STRATFORD-005 (60)	TSP	103	92	81	80	76	71	70	65	64	64
	DATE	11/26/84	2/12/84	2/ 6/84	5/24/84	4/30/84	2/24/84	6/ 5/84	6/11/84	1/25/84	10/ 3/84
METEOROLOGICAL SITE	DIR (DEG)	210	270	290	290	210	340	220	260	250	230
NEWARK	VEL (MPH)	6.3	1.9	6.3	11.0	9.4	8.6	6.7	9.8	10.8	13.4
	SPD (MPH)	6.8	2.2	9.5	11.5	11.1	12.9	7.9	11.6	11.1	13.7
	RATIO	0.939	0.881	0.665	0.952	0.849	0.665	0.849	0.840	0.975	0.981
METEOROLOGICAL SITE	DIR (DEG)	190	240	280	330	200	360	250	260	240	230
BRADLEY	VEL (MPH)	3.0	2.5	7.5	6.4	10.6	9.4	1.6	6.4	5.1	8.6
	SPD (MPH)	3.2	3.3	9.8	8.8	11.1	11.2	4.6	9.5	7.6	8.9
	RATIO	0.934	0.759	0.772	0.731	0.955	0.840	0.338	0.672	0.667	0.970
METEOROLOGICAL SITE	DIR (DEG)	250	240	290	300	200	350	240	240	250	240
BRIDGEPORT	VEL (MPH)	7.7	3.3	5.2	5.4	4.8	9.1	6.4	7.3	10.2	13.6
	SPD (MPH)	8.1	5.6	9.8	7.3	7.0	10.6	6.6	7.5	10.5	13.9
	RATIO	0.959	0.581	0.530	0.732	0.682	0.857	0.961	0.977	0.971	0.973
METEOROLOGICAL SITE	DIR (DEG)	260	290	280	300	230	360	290	280	270	250
WORCESTER	VEL (MPH)	9.6	8.1	9.1	10.3	8.7	9.8	8.3	7.2	11.8	9.8
	SPD (MPH)	9.6	8.3	10.1	11.1	9.8	12.9	8.5	8.1	12.2	10.8
	RATIO	0.992	0.969	0.904	0.930	0.888	0.758	0.976	0.893	0.966	0.914

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
TORRINGTON-001 (61)	TSP	98	93	84	82	79	64	62	62	61	60
	DATE	11/26/84	6/11/84	4/30/84	12/ 8/84	7/11/84	12/20/84	6/29/84	7/ 5/84	4/ 6/84	3/ 7/84
METEOROLOGICAL SITE	DIR (DEG)	210	260	210	250	230	260	150	210	230	330
NEWARK	VEL (MPH)	6.3	9.8	9.4	10.1	7.6	5.6	6.6	13.6	11.3	12.6
	SPD (MPH)	6.8	11.6	11.1	12.7	9.6	9.3	7.2	14.4	12.2	13.5
	RATIO	0.939	0.840	0.849	0.797	0.791	0.597	0.924	0.948	0.923	0.932
METEOROLOGICAL SITE	DIR (DEG)	190	260	200	250	180	290	180	200	200	340
BRADLEY	VEL (MPH)	3.0	6.4	10.6	7.2	7.1	4.4	8.0	9.9	6.4	10.4
	SPD (MPH)	3.2	9.5	11.1	8.6	7.3	6.0	8.2	10.1	7.0	10.6
	RATIO	0.934	0.672	0.955	0.829	0.973	0.727	0.977	0.982	0.902	0.979
METEOROLOGICAL SITE	DIR (DEG)	250	240	200	260	170	280	110	210	190	320
BRIDGEPORT	VEL (MPH)	7.7	7.3	4.8	12.3	5.1	7.3	5.1	8.8	4.7	9.1
	SPD (MPH)	8.1	7.5	7.0	12.9	5.6	7.8	5.3	9.9	10.9	9.5
	RATIO	0.959	0.977	0.682	0.950	0.911	0.944	0.964	0.882	0.427	0.964
METEOROLOGICAL SITE	DIR (DEG)	260	280	230	240	230	260	220	260	220	290
WORCESTER	VEL (MPH)	9.6	7.2	8.7	9.2	2.8	9.5	4.5	5.7	6.1	11.0
	SPD (MPH)	9.6	8.1	9.8	9.6	7.9	9.9	5.0	10.1	6.9	11.2
	RATIO	0.992	0.893	0.888	0.958	0.348	0.958	0.894	0.562	0.887	0.977
VOLUNTOWN-001 (59)	TSP	69	51	47	45	43	43	43	42	42	42
	DATE	6/11/84	8/ 4/84	6/ 5/84	7/23/84	5/24/84	7/11/84	8/28/84	6/23/84	7/ 5/84	8/22/84
METEOROLOGICAL SITE	DIR (DEG)	260	350	220	240	290	230	200	210	210	220
NEWARK	VEL (MPH)	9.8	1.0	6.7	10.4	11.0	7.6	7.3	10.0	13.6	9.4
	SPD (MPH)	11.6	7.0	7.9	10.6	11.5	9.6	8.1	10.4	14.4	10.2
	RATIO	0.840	0.147	0.849	0.975	0.952	0.791	0.913	0.966	0.948	0.916
METEOROLOGICAL SITE	DIR (DEG)	260	340	250	210	330	180	200	220	200	220
BRADLEY	VEL (MPH)	6.4	2.5	1.6	7.6	6.4	7.1	7.1	2.8	9.9	5.1
	SPD (MPH)	9.5	4.2	4.6	8.3	8.8	7.3	7.2	4.9	10.1	5.3
	RATIO	0.672	0.597	0.338	0.909	0.731	0.973	0.983	0.579	0.982	0.967
METEOROLOGICAL SITE	DIR (DEG)	240	140	240	230	300	170	210	220	210	220
BRIDGEPORT	VEL (MPH)	7.3	2.7	6.4	8.5	5.4	5.1	7.6	6.1	8.8	8.8
	SPD (MPH)	7.5	5.9	6.6	8.9	7.3	5.6	7.9	6.2	9.9	9.3
	RATIO	0.977	0.451	0.961	0.955	0.732	0.911	0.957	0.990	0.882	0.937
METEOROLOGICAL SITE	DIR (DEG)	280	310	290	280	300	230	240	340	260	280
WORCESTER	VEL (MPH)	7.2	3.4	8.3	4.7	10.3	2.8	5.5	2.1	5.7	4.5
	SPD (MPH)	8.1	4.9	8.5	11.2	11.1	7.9	5.9	7.5	10.1	7.8
	RATIO	0.893	0.687	0.976	0.420	0.930	0.348	0.932	0.285	0.562	0.584
WALLINGFORD-001 (60)	TSP	95	92	91	88	84	77	73	68	67	65
	DATE	11/26/84	6/11/84	1/25/84	2/12/84	12/20/84	2/ 6/84	12/ 8/84	6/ 5/84	4/30/84	7/11/84
METEOROLOGICAL SITE	DIR (DEG)	210	260	250	270	260	290	250	220	210	230
NEWARK	VEL (MPH)	6.3	9.8	10.8	1.9	5.6	6.3	10.1	6.7	9.4	7.6
	SPD (MPH)	6.8	11.6	11.1	2.2	9.3	9.5	12.7	7.9	11.1	9.6
	RATIO	0.939	0.840	0.975	0.881	0.597	0.665	0.797	0.849	0.849	0.791
METEOROLOGICAL SITE	DIR (DEG)	190	260	240	240	290	280	250	250	200	180
BRADLEY	VEL (MPH)	3.0	6.4	5.1	2.5	4.4	7.5	7.2	1.6	10.6	7.1
	SPD (MPH)	3.2	9.5	7.6	3.3	6.0	9.8	8.6	4.6	11.1	7.3
	RATIO	0.934	0.672	0.667	0.759	0.727	0.772	0.829	0.338	0.955	0.973

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	250	240	250	240	280	290	260	240	200	170
BRIDGEPORT	VEL (MPH)	7.7	7.3	10.2	3.3	7.3	5.2	12.3	6.4	4.8	5.1
	SPD (MPH)	8.1	7.5	10.5	5.6	7.8	9.8	12.9	6.6	7.0	5.6
	RATIO	0.959	0.977	0.971	0.581	0.944	0.530	0.950	0.961	0.682	0.911
METEOROLOGICAL SITE	DIR (DEG)	260	280	270	290	260	280	240	290	230	230
WORCESTER	VEL (MPH)	9.6	7.2	11.8	8.1	9.5	9.1	9.2	8.3	8.7	2.8
	SPD (MPH)	9.6	8.1	12.2	8.3	9.9	10.1	9.6	8.5	9.8	7.9
	RATIO	0.992	0.893	0.966	0.969	0.958	0.904	0.958	0.976	0.888	0.348
WATERBURY-005 (57)	TSP	99	94	82	77	73	67	65	62	61	60
	DATE	6/11/84	11/26/84	4/30/84	12/20/84	7/11/84	2/12/84	9/27/84	6/ 5/84	6/29/84	12/ 8/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	210	260	230	270	20	220	150	250
NEWARK	VEL (MPH)	9.8	6.3	9.4	5.6	7.6	1.9	9.4	6.7	6.6	10.1
	SPD (MPH)	11.6	6.8	11.1	9.3	9.6	2.2	10.1	7.9	7.2	12.7
	RATIO	0.840	0.939	0.849	0.597	0.791	0.881	0.934	0.849	0.924	0.797
METEOROLOGICAL SITE	DIR (DEG)	260	190	200	290	180	240	360	250	180	250
BRADLEY	VEL (MPH)	6.4	3.0	10.6	4.4	7.1	2.5	6.2	1.6	8.0	7.2
	SPD (MPH)	9.5	3.2	11.1	6.0	7.3	3.3	7.0	4.6	8.2	8.6
	RATIO	0.672	0.934	0.955	0.727	0.973	0.759	0.876	0.338	0.977	0.829
METEOROLOGICAL SITE	DIR (DEG)	240	250	200	280	170	240	20	240	110	260
BRIDGEPORT	VEL (MPH)	7.3	7.7	4.8	7.3	5.1	3.3	5.2	6.4	5.1	12.3
	SPD (MPH)	7.5	8.1	7.0	7.8	5.6	5.6	6.2	6.6	5.3	12.9
	RATIO	0.977	0.959	0.682	0.944	0.911	0.581	0.837	0.961	0.964	0.950
METEOROLOGICAL SITE	DIR (DEG)	280	260	230	260	230	290	340	290	220	240
WORCESTER	VEL (MPH)	7.2	9.6	8.7	9.5	2.8	8.1	3.9	8.3	4.5	9.2
	SPD (MPH)	8.1	9.6	9.8	9.9	7.9	8.3	5.5	8.5	5.0	9.6
	RATIO	0.893	0.992	0.888	0.958	0.348	0.969	0.720	0.976	0.894	0.958
WATERBURY-006 (59)	TSP	98	81	74	72	66	64	64	63	63	62
	DATE	6/11/84	7/11/84	4/ 6/84	11/26/84	4/30/84	7/ 5/84	9/27/84	5/ 6/84	6/29/84	8/28/84
METEOROLOGICAL SITE	DIR (DEG)	260	230	230	210	210	210	20	140	150	200
NEWARK	VEL (MPH)	9.8	7.6	11.3	6.3	9.4	13.6	9.4	2.1	6.6	7.3
	SPD (MPH)	11.6	9.6	12.2	6.8	11.1	14.4	10.1	6.9	7.2	8.1
	RATIO	0.840	0.791	0.923	0.939	0.849	0.948	0.934	0.302	0.924	0.913
METEOROLOGICAL SITE	DIR (DEG)	260	180	200	190	200	200	360	190	180	200
BRADLEY	VEL (MPH)	6.4	7.1	6.4	3.0	10.6	9.9	6.2	3.6	8.0	7.1
	SPD (MPH)	9.5	7.3	7.0	3.2	11.1	10.1	7.0	3.7	8.2	7.2
	RATIO	0.672	0.973	0.902	0.934	0.955	0.982	0.876	0.954	0.977	0.983
METEOROLOGICAL SITE	DIR (DEG)	240	170	190	250	200	210	20	190	110	210
BRIDGEPORT	VEL (MPH)	7.3	5.1	4.7	7.7	4.8	8.8	5.2	4.6	5.1	7.6
	SPD (MPH)	7.5	5.6	10.9	8.1	7.0	9.9	6.2	6.2	5.3	7.9
	RATIO	0.977	0.911	0.427	0.959	0.682	0.882	0.837	0.741	0.964	0.957
METEOROLOGICAL SITE	DIR (DEG)	280	230	220	260	230	260	340	310	220	240
WORCESTER	VEL (MPH)	7.2	2.8	6.1	9.6	8.7	5.7	3.9	6.3	4.5	5.5
	SPD (MPH)	8.1	7.9	6.9	9.6	9.8	10.1	5.5	7.3	5.0	5.9
	RATIO	0.893	0.348	0.887	0.992	0.888	0.562	0.720	0.854	0.894	0.932

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
WATERBURY-007 (59)	TSP	114	106	86	85	80	78	75	71	70	69
	DATE	11/26/84	6/11/84	12/ 8/84	7/11/84	12/20/84	2/12/84	6/ 5/84	1/ 1/84	7/ 5/84	4/30/84
METEOROLOGICAL SITE	DIR (DEG)	210	260	250	230	260	270	220	20	210	210
NEWARK	VEL (MPH)	6.3	9.8	10.1	7.6	5.6	1.9	6.7	6.4	13.6	9.4
	SPD (MPH)	6.8	11.6	12.7	9.6	9.3	2.2	7.9	7.8	14.4	11.1
	RATIO	0.939	0.840	0.797	0.791	0.597	0.881	0.849	0.819	0.948	0.849
METEOROLOGICAL SITE	DIR (DEG)	190	260	250	180	290	240	250	20	200	200
BRADLEY	VEL (MPH)	3.0	6.4	7.2	7.1	4.4	2.5	1.6	5.2	9.9	10.6
	SPD (MPH)	3.2	9.5	8.6	7.3	6.0	3.3	4.6	6.0	10.1	11.1
	RATIO	0.934	0.672	0.829	0.973	0.727	0.759	0.338	0.864	0.982	0.955
METEOROLOGICAL SITE	DIR (DEG)	250	240	260	170	280	240	240	30	210	200
BRIDGEPORT	VEL (MPH)	7.7	7.3	12.3	5.1	7.3	3.3	6.4	8.3	8.8	4.8
	SPD (MPH)	8.1	7.5	12.9	5.6	7.8	5.6	6.6	8.5	9.9	7.0
	RATIO	0.959	0.977	0.950	0.911	0.944	0.581	0.961	0.980	0.882	0.682
METEOROLOGICAL SITE	DIR (DEG)	260	280	240	230	260	290	290	10	260	230
WORCESTER	VEL (MPH)	9.6	7.2	9.2	2.8	9.5	8.1	8.3	6.5	5.7	8.7
	SPD (MPH)	9.6	8.1	9.6	7.9	9.9	8.3	8.5	8.1	10.1	9.8
	RATIO	0.992	0.893	0.958	0.348	0.958	0.969	0.976	0.812	0.562	0.888
WATERFORD-001 (58)	TSP	95	69	68	64	63	63	60	59	56	53
	DATE	8/ 4/84	8/22/84	3/ 1/84	5/24/84	6/11/84	6/23/84	6/ 5/84	11/26/84	7/ 5/84	8/16/84
METEOROLOGICAL SITE	DIR (DEG)	350	220	270	290	260	210	220	210	210	330
NEWARK	VEL (MPH)	1.0	9.4	15.9	11.0	9.8	10.0	6.7	6.3	13.6	7.1
	SPD (MPH)	7.0	10.2	16.2	11.5	11.6	10.4	7.9	6.8	14.4	8.3
	RATIO	0.147	0.916	0.978	0.952	0.840	0.966	0.849	0.939	0.948	0.853
METEOROLOGICAL SITE	DIR (DEG)	340	220	280	330	260	220	250	190	200	340
BRADLEY	VEL (MPH)	2.5	5.1	9.3	6.4	6.4	2.8	1.6	3.0	9.9	3.8
	SPD (MPH)	4.2	5.3	10.1	8.8	9.5	4.9	4.6	3.2	10.1	4.7
	RATIO	0.597	0.967	0.925	0.731	0.672	0.579	0.338	0.934	0.982	0.800
METEOROLOGICAL SITE	DIR (DEG)	140	220	270	300	240	220	240	250	210	250
BRIDGEPORT	VEL (MPH)	2.7	8.8	14.6	5.4	7.3	6.1	6.4	7.7	8.8	6.0
	SPD (MPH)	5.9	9.3	14.7	7.3	7.5	6.2	6.6	8.1	9.9	8.1
	RATIO	0.451	0.937	0.997	0.732	0.977	0.990	0.961	0.959	0.882	0.748
METEOROLOGICAL SITE	DIR (DEG)	310	280	280	300	280	340	290	260	260	320
WORCESTER	VEL (MPH)	3.4	4.5	13.7	10.3	7.2	2.1	8.3	9.6	5.7	5.9
	SPD (MPH)	4.9	7.8	13.8	11.1	8.1	7.5	8.5	9.6	10.1	6.8
	RATIO	0.687	0.584	0.991	0.930	0.893	0.285	0.976	0.992	0.562	0.879
WILLIMANTIC-002 (61)	TSP	83	72	65	62	61	60	58	58	57	55
	DATE	6/11/84	11/26/84	2/ 6/84	2/12/84	6/ 5/84	12/26/84	4/30/84	12/20/84	7/ 5/84	5/24/84
METEOROLOGICAL SITE	DIR (DEG)	260	210	290	270	220	280	210	260	210	290
NEWARK	VEL (MPH)	9.8	6.3	6.3	1.9	6.7	7.9	9.4	5.6	13.6	11.0
	SPD (MPH)	11.6	6.8	9.5	2.2	7.9	11.8	11.1	9.3	14.4	11.5
	RATIO	0.840	0.939	0.665	0.881	0.849	0.672	0.849	0.597	0.948	0.952
METEOROLOGICAL SITE	DIR (DEG)	260	190	280	240	250	290	200	290	200	330
BRADLEY	VEL (MPH)	6.4	3.0	7.5	2.5	1.6	3.3	10.6	4.4	9.9	6.4
	SPD (MPH)	9.5	3.2	9.8	3.3	4.6	7.2	11.1	6.0	10.1	8.8
	RATIO	0.672	0.934	0.772	0.759	0.338	0.458	0.955	0.727	0.982	0.731

TABLE 11, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE TSP DAYS WITH WIND DATA

UNITS : MICROGRAMS PER CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	240	250	290	240	240	290	200	280	210	300
BRIDGEPORT	VEL (MPH)	7.3	7.7	5.2	3.3	6.4	7.9	4.8	7.3	8.8	5.4
	SPD (MPH)	7.5	8.1	9.8	5.6	6.6	11.5	7.0	7.8	9.9	7.3
	RATIO	0.977	0.959	0.530	0.581	0.961	0.687	0.682	0.944	0.882	0.732
METEOROLOGICAL SITE	DIR (DEG)	280	260	280	290	290	270	230	260	260	300
WORCESTER	VEL (MPH)	7.2	9.6	9.1	8.1	8.3	13.1	8.7	9.5	5.7	10.3
	SPD (MPH)	8.1	9.6	10.1	8.3	8.5	14.7	9.8	9.9	10.1	11.1
	RATIO	0.893	0.992	0.904	0.969	0.976	0.891	0.888	0.958	0.562	0.930

$SW = \frac{270}{430} = 62.8$

$NW = \frac{67}{430} = 15.6$

$NE = \frac{23}{430} = 5.3$

$SE = \frac{2}{430} = \emptyset$

III. SULFUR DIOXIDE

Health Effects

Sulfur oxides are gases that come from the burning of sulfur-containing fuel, mainly coal and oil, and also from the smelting of metals and from certain industrial processes. They have a distinctive odor. Sulfur dioxide (SO_2) comprises about 95 percent of these gases, so scientists use a test for SO_2 alone as a measure of all sulfur oxides.

Exposure to high levels of sulfur oxides can cause an obstruction of breathing that doctors call "pulmonary flow resistance." The amount of breathing obstruction has a direct relation to the amount of sulfur compounds in the air. The effect of sulfur pollution is enhanced by the presence of other pollutants, especially particulates and oxidants. Moreover, the harm that results from two or more pollutants is more than additive. Each augments the other, and the combined effect is greater than the sum of the effects that each alone would have.

Many types of respiratory disease are associated with sulfur oxides: coughs and colds, asthma, bronchitis, and emphysema. Some researchers believe that the harm is not only due to the sulfur oxide gases but also other sulfur compounds that accompany the oxides.

Conclusions

Sulfur dioxide concentrations in 1984 did not exceed any federal primary or secondary standards. Measured concentrations were substantially below the 365 ug/m^3 primary 24-hour standard and well below both the 80 ug/m^3 primary annual standard and the 1300 ug/m^3 secondary 3-hour standard.

Method of Measurement

The DEP Air Monitoring Unit used the pulsed fluorescence method (Teco instruments) to continuously measure sulfur dioxide levels at all 19 sites in 1984.

Discussion of Data

Monitoring Network - Nineteen continuous SO_2 monitors were used to record data in fifteen towns during 1984 (see Figure 5):

Bridgeport 012
Bridgeport 123
Danbury 123
East Hartford 005
East Haven 003
Enfield 005
Greenwich 017
Groton 007
Hartford 123
Milford 002
New Britain 011
New Haven 017
New Haven 123
Norwalk 013
Preston 002
Stamford 025
Stamford 123
Waterbury 007
Waterbury 123

All of these sites telemetered the data to the central computer in Hartford on a real-time basis. Bridgeport 012, New Haven 017, Stamford 025 and the sites in East Hartford, East Haven, New Britain and Norwalk are new sites and did not exist in 1983.

Precision and Accuracy - 530 precision checks were made on SO_2 monitors in 1984, yielding 95% probability limits ranging from -15% to +11%. Accuracy is determined by introducing a known amount of SO_2 into each of the monitors. Three different concentration levels are tested: low, medium, and high. The 95% probability limits for accuracy based on 22 audits were: low, -13% to +11%; medium, -9% to +8%; and high, -9% to +7%.

Annual Averages - SO_2 levels were below the primary annual standard of 80 ug/m ^{3} at all sites in 1984 (see Table 12). The annual average SO_2 levels increased at six of the eight monitoring sites that both operated during 1983 and 1984 and had adequate data in those years to calculate valid annual averages. Stamford 123 experienced the highest increase of 5 ug/m^3. Hartford 123 showed an annual average decrease of 1 ug/m ^{3} and Milford 002 remained unchanged.

Statistical Projections - A statistical analysis of the sulfur dioxide data is presented in Table 13. This analysis provides information to compensate for any loss of data caused by instrumentation problems. The format of Table 13 is the same as that used to present the total suspended particulate annual averages (see Table 6). However, Table 13 gives the annual arithmetic mean of the valid 24-hour SO_2 averages to allow direct comparison to the annual SO_2 standards. The 95% limits and standard deviations are also arithmetic calculations. Since the distribution of the SO_2 data tends to be lognormal, the geometric means and standard deviations were used to predict the number of days the 24-hour standard of 365 ug/m ^{3} would be exceeded at each site if sampling had been conducted every day.

It is important to note that these statistical tests require that the data be random for the test to be valid. This means that an equal number of samples must be collected in each season of the year and on each day of the week. For the 19 sites that operated in 1984, the distribution and quantity of SO_2 data were adequate — except for the New Britain, Norwalk and Stamford sites. The data for these sites indicate that there were no violations of the primary SO_2 standard in Connecticut. For example, a statistical prediction of one day exceeding the primary 24-hour standard (365 ug/m ^{3}) at Bridgeport 012 indicates that an increase in SO_2 emissions there might jeopardize the attainment of this standard. Two days over the standard are required for the standard to be violated.

24-Hour Averages - Table 14 presents the 1st and 2nd high running 24-hour concentrations recorded at each monitoring site. In 1984 no sites recorded SO_2 levels in excess of the 24-hour primary standard of 365 ug/m^3. Second high running 24-hour average concentrations increased at the eight SO_2 monitoring sites that operated during 1983 and 1984 and had a sufficient distribution and quantity of data. The increases ranged from 7 ug/m ^{3} at Milford 002 to 72 ug/m ^{3} at Hartford 123.

Current EPA policy bases compliance with the primary 24-hour SO_2 standard on non-overlapping running averages. Running averages are averages computed for the 24-hour periods ending at every hour. Assessment of compliance is based on the value of the 2nd highest of the two highest non-overlapping 24-hour periods in the year. Thus, the basis for compliance is the magnitude of the exposure encountered within any two distinct 24-hour periods, not calendar days. However, there is some contention that compliance assessment for 24-hour SO_2 standards should be based on calendar day averages only. Table 15 contains the maximum 24-hour SO_2 readings from both the running averages and the calendar day averages for comparison. Except for Stamford 123, the maximum calendar day readings are all lower than the maximum readings from the running averages, and the differences range up to 37 ug/m ^{3} at Milford 002.

3-Hour Averages - Table 16 presents the 1st and 2nd high 3-hour concentrations recorded at each monitoring site. Measured SO_2 concentrations were far below the federal secondary 3-hour standard of 1300 ug/m ^{3} at all DEP monitoring sites in 1984. Of the sites that had a sufficient distribution and quantity of data in both 1983 and 1984, all but Milford 002 had a higher 2nd high concentration in 1984.

10-High Days with Wind Data - Table 17 lists the ten highest 24-hour calendar day SO_2 averages and the dates of occurrence for each SO_2 site in Connecticut during 1984. The table also shows the average wind conditions that occurred on each of these dates. (The origin and use of these wind data are described in the discussion of Table 11 in the TSP section of this Air Quality Summary.)

Once again, as with TSP, most (i.e., 65.8%) of the highest SO_2 days occur during periods of persistent winds out of the southwest quadrant. This relationship is caused, at least in part, by SO_2 transport, but any transport is limited by the chemical instability of SO_2. In the atmosphere, SO_2 reacts with other gases to produce, among other things, sulfate particulates. Therefore, SO_2 is not likely to be transported very long distances. Previous studies conducted by the DEP have shown that, during periods of southwest winds, levels of SO_2 in Connecticut decrease with distance from the New York City metropolitan area. This relationship tends to support the transport hypothesis. On the other hand, these studies also revealed that certain meteorological parameters, most notably mixing height and wind speed, are more conducive to high SO_2 levels on days when there are southwesterly winds than on other days.

The data in Table 17 were used to make a tally, by date, of the frequency of occurrence of high SO_2 levels. Only those eight sites were used which operated in both 1983 and 1984. If a given date recurred at four or more sites in this tally, the SO_2 levels and meteorological conditions were investigated further (there were nine such days). A close look at these nine days revealed three important points. First, eight of the nine days occurred during the winter months. This can be attributed to more fuel being burned during the cold weather. Second, seven of the nine days had persistent southwest winds for that calendar day. Third, the other two days had persistent southwest winds for the previous 24 hours.

In summary, high levels of SO_2 in Connecticut seem to be caused by a number of related factors. First, Connecticut experiences its highest SO_2 levels during the winter months, when there is an increased amount of fuel combustion. Second, the New York City metropolitan area, a large emission source, is located to the southwest of Connecticut and, in this region, southwest winds occur relatively often in comparison to other wind directions. Also, adverse meteorological conditions are often associated with southwest winds. The net effect is that during the winter months when a persistent southwesterly wind occurs, an air mass picks up increased amounts of SO_2 over the New York City metropolitan area and transports this SO_2 into Connecticut. Here, the SO_2 levels remain high because the relatively low mixing heights associated with the southwest wind will not allow much vertical mixing. The levels of transported SO_2 eventually decline with increasing distance from New York City, as the SO_2 is dispersed and as it slowly reacts to produce sulfate particulates. These sulfate particulates may fall to the ground in either a dry state (dry deposition) or in a wet state after combination with water droplets (wet deposition or "acid rain").

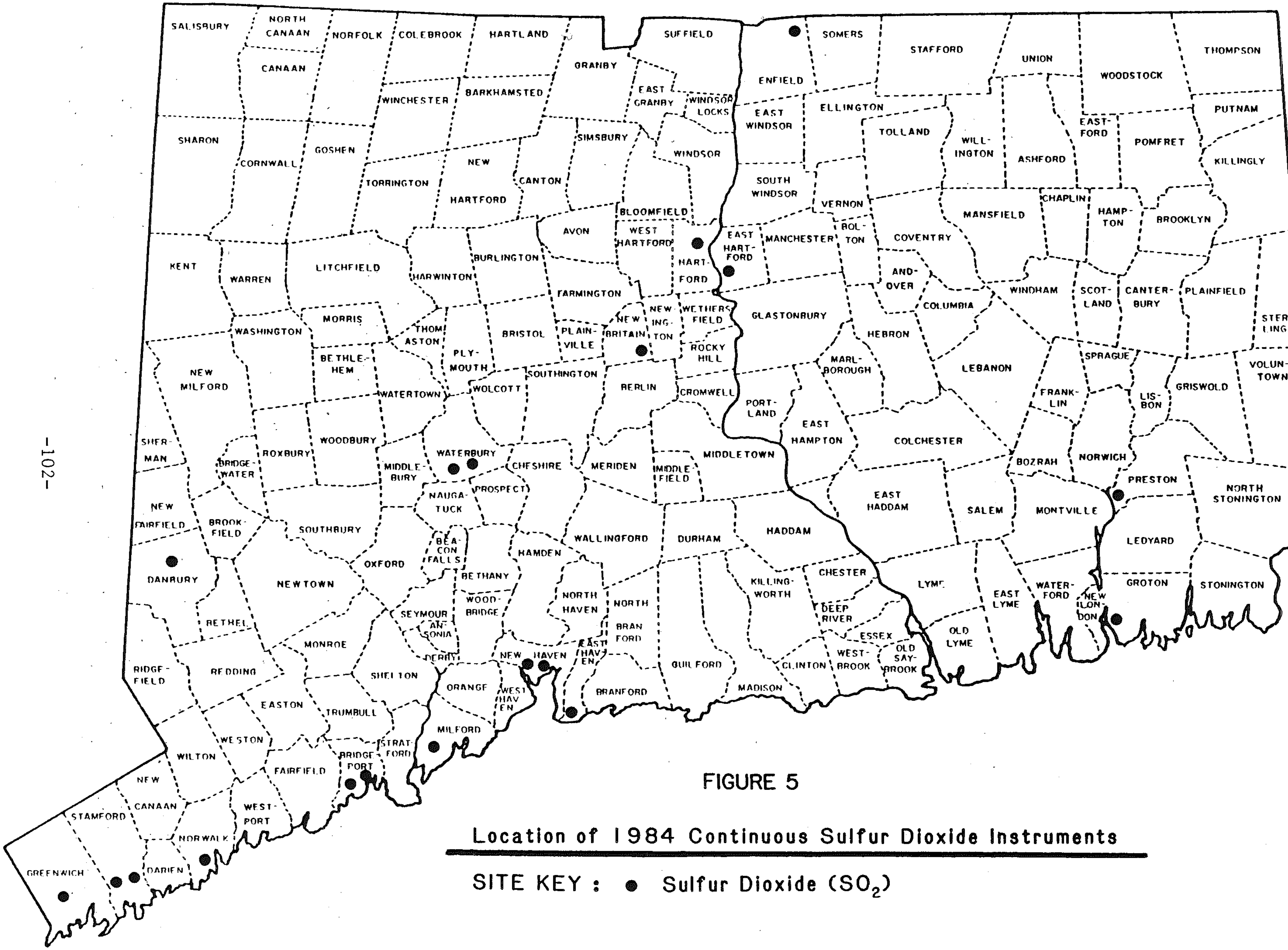


FIGURE 5

Location of 1984 Continuous Sulfur Dioxide Instruments

SITE KEY : ● Sulfur Dioxide (SO_2)

TABLE 12

1984 ANNUAL ARITHMETIC AVERAGES* OF SULFUR DIOXIDE

AT SITES WITH CONTINUOUS MONITORS

(PRIMARY STANDARD: 80 ug/m^3)

TOWN	SITE NAME	ANNUAL AVG (ug/m^3)
Bridgeport-012	Edison School	34
Bridgeport-123	Hallett Street	32
Danbury-123	Western CT State College	18
East Hartford-005	Fire House - Engine Co. #5	28
East Haven-003	Animal Shelter	20
Enfield-005	Department of Corrections	15
Greenwich-017	Greenwich Point Park	17
Groton-007	Fire Headquarters	21
Hartford-123	State Office Building	31
Milford-002	Devon Community Center	35
New Britain-011	Armory	15**
New Haven-017	Lombard St. Fire House	26
New Haven-123	State Street	35
Norwalk-013	Ludlow School	18**
Preston-002	Norwich State Hospital	13
Stamford-025	Recreation Center	23**
Stamford-123	Health Department	32
Waterbury-007	Fire House	29
Waterbury-123	Bank Street	23

* The annual averages are expressed in terms of the arithmetic mean because the primary ambient air quality standard for SO_2 is defined as the annual arithmetic mean concentration. This differs from the trend analysis presented earlier in section I.B. of this Air Quality Summary which made use of the annual geometric mean.

** A valid annual average cannot be calculated because the number of observations is insufficient or is poorly distributed.

TABLE 13

1982-1984 SO2 ANNUAL AVERAGES AND STATISTICAL PROJECTIONS

							LOGNORMAL DISTRIBUTION	
TOWN NAME	SITE	YEAR	SAMPLES	ARITHMETIC MEAN	95-PCT-LIMITS LOWER	95-PCT-LIMITS UPPER	STD DEVIATION	PREDICTED DAYS OVER 365 UG/M3
BRIDGEPORT	001	1982	361	30.6	30	31	23.788	
BRIDGEPORT	001	1983	260*	27.6	26	29	17.066	
BRIDGEPORT	012	1984	333	32.9	32	34	33.836	1
BRIDGEPORT	123	1982	361	37.0	37	37	26.000	
BRIDGEPORT	123	1983	359	33.3	33	34	22.834	
BRIDGEPORT	123	1984	358	31.8	31	32	26.948	
DANBURY	123	1982	361	19.8	20	20	16.074	
DANBURY	123	1983	356	16.9	17	17	13.031	
DANBURY	123	1984	358	17.5	17	18	18.635	
EAST HARTFORD	005	1984	309	27.4	26	28	24.298	
EAST HAVEN	003	1984	341	20.1	20	21	19.700	
ENFIELD	005	1983	61*	23.1	18	28	20.895	
ENFIELD	005	1984	349	13.9	14	14	16.871	
GREENWICH	017	1982	360	20.5	20	21	16.017	
GREENWICH	017	1983	333	15.5	15	16	11.659	
GREENWICH	017	1984	345	16.9	16	17	17.251	
GROTON	007	1983	79*	24.2	21	27	13.835	
GROTON	007	1984	334	20.6	20	21	16.210	
HARTFORD	123	1982	352	35.1	35	36	26.747	
HARTFORD	123	1983	360	32.4	32	33	22.793	
HARTFORD	123	1984	360	31.4	31	32	31.425	
MILFORD	002	1982	358	36.9	36	37	29.540	
MILFORD	002	1983	342	34.8	34	35	27.169	
MILFORD	002	1984	341	33.9	33	35	34.191	1

* SAMPLING NOT RANDOM OR OF INSUFFICIENT SIZE FOR REPRESENTATIVE ANNUAL STATISTICS.

N.B. THE ANNUAL AVERAGES IN TABLE 13 VARY SLIGHTLY FROM THOSE IN TABLE 12 BECAUSE OF THE MANNER IN WHICH THEY WERE DERIVED. THE AVERAGES IN TABLE 12 ARE BASED ON THE AVAILABLE HOURLY READINGS, WHILE THOSE IN TABLE 13 ARE BASED ON VALID 24-HOUR AVERAGES. (AT LEAST 18 HOURLY READINGS ARE REQUIRED TO PRODUCE A VALID 24-HOUR AVERAGE.)

THE ARITHMETIC MEAN AND STANDARD DEVIATION HAVE UNITS OF MICROGRAMS PER CUBIC METER.

TABLE 13, CONTINUED

1982-1984 SO2 ANNUAL AVERAGES AND STATISTICAL PROJECTIONS

							LOGNORMAL DISTRIBUTION	
TOWN NAME	SITE	YEAR	SAMPLES	ARITHMETIC MEAN	95-PCT-LIMITS LOWER	UPPER	STD DEVIATION	PREDICTED DAYS OVER 365 UG/M3
NEW BRITAIN	011	1984	227*	14.2	13	15	12.809	
NEW HAVEN	017	1984	330	24.6	24	25	22.161	
NEW HAVEN	123	1982	359	33.4	33	34	24.665	
NEW HAVEN	123	1983	363	30.7	31	31	24.284	
NEW HAVEN	123	1984	346	34.6	34	35	32.585	
NORWALK	005	1983	226*	22.6	21	24	21.556	
NORWALK	013	1984	266*	17.1	16	18	14.621	1
PRESTON	002	1983	61*	13.9	12	16	7.016	
PRESTON	002	1984	345	10.9	11	11	9.527	
STAMFORD	024	1983	34*	28.0	23	33	15.948	
STAMFORD	025	1984	297*	23.0	22	24	16.563	
STAMFORD	123	1982	358	31.0	31	31	26.872	
STAMFORD	123	1983	362	26.7	27	27	18.916	
STAMFORD	123	1984	343	31.9	31	32	21.563	
WATERBURY	007	1983	60*	34.0	27	41	29.103	
WATERBURY	007	1984	350	28.8	28	29	28.810	
WATERBURY	123	1982	362	20.5	20	21	14.999	
WATERBURY	123	1983	351	18.9	19	19	14.291	
WATERBURY	123	1984	334	22.7	22	23	20.813	

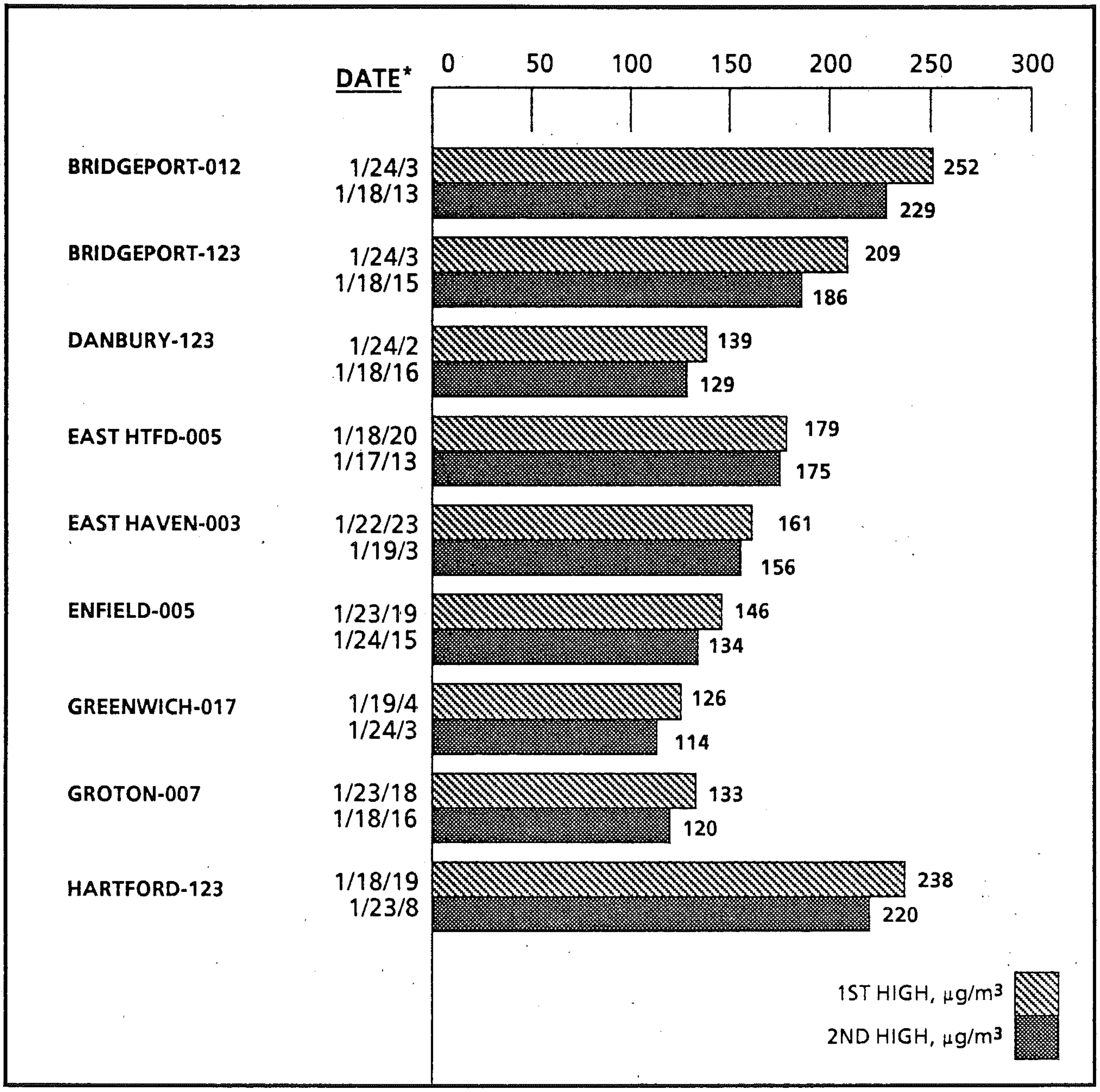
* SAMPLING NOT RANDOM OR OF INSUFFICIENT SIZE FOR REPRESENTATIVE ANNUAL STATISTICS.

N.B. THE ANNUAL AVERAGES IN TABLE 13 VARY SLIGHTLY FROM THOSE IN TABLE 12 BECAUSE OF THE MANNER IN WHICH THEY WERE DERIVED. THE AVERAGES IN TABLE 12 ARE BASED ON THE AVAILABLE HOURLY READINGS, WHILE THOSE IN TABLE 13 ARE BASED ON VALID 24-HOUR AVERAGES. (AT LEAST 18 HOURLY READINGS ARE REQUIRED TO PRODUCE A VALID 24-HOUR AVERAGE.)

THE ARITHMETIC MEAN AND STANDARD DEVIATION HAVE UNITS OF MICROGRAMS PER CUBIC METER.

TABLE 14

1984 MAXIMUM 24-HOUR RUNNING AVERAGE SULFUR DIOXIDE CONCENTRATIONS



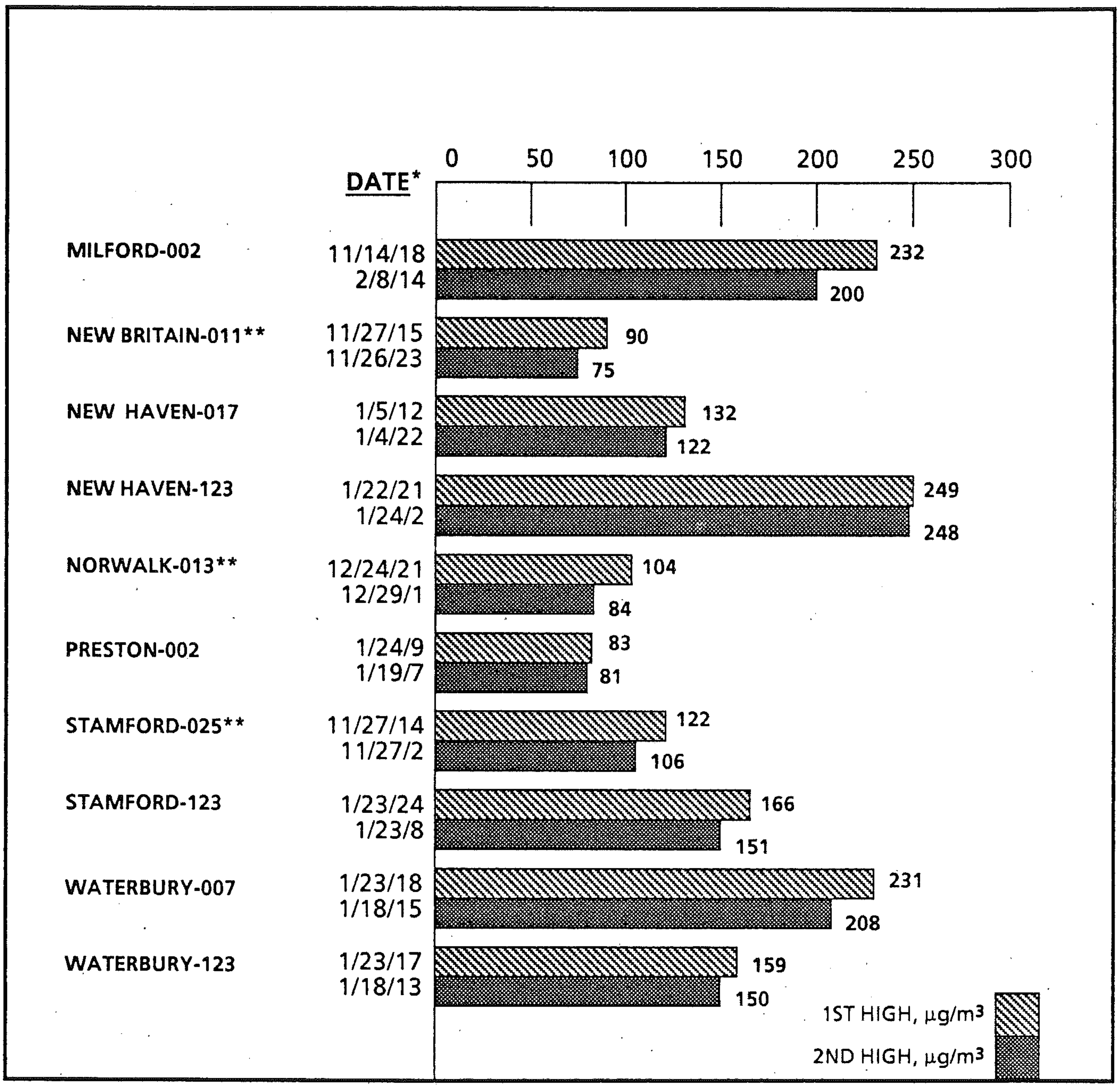
* Date is month/day/ending hour of occurrence.

** Database for the site is deficient in number or distribution of observations.

N.B. When a listed concentration occurs more than once at a site, the earliest date of occurrence is given.

Primary standard = 365 µg/m³.

TABLE 14, CONTINUED



* Date is month/day/ending hour of occurrence.

** Database for the site is deficient in number or distribution of observations.

N.B. When a listed concentration occurs more than once at a site, the earliest date of occurrence is given.

Primary standard = 365 µg/m3.

TABLE 15

COMPARISONS OF 1984 FIRST AND SECOND HIGH RUNNING AND

CALENDAR DAY 24-HOUR SO2 AVERAGES*

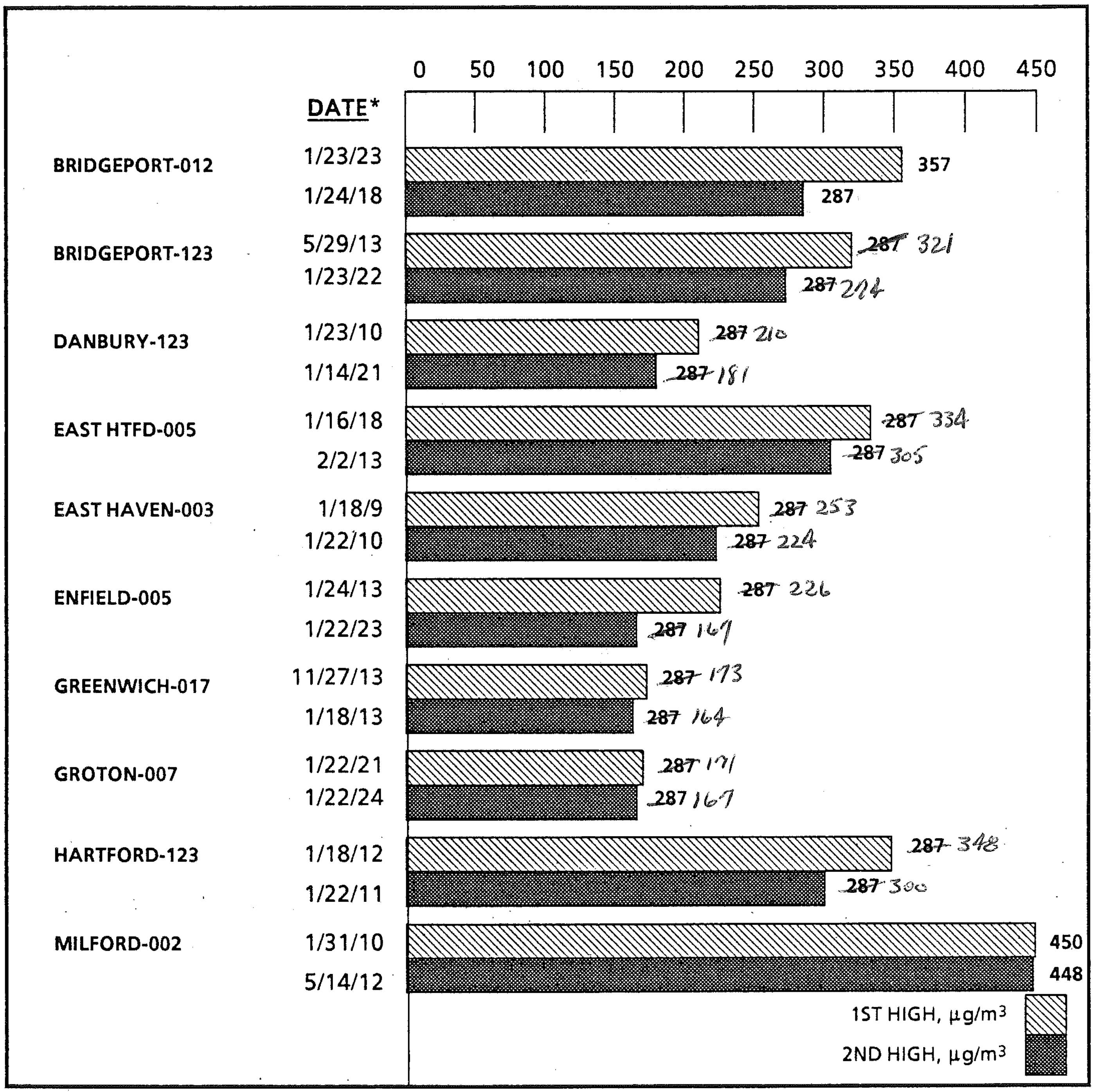
Site	1st High Running Avg.	1st High Calendar Day	2nd High Running Avg.	2nd High Calendar Day
Bridgeport-012	252	251	229	211
Bridgeport-123	209	204	186	176
Danbury-123	139	136	129	124
E. Hartford-005	179	174	175	154
E. Haven-003	161	159	156	153
Enfield-005	146	133	134	109
Greenwich-017	126	125	114	109
Groton-007	133	120	120	114
Hartford-123	238	229	220	211
Milford-002	232	195	200	191
New Britain-011**	90	76	75	74
New Haven-017	132	123	122	120
New Haven-123	249	242	248	242
Norwalk-013**	104	95	84	83
Preston-002	83	75	81	62
Stamford-025**	122	115	106	104
Stamford-123	166	166	151	147
Waterbury-007	231	228	208	201
Waterbury-123	159	153	150	136

* Units are ug/m^3

** Database for the site is deficient in number or distribution of observations.

TABLE 16

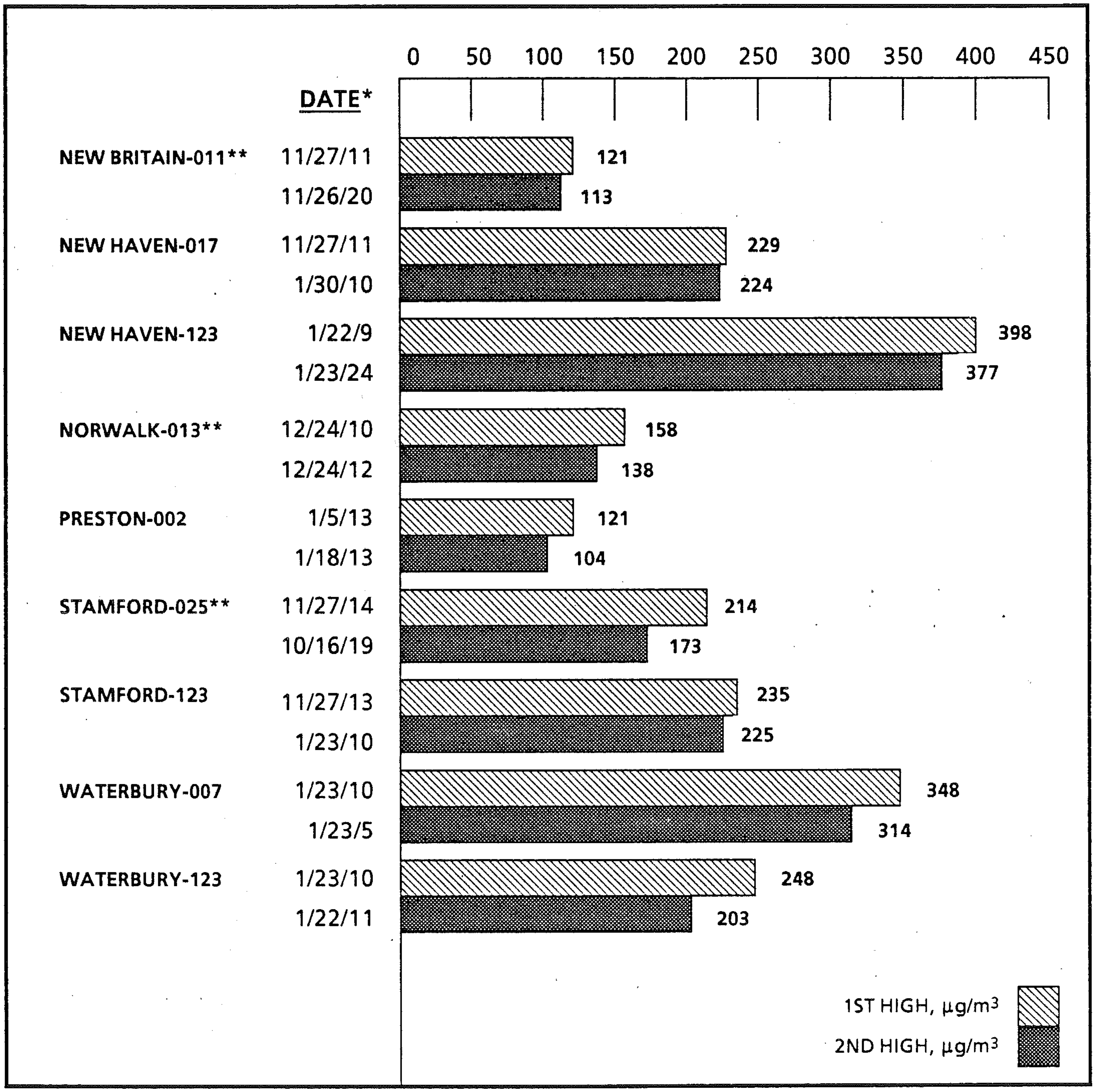
1984 MAXIMUM RUNNING 3-HOUR SULFUR DIOXIDE CONCENTRATIONS



*	Date is month/day/ending hour of occurrence.
**	Database for the site is deficient in number or distribution of observations.
N.B.	When a listed concentration occurs more than once at a site, the earliest date of occurrence is given.

Secondary Standard = 1300 µg/m3

TABLE 16, CONTINUED



*	Date is month/day/ending hour of occurrence.
**	Database for the site is deficient in number or distribution of observations.
N.B.	When a listed concentration occurs more than once at a site, the earliest date of occurrence is given.

Secondary Standard = 1300 µg/m3

TABLE 17

1984 TEN HIGHEST 24-HOUR AVERAGE SO2 DAYS WITH WIND DATA

UNITS : MICROGRAMS / CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
BRIDGEPORT-012 (333)	SO2	251	211	196	193	177	145	139	125	120	115
	DATE	1/23/84	1/18/84	1/17/84	1/22/84	1/24/84	11/27/84	12/24/84	11/26/84	1/21/84	1/16/84
METEOROLOGICAL SITE	DIR (DEG)	210	20	250	230	20	190	210	210	330	20
NEWARK	VEL (MPH)	4.4	2.9	4.4	5.7	3.3	3.3	5.4	6.3	8.5	6.3
	SPD (MPH)	4.7	4.7	4.6	6.2	5.3	5.0	5.9	6.8	10.6	6.3
	RATIO	0.932	0.618	0.958	0.929	0.612	0.658	0.922	0.939	0.801	0.997
METEOROLOGICAL SITE	DIR (DEG)	160	20	130	200	30	180	200	190	320	10
BRADLEY	VEL (MPH)	2.0	3.7	0.7	2.9	1.7	2.7	6.8	3.0	6.5	3.1
	SPD (MPH)	2.4	4.2	1.0	3.4	3.6	3.0	7.3	3.2	6.8	3.3
	RATIO	0.812	0.877	0.714	0.837	0.473	0.883	0.934	0.934	0.960	0.930
METEOROLOGICAL SITE	DIR (DEG)	260	30	250	270	200	220	190	250	330	20
BRIDGEPORT	VEL (MPH)	4.4	6.1	5.9	6.8	2.0	3.4	2.3	7.7	6.9	5.9
	SPD (MPH)	7.2	6.6	7.0	7.9	6.9	5.9	3.7	8.1	7.3	6.6
	RATIO	0.608	0.926	0.842	0.858	0.288	0.576	0.613	0.959	0.942	0.889
METEOROLOGICAL SITE	DIR (DEG)	250	350	270	260	200	250	220	260	300	20
WORCESTER	VEL (MPH)	5.5	1.3	5.9	6.7	4.8	7.8	7.8	9.6	9.0	2.0
	SPD (MPH)	5.8	4.2	6.3	7.2	6.6	8.2	7.9	9.6	9.2	3.3
	RATIO	0.960	0.318	0.935	0.934	0.733	0.952	0.991	0.992	0.978	0.597
BRIDGEPORT-123 (358)	SO2	204	176	149	148	120	120	113	107	98	98
	DATE	1/23/84	1/18/84	1/24/84	1/22/84	11/27/84	1/ 4/84	1/ 5/84	11/26/84	1/27/84	1/25/84
METEOROLOGICAL SITE	DIR (DEG)	210	20	20	230	190	220	210	210	300	250
NEWARK	VEL (MPH)	4.4	2.9	3.3	5.7	3.3	9.0	5.1	6.3	1.7	10.8
	SPD (MPH)	4.7	4.7	5.3	6.2	5.0	9.3	5.6	6.8	6.3	11.1
	RATIO	0.932	0.618	0.612	0.929	0.658	0.967	0.906	0.939	0.268	0.975
METEOROLOGICAL SITE	DIR (DEG)	160	20	30	200	180	210	180	190	350	240
BRADLEY	VEL (MPH)	2.0	3.7	1.7	2.9	2.7	7.9	3.7	3.0	1.5	5.1
	SPD (MPH)	2.4	4.2	3.6	3.4	3.0	8.2	3.7	3.2	3.9	7.6
	RATIO	0.812	0.877	0.473	0.837	0.883	0.960	0.985	0.934	0.389	0.667
METEOROLOGICAL SITE	DIR (DEG)	260	30	200	270	220	240	140	250	30	250
BRIDGEPORT	VEL (MPH)	4.4	6.1	2.0	6.8	3.4	9.6	2.1	7.7	4.2	10.2
	SPD (MPH)	7.2	6.6	6.9	7.9	5.9	9.8	2.6	8.1	4.9	10.5
	RATIO	0.608	0.926	0.288	0.858	0.576	0.981	0.804	0.959	0.866	0.971
METEOROLOGICAL SITE	DIR (DEG)	250	350	200	260	250	240	250	260	250	270
WORCESTER	VEL (MPH)	5.5	1.3	4.8	6.7	7.8	9.1	2.8	9.6	3.3	11.8
	SPD (MPH)	5.8	4.2	6.6	7.2	8.2	9.5	4.2	9.6	6.0	12.2
	RATIO	0.960	0.318	0.733	0.934	0.952	0.961	0.681	0.992	0.546	0.966
DANBURY-123 (358)	SO2	136	124	111	100	83	75	73	69	68	68
	DATE	1/23/84	1/18/84	1/22/84	1/17/84	2/ 2/84	11/27/84	1/24/84	11/26/84	1/19/84	1/30/84
METEOROLOGICAL SITE	DIR (DEG)	210	20	230	250	230	190	20	210	330	190
NEWARK	VEL (MPH)	4.4	2.9	5.7	4.4	2.8	3.3	3.3	6.3	10.0	2.7
	SPD (MPH)	4.7	4.7	6.2	4.6	4.2	5.0	5.3	6.8	11.9	6.0
	RATIO	0.932	0.618	0.929	0.958	0.672	0.658	0.612	0.939	0.834	0.454
METEOROLOGICAL SITE	DIR (DEG)	160	20	200	130	180	180	30	190	340	150
BRADLEY	VEL (MPH)	2.0	3.7	2.9	0.7	1.1	2.7	1.7	3.0	7.1	3.0
	SPD (MPH)	2.4	4.2	3.4	1.0	2.0	3.0	3.6	3.2	7.3	3.6
	RATIO	0.812	0.877	0.837	0.714	0.564	0.883	0.473	0.934	0.964	0.830

TABLE 17, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE SO2 DAYS WITH WIND DATA

UNITS : MICROGRAMS / CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	260	30	270	250	230	220	200	250	340	130
BRIDGEPORT	VEL (MPH)	4.4	6.1	6.8	5.9	5.2	3.4	2.0	7.7	10.7	1.6
	SPD (MPH)	7.2	6.6	7.9	7.0	5.6	5.9	6.9	8.1	11.4	5.9
	RATIO	0.608	0.926	0.858	0.842	0.921	0.576	0.288	0.959	0.943	0.276
METEOROLOGICAL SITE	DIR (DEG)	250	350	260	270	290	250	200	260	320	190
WORCESTER	VEL (MPH)	5.5	1.3	6.7	5.9	7.8	7.8	4.8	9.6	6.9	3.2
	SPD (MPH)	5.8	4.2	7.2	6.3	8.3	8.2	6.6	9.6	8.2	3.9
	RATIO	0.960	0.318	0.934	0.935	0.931	0.952	0.733	0.992	0.846	0.830
EAST HARTFORD-005 (309)	SO2	174	154	153	150	148	137	128	98	90	82
	DATE	1/18/84	1/16/84	1/23/84	1/22/84	1/17/84	2/ 2/84	1/24/84	1/19/84	1/14/84	2/ 7/84
METEOROLOGICAL SITE	DIR (DEG)	20	20	210	230	250	230	20	330	360	320
NEWARK	VEL (MPH)	2.9	6.3	4.4	5.7	4.4	2.8	3.3	10.0	6.0	16.3
	SPD (MPH)	4.7	6.3	4.7	6.2	4.6	4.2	5.3	11.9	6.9	16.7
	RATIO	0.618	0.997	0.932	0.929	0.958	0.672	0.612	0.834	0.868	0.976
METEOROLOGICAL SITE	DIR (DEG)	20	10	160	200	130	180	30	340	10	330
BRADLEY	VEL (MPH)	3.7	3.1	2.0	2.9	0.7	1.1	1.7	7.1	4.8	11.3
	SPD (MPH)	4.2	3.3	2.4	3.4	1.0	2.0	3.6	7.3	5.5	11.5
	RATIO	0.877	0.930	0.812	0.837	0.714	0.564	0.473	0.964	0.885	0.986
METEOROLOGICAL SITE	DIR (DEG)	30	20	260	270	250	230	200	340	350	310
BRIDGEPORT	VEL (MPH)	6.1	5.9	4.4	6.8	5.9	5.2	2.0	10.7	2.3	10.7
	SPD (MPH)	6.6	6.6	7.2	7.9	7.0	5.6	6.9	11.4	4.3	11.1
	RATIO	0.926	0.889	0.608	0.858	0.842	0.921	0.288	0.943	0.544	0.968
METEOROLOGICAL SITE	DIR (DEG)	350	20	250	260	270	290	200	320	30	310
WORCESTER	VEL (MPH)	1.3	2.0	5.5	6.7	5.9	7.8	4.8	6.9	4.3	15.1
	SPD (MPH)	4.2	3.3	5.8	7.2	6.3	8.3	6.6	8.2	5.6	15.2
	RATIO	0.318	0.597	0.960	0.934	0.935	0.931	0.733	0.846	0.767	0.991
EAST HAVEN-003 (341)	SO2	159	153	135	113	98	71	70	67	67	64
	DATE	1/22/84	1/18/84	1/23/84	1/17/84	2/ 2/84	1/19/84	1/ 4/84	1/16/84	11/14/84	12/28/84
METEOROLOGICAL SITE	DIR (DEG)	230	20	210	250	230	330	220	20	310	210
NEWARK	VEL (MPH)	5.7	2.9	4.4	4.4	2.8	10.0	9.0	6.3	17.8	2.0
	SPD (MPH)	6.2	4.7	4.7	4.6	4.2	11.9	9.3	6.3	18.1	5.3
	RATIO	0.929	0.618	0.932	0.958	0.672	0.834	0.967	0.997	0.983	0.374
METEOROLOGICAL SITE	DIR (DEG)	200	20	160	130	180	340	210	10	330	190
BRADLEY	VEL (MPH)	2.9	3.7	2.0	0.7	1.1	7.1	7.9	3.1	13.3	4.1
	SPD (MPH)	3.4	4.2	2.4	1.0	2.0	7.3	8.2	3.3	13.5	6.8
	RATIO	0.837	0.877	0.812	0.714	0.564	0.964	0.960	0.930	0.984	0.608
METEOROLOGICAL SITE	DIR (DEG)	270	30	260	250	230	340	240	20	340	260
BRIDGEPORT	VEL (MPH)	6.8	6.1	4.4	5.9	5.2	10.7	9.6	5.9	16.0	4.9
	SPD (MPH)	7.9	6.6	7.2	7.0	5.6	11.4	9.8	6.6	16.4	6.6
	RATIO	0.858	0.926	0.608	0.842	0.921	0.943	0.981	0.889	0.977	0.739
METEOROLOGICAL SITE	DIR (DEG)	260	350	250	270	290	320	240	20	310	270
WORCESTER	VEL (MPH)	6.7	1.3	5.5	5.9	7.8	6.9	9.1	2.0	20.0	10.8
	SPD (MPH)	7.2	4.2	5.8	6.3	8.3	8.2	9.5	3.3	20.3	12.2
	RATIO	0.934	0.318	0.960	0.935	0.931	0.846	0.961	0.597	0.986	0.883

TABLE 17, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE SO2 DAYS WITH WIND DATA

UNITS : MICROGRAMS / CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
ENFIELD-005 (349)	SO2	133	109	94	86	73	69	67	66	65	62
	DATE	1/23/84	1/24/84	1/22/84	1/17/84	1/16/84	1/ 4/84	1/10/84	11/27/84	1/ 5/84	2/ 2/84
METEOROLOGICAL SITE	DIR (DEG)	210	20	230	250	20	220	340	190	210	230
NEWARK	VEL (MPH)	4.4	3.3	5.7	4.4	6.3	9.0	1.6	3.3	5.1	2.8
	SPD (MPH)	4.7	5.3	6.2	4.6	6.3	9.3	7.6	5.0	5.6	4.2
	RATIO	0.932	0.612	0.929	0.958	0.997	0.967	0.208	0.658	0.906	0.672
METEOROLOGICAL SITE	DIR (DEG)	160	30	200	130	10	210	20	180	180	180
BRADLEY	VEL (MPH)	2.0	1.7	2.9	0.7	3.1	7.9	4.5	2.7	3.7	1.1
	SPD (MPH)	2.4	3.6	3.4	1.0	3.3	8.2	4.6	3.0	3.7	2.0
	RATIO	0.812	0.473	0.837	0.714	0.930	0.960	0.978	0.883	0.985	0.564
METEOROLOGICAL SITE	DIR (DEG)	260	200	270	250	20	240	350	220	140	230
BRIDGEPORT	VEL (MPH)	4.4	2.0	6.8	5.9	5.9	9.6	3.6	3.4	2.1	5.2
	SPD (MPH)	7.2	6.9	7.9	7.0	6.6	9.8	6.8	5.9	2.6	5.6
	RATIO	0.608	0.288	0.858	0.842	0.889	0.981	0.539	0.576	0.804	0.921
METEOROLOGICAL SITE	DIR (DEG)	250	200	260	270	20	240	90	250	250	290
WORCESTER	VEL (MPH)	5.5	4.8	6.7	5.9	2.0	9.1	2.1	7.8	2.8	7.8
	SPD (MPH)	5.8	6.6	7.2	6.3	3.3	9.5	3.3	8.2	4.2	8.3
	RATIO	0.960	0.733	0.934	0.935	0.597	0.961	0.647	0.952	0.681	0.931
GREENWICH-017 (345)	SO2	125	109	97	91	89	82	81	79	69	65
	DATE	1/18/84	1/23/84	1/17/84	6/ 7/84	1/22/84	6/ 6/84	1/24/84	6/ 5/84	11/27/84	1/ 4/84
METEOROLOGICAL SITE	DIR (DEG)	20	210	250	240	230	230	20	220	190	220
NEWARK	VEL (MPH)	2.9	4.4	4.4	7.7	5.7	6.8	3.3	6.7	3.3	9.0
	SPD (MPH)	4.7	4.7	4.6	8.5	6.2	7.9	5.3	7.9	5.0	9.3
	RATIO	0.618	0.932	0.958	0.907	0.929	0.856	0.612	0.849	0.658	0.967
METEOROLOGICAL SITE	DIR (DEG)	20	160	130	250	200	200	30	250	180	210
BRADLEY	VEL (MPH)	3.7	2.0	0.7	2.4	2.9	3.3	1.7	1.6	2.7	7.9
	SPD (MPH)	4.2	2.4	1.0	4.0	3.4	5.0	3.6	4.6	3.0	8.2
	RATIO	0.877	0.812	0.714	0.593	0.837	0.665	0.473	0.338	0.883	0.960
METEOROLOGICAL SITE	DIR (DEG)	30	260	250	220	270	220	200	240	220	240
BRIDGEPORT	VEL (MPH)	6.1	4.4	5.9	6.4	6.8	5.4	2.0	6.4	3.4	9.6
	SPD (MPH)	6.6	7.2	7.0	6.5	7.9	6.0	6.9	6.6	5.9	9.8
	RATIO	0.926	0.608	0.842	0.989	0.858	0.900	0.288	0.961	0.576	0.981
METEOROLOGICAL SITE	DIR (DEG)	350	250	270	280	260	280	200	290	250	240
WORCESTER	VEL (MPH)	1.3	5.5	5.9	3.3	6.7	2.7	4.8	8.3	7.8	9.1
	SPD (MPH)	4.2	5.8	6.3	5.8	7.2	4.9	6.6	8.5	8.2	9.5
	RATIO	0.318	0.960	0.935	0.579	0.934	0.553	0.733	0.976	0.952	0.961
GROTON-007 (334)	SO2	120	114	111	93	71	70	61	57	55	55
	DATE	1/23/84	1/22/84	1/18/84	1/17/84	1/19/84	12/28/84	2/ 2/84	11/ 6/84	11/26/84	1/16/84
METEOROLOGICAL SITE	DIR (DEG)	210	230	20	250	330	210	230	350	210	20
NEWARK	VEL (MPH)	4.4	5.7	2.9	4.4	10.0	2.0	2.8	13.5	6.3	6.3
	SPD (MPH)	4.7	6.2	4.7	4.6	11.9	5.3	4.2	13.9	6.8	6.3
	RATIO	0.932	0.929	0.618	0.958	0.834	0.374	0.672	0.966	0.939	0.997
METEOROLOGICAL SITE	DIR (DEG)	160	200	20	130	340	190	180	340	190	10
BRADLEY	VEL (MPH)	2.0	2.9	3.7	0.7	7.1	4.1	1.1	7.3	3.0	3.1
	SPD (MPH)	2.4	3.4	4.2	1.0	7.3	6.8	2.0	7.5	3.2	3.3
	RATIO	0.812	0.837	0.877	0.714	0.964	0.608	0.564	0.971	0.934	0.930

TABLE 17, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE SO2 DAYS WITH WIND DATA

UNITS : MICROGRAMS / CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	260	270	30	250	340	260	230	340	250	20
BRIDGEPORT	VEL (MPH)	4.4	6.8	6.1	5.9	10.7	4.9	5.2	9.7	7.7	5.9
	SPD (MPH)	7.2	7.9	6.6	7.0	11.4	6.6	5.6	9.9	8.1	6.6
	RATIO	0.608	0.858	0.926	0.842	0.943	0.739	0.921	0.977	0.959	0.889
METEOROLOGICAL SITE	DIR (DEG)	250	260	350	270	320	270	290	300	260	20
WORCESTER	VEL (MPH)	5.5	6.7	1.3	5.9	6.9	10.8	7.8	10.7	9.6	2.0
	SPD (MPH)	5.8	7.2	4.2	6.3	8.2	12.2	8.3	10.9	9.6	3.3
	RATIO	0.960	0.934	0.318	0.935	0.846	0.883	0.931	0.982	0.992	0.597
HARTFORD-123 (360)	SO2	229	211	199	182	180	145	138	122	115	104
	DATE	1/18/84	1/23/84	1/17/84	1/22/84	1/24/84	2/ 2/84	1/27/84	1/16/84	1/19/84	1/30/84
METEOROLOGICAL SITE	DIR (DEG)	20	210	250	230	20	230	300	20	330	190
NEWARK	VEL (MPH)	2.9	4.4	4.4	5.7	3.3	2.8	1.7	6.3	10.0	2.7
	SPD (MPH)	4.7	4.7	4.6	6.2	5.3	4.2	6.3	6.3	11.9	6.0
	RATIO	0.618	0.932	0.958	0.929	0.612	0.672	0.268	0.997	0.834	0.454
METEOROLOGICAL SITE	DIR (DEG)	20	160	130	200	30	180	350	10	340	150
BRADLEY	VEL (MPH)	3.7	2.0	0.7	2.9	1.7	1.1	1.5	3.1	7.1	3.0
	SPD (MPH)	4.2	2.4	1.0	3.4	3.6	2.0	3.9	3.3	7.3	3.6
	RATIO	0.877	0.812	0.714	0.837	0.473	0.564	0.389	0.930	0.964	0.830
METEOROLOGICAL SITE	DIR (DEG)	30	260	250	270	200	230	30	20	340	130
BRIDGEPORT	VEL (MPH)	6.1	4.4	5.9	6.8	2.0	5.2	4.2	5.9	10.7	1.6
	SPD (MPH)	6.6	7.2	7.0	7.9	6.9	5.6	4.9	6.6	11.4	5.9
	RATIO	0.926	0.608	0.842	0.858	0.288	0.921	0.866	0.889	0.943	0.276
METEOROLOGICAL SITE	DIR (DEG)	350	250	270	260	200	290	250	20	320	190
WORCESTER	VEL (MPH)	1.3	5.5	5.9	6.7	4.8	7.8	3.3	2.0	6.9	3.2
	SPD (MPH)	4.2	5.8	6.3	7.2	6.6	8.3	6.0	3.3	8.2	3.9
	RATIO	0.318	0.960	0.935	0.934	0.733	0.931	0.546	0.597	0.846	0.830
MILFORD-002 (341)	SO2	195	191	186	184	176	163	153	147	129	122
	DATE	1/23/84	2/ 7/84	11/20/84	11/14/84	1/31/84	1/18/84	5/14/84	1/22/84	2/ 8/84	2/ 1/84
METEOROLOGICAL SITE	DIR (DEG)	210	320	330	310	320	20	310	230	300	310
NEWARK	VEL (MPH)	4.4	16.3	13.4	17.8	17.3	2.9	12.2	5.7	11.5	13.5
	SPD (MPH)	4.7	16.7	13.9	18.1	18.4	4.7	14.1	6.2	12.7	13.9
	RATIO	0.932	0.976	0.958	0.983	0.942	0.618	0.865	0.929	0.907	0.968
METEOROLOGICAL SITE	DIR (DEG)	160	330	330	330	330	20	330	200	320	330
BRADLEY	VEL (MPH)	2.0	11.3	9.6	13.3	11.9	3.7	9.1	2.9	10.9	7.1
	SPD (MPH)	2.4	11.5	9.9	13.5	12.5	4.2	9.6	3.4	11.6	7.8
	RATIO	0.812	0.986	0.971	0.984	0.954	0.877	0.945	0.837	0.939	0.915
METEOROLOGICAL SITE	DIR (DEG)	260	310	320	340	320	30	330	270	300	330
BRIDGEPORT	VEL (MPH)	4.4	10.7	11.7	16.0	14.0	6.1	10.3	6.8	9.1	9.9
	SPD (MPH)	7.2	11.1	12.1	16.4	16.1	6.6	10.5	7.9	10.4	10.1
	RATIO	0.608	0.968	0.966	0.977	0.867	0.926	0.979	0.858	0.882	0.988
METEOROLOGICAL SITE	DIR (DEG)	250	310	300	310	330	350	320	260	290	310
WORCESTER	VEL (MPH)	5.5	15.1	12.7	20.0	12.1	1.3	5.9	6.7	13.6	10.8
	SPD (MPH)	5.8	15.2	12.9	20.3	13.2	4.2	8.3	7.2	13.9	10.9
	RATIO	0.960	0.991	0.982	0.986	0.913	0.318	0.707	0.934	0.974	0.989

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TABLE 17, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE SO2 DAYS WITH WIND DATA

UNITS : MICROGRAMS / CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
NEW BRITAIN-011 (227)	SO2	76	74	62	57	50	50	47	47	46	43
	DATE	11/26/84	11/27/84	12/24/84	12/ 9/84	11/23/84	11/25/84	12/ 8/84	11/15/84	12/28/84	12/12/84
METEOROLOGICAL SITE	DIR (DEG)	210	190	210	90	240	180	250	210	210	240
NEWARK	VEL (MPH)	6.3	3.3	5.4	1.4	8.7	1.6	10.1	5.5	2.0	4.6
	SPD (MPH)	6.8	5.0	5.9	4.9	9.5	3.6	12.7	7.2	5.3	7.5
	RATIO	0.939	0.658	0.922	0.278	0.922	0.456	0.797	0.769	0.374	0.609
METEOROLOGICAL SITE	DIR (DEG)	190	180	200	210	230	170	250	230	190	210
BRADLEY	VEL (MPH)	3.0	2.7	6.8	1.5	4.3	1.5	7.2	4.1	4.1	3.1
	SPD (MPH)	3.2	3.0	7.3	3.0	6.0	1.6	8.6	5.0	6.8	5.3
	RATIO	0.934	0.883	0.934	0.492	0.710	0.920	0.829	0.808	0.608	0.582
METEOROLOGICAL SITE	DIR (DEG)	250	220	190	180	270	150	260	220	260	200
BRIDGEPORT	VEL (MPH)	7.7	3.4	2.3	1.8	9.6	2.2	12.3	9.1	4.9	3.2
	SPD (MPH)	8.1	5.9	3.7	3.6	9.6	5.9	12.9	9.9	6.6	6.0
	RATIO	0.959	0.576	0.613	0.500	0.995	0.375	0.950	0.915	0.739	0.528
METEOROLOGICAL SITE	DIR (DEG)	260	250	220	270	250	250	240	240	270	200
WORCESTER	VEL (MPH)	9.6	7.8	7.8	5.2	7.4	3.0	9.2	6.3	10.8	1.9
	SPD (MPH)	9.6	8.2	7.9	5.8	7.6	5.0	9.6	7.6	12.2	4.2
	RATIO	0.992	0.952	0.991	0.913	0.968	0.593	0.958	0.826	0.883	0.454
NEW HAVEN-017 (330)	SO2	123	120	118	118	104	100	97	92	89	84
	DATE	1/ 4/84	1/ 5/84	12/29/84	2/ 2/84	1/ 9/84	1/ 3/84	1/30/84	11/27/84	12/13/84	11/26/84
METEOROLOGICAL SITE	DIR (DEG)	220	210	230	230	270	280	190	190	240	210
NEWARK	VEL (MPH)	9.0	5.1	13.1	2.8	8.0	6.3	2.7	3.3	6.7	6.3
	SPD (MPH)	9.3	5.6	13.5	4.2	9.2	8.2	6.0	5.0	7.9	6.8
	RATIO	0.967	0.906	0.972	0.672	0.865	0.768	0.454	0.658	0.847	0.939
METEOROLOGICAL SITE	DIR (DEG)	210	180	220	180	310	280	150	180	210	190
BRADLEY	VEL (MPH)	7.9	3.7	8.8	1.1	3.8	4.4	3.0	2.7	2.2	3.0
	SPD (MPH)	8.2	3.7	11.2	2.0	4.9	7.5	3.6	3.0	5.6	3.2
	RATIO	0.960	0.985	0.788	0.564	0.774	0.588	0.830	0.883	0.395	0.934
METEOROLOGICAL SITE	DIR (DEG)	240	140	250	230	280	280	130	220	260	250
BRIDGEPORT	VEL (MPH)	9.6	2.1	11.6	5.2	5.2	6.5	1.6	3.4	5.8	7.7
	SPD (MPH)	9.8	2.6	11.6	5.6	7.0	7.9	5.9	5.9	6.9	8.1
	RATIO	0.981	0.804	0.994	0.921	0.744	0.818	0.276	0.576	0.834	0.959
METEOROLOGICAL SITE	DIR (DEG)	240	250	270	290	280	280	190	250	250	260
WORCESTER	VEL (MPH)	9.1	2.8	18.6	7.8	8.3	4.9	3.2	7.8	6.6	9.6
	SPD (MPH)	9.5	4.2	18.7	8.3	8.5	6.0	3.9	8.2	7.3	9.6
	RATIO	0.961	0.681	0.995	0.931	0.984	0.811	0.830	0.952	0.902	0.992
NEW HAVEN-123 (346)	SO2	242	242	210	178	142	130	123	117	117	112
	DATE	1/22/84	1/23/84	1/18/84	1/17/84	1/24/84	11/27/84	1/ 5/84	1/27/84	1/ 4/84	2/ 2/84
METEOROLOGICAL SITE	DIR (DEG)	230	210	20	250	20	190	210	300	220	230
NEWARK	VEL (MPH)	5.7	4.4	2.9	4.4	3.3	3.3	5.1	1.7	9.0	2.8
	SPD (MPH)	6.2	4.7	4.7	4.6	5.3	5.0	5.6	6.3	9.3	4.2
	RATIO	0.929	0.932	0.618	0.958	0.612	0.658	0.906	0.268	0.967	0.672
METEOROLOGICAL SITE	DIR (DEG)	200	160	20	130	30	180	180	350	210	180
BRADLEY	VEL (MPH)	2.9	2.0	3.7	0.7	1.7	2.7	3.7	1.5	7.9	1.1
	SPD (MPH)	3.4	2.4	4.2	1.0	3.6	3.0	3.7	3.9	8.2	2.0
	RATIO	0.837	0.812	0.877	0.714	0.473	0.883	0.985	0.389	0.960	0.564

TABLE 17, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE SO2 DAYS WITH WIND DATA

UNITS : MICROGRAMS / CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	270	260	30	250	200	220	140	30	240	230
BRIDGEPORT	VEL (MPH)	6.8	4.4	6.1	5.9	2.0	3.4	2.1	4.2	9.6	5.2
	SPD (MPH)	7.9	7.2	6.6	7.0	6.9	5.9	2.6	4.9	9.8	5.6
	RATIO	0.858	0.608	0.926	0.842	0.288	0.576	0.804	0.866	0.981	0.921
METEOROLOGICAL SITE	DIR (DEG)	260	250	350	270	200	250	250	250	240	290
WORCESTER	VEL (MPH)	6.7	5.5	1.3	5.9	4.8	7.8	2.8	3.3	9.1	7.8
	SPD (MPH)	7.2	5.8	4.2	6.3	6.6	8.2	4.2	6.0	9.5	8.3
	RATIO	0.934	0.960	0.318	0.935	0.733	0.952	0.681	0.546	0.961	0.931
NORWALK-013 (266)	SO2	95	83	71	65	64	64	60	57	57	57
	DATE	12/24/84	12/28/84	12/13/84	12/21/84	12/ 9/84	11/23/84	11/26/84	12/10/84	12/18/84	12/20/84
METEOROLOGICAL SITE	DIR (DEG)	210	210	240	40	90	240	210	20	330	260
NEWARK	VEL (MPH)	5.4	2.0	6.7	8.4	1.4	8.7	6.3	4.7	6.1	5.6
	SPD (MPH)	5.9	5.3	7.9	10.4	4.9	9.5	6.8	7.9	10.5	9.3
	RATIO	0.922	0.374	0.847	0.807	0.278	0.922	0.939	0.595	0.579	0.597
METEOROLOGICAL SITE	DIR (DEG)	200	190	210	30	210	230	190	10	330	290
BRADLEY	VEL (MPH)	6.8	4.1	2.2	3.2	1.5	4.3	3.0	4.9	4.0	4.4
	SPD (MPH)	7.3	6.8	5.6	5.2	3.0	6.0	3.2	4.9	5.6	6.0
	RATIO	0.934	0.608	0.395	0.610	0.492	0.710	0.934	0.998	0.722	0.727
METEOROLOGICAL SITE	DIR (DEG)	190	260	260	50	180	270	250	30	330	280
BRIDGEPORT	VEL (MPH)	2.3	4.9	5.8	9.6	1.8	9.6	7.7	7.2	5.7	7.3
	SPD (MPH)	3.7	6.6	6.9	10.1	3.6	9.6	8.1	7.8	5.9	7.8
	RATIO	0.613	0.739	0.834	0.950	0.500	0.995	0.959	0.924	0.965	0.944
METEOROLOGICAL SITE	DIR (DEG)	220	270	250	50	270	250	260	40	270	260
WORCESTER	VEL (MPH)	7.8	10.8	6.6	3.0	5.2	7.4	9.6	4.0	6.8	9.5
	SPD (MPH)	7.9	12.2	7.3	5.5	5.8	7.6	9.6	5.2	7.5	9.9
	RATIO	0.991	0.883	0.902	0.543	0.913	0.968	0.992	0.768	0.907	0.958
PRESTON-002 (345)	SO2	75	62	54	51	42	42	40	37	37	36
	DATE	1/18/84	1/17/84	1/19/84	1/24/84	2/ 2/84	11/26/84	12/13/84	1/16/84	1/25/84	12/ 8/84
METEOROLOGICAL SITE	DIR (DEG)	20	250	330	20	230	210	240	20	250	250
NEWARK	VEL (MPH)	2.9	4.4	10.0	3.3	2.8	6.3	6.7	6.3	10.8	10.1
	SPD (MPH)	4.7	4.6	11.9	5.3	4.2	6.8	7.9	6.3	11.1	12.7
	RATIO	0.618	0.958	0.834	0.612	0.672	0.939	0.847	0.997	0.975	0.797
METEOROLOGICAL SITE	DIR (DEG)	20	130	340	30	180	190	210	10	240	250
BRADLEY	VEL (MPH)	3.7	0.7	7.1	1.7	1.1	3.0	2.2	3.1	5.1	7.2
	SPD (MPH)	4.2	1.0	7.3	3.6	2.0	3.2	5.6	3.3	7.6	8.6
	RATIO	0.877	0.714	0.964	0.473	0.564	0.934	0.395	0.930	0.667	0.829
METEOROLOGICAL SITE	DIR (DEG)	30	250	340	200	230	250	260	20	250	260
BRIDGEPORT	VEL (MPH)	6.1	5.9	10.7	2.0	5.2	7.7	5.8	5.9	10.2	12.3
	SPD (MPH)	6.6	7.0	11.4	6.9	5.6	8.1	6.9	6.6	10.5	12.9
	RATIO	0.926	0.842	0.943	0.288	0.921	0.959	0.834	0.889	0.971	0.950
METEOROLOGICAL SITE	DIR (DEG)	350	270	320	200	290	260	250	20	270	240
WORCESTER	VEL (MPH)	1.3	5.9	6.9	4.8	7.8	9.6	6.6	2.0	11.8	9.2
	SPD (MPH)	4.2	6.3	8.2	6.6	8.3	9.6	7.3	3.3	12.2	9.6
	RATIO	0.318	0.935	0.846	0.733	0.931	0.992	0.902	0.597	0.966	0.958

TABLE 17, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE SO2 DAYS WITH WIND DATA

UNITS : MICROGRAMS / CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
STAMFORD-025 (297)	SO2	115	104	90	89	87	76	73	72	66	64
	DATE	11/27/84	11/26/84	12/13/84	12/24/84	12/28/84	2/ 2/84	11/23/84	12/ 9/84	12/29/84	12/ 8/84
METEOROLOGICAL SITE	DIR (DEG)	190	210	240	210	210	230	240	90	230	250
NEWARK	VEL (MPH)	3.3	6.3	6.7	5.4	2.0	2.8	8.7	1.4	13.1	10.1
	SPD (MPH)	5.0	6.8	7.9	5.9	5.3	4.2	9.5	4.9	13.5	12.7
	RATIO	0.658	0.939	0.847	0.922	0.374	0.672	0.922	0.278	0.972	0.797
METEOROLOGICAL SITE	DIR (DEG)	180	190	210	200	190	180	230	210	220	250
BRADLEY	VEL (MPH)	2.7	3.0	2.2	6.8	4.1	1.1	4.3	1.5	8.8	7.2
	SPD (MPH)	3.0	3.2	5.6	7.3	6.8	2.0	6.0	3.0	11.2	8.6
	RATIO	0.883	0.934	0.395	0.934	0.608	0.564	0.710	0.492	0.788	0.829
METEOROLOGICAL SITE	DIR (DEG)	220	250	260	190	260	230	270	180	250	260
BRIDGEPORT	VEL (MPH)	3.4	7.7	5.8	2.3	4.9	5.2	9.6	1.8	11.6	12.3
	SPD (MPH)	5.9	8.1	6.9	3.7	6.6	5.6	9.6	3.6	11.6	12.9
	RATIO	0.576	0.959	0.834	0.613	0.739	0.921	0.995	0.500	0.994	0.950
METEOROLOGICAL SITE	DIR (DEG)	250	260	250	220	270	290	250	270	270	240
WORCESTER	VEL (MPH)	7.8	9.6	6.6	7.8	10.8	7.8	7.4	5.2	18.6	9.2
	SPD (MPH)	8.2	9.6	7.3	7.9	12.2	8.3	7.6	5.8	18.7	9.6
	RATIO	0.952	0.992	0.902	0.991	0.883	0.931	0.968	0.913	0.995	0.958
STAMFORD-123 (343)	SO2	166	147	136	123	108	106	103	103	97	92
	DATE	1/23/84	1/18/84	1/22/84	1/17/84	1/ 4/84	12/24/84	1/24/84	11/27/84	1/ 5/84	12/13/84
METEOROLOGICAL SITE	DIR (DEG)	210	20	230	250	220	210	20	190	210	240
NEWARK	VEL (MPH)	4.4	2.9	5.7	4.4	9.0	5.4	3.3	3.3	5.1	6.7
	SPD (MPH)	4.7	4.7	6.2	4.6	9.3	5.9	5.3	5.0	5.6	7.9
	RATIO	0.932	0.618	0.929	0.958	0.967	0.922	0.612	0.658	0.906	0.847
METEOROLOGICAL SITE	DIR (DEG)	160	20	200	130	210	200	30	180	180	210
BRADLEY	VEL (MPH)	2.0	3.7	2.9	0.7	7.9	6.8	1.7	2.7	3.7	2.2
	SPD (MPH)	2.4	4.2	3.4	1.0	8.2	7.3	3.6	3.0	3.7	5.6
	RATIO	0.812	0.877	0.837	0.714	0.960	0.934	0.473	0.883	0.985	0.395
METEOROLOGICAL SITE	DIR (DEG)	260	30	270	250	240	190	200	220	140	260
BRIDGEPORT	VEL (MPH)	4.4	6.1	6.8	5.9	9.6	2.3	2.0	3.4	2.1	5.8
	SPD (MPH)	7.2	6.6	7.9	7.0	9.8	3.7	6.9	5.9	2.6	6.9
	RATIO	0.608	0.926	0.858	0.842	0.981	0.613	0.288	0.576	0.804	0.834
METEOROLOGICAL SITE	DIR (DEG)	250	350	260	270	240	220	200	250	250	250
WORCESTER	VEL (MPH)	5.5	1.3	6.7	5.9	9.1	7.8	4.8	7.8	2.8	6.6
	SPD (MPH)	5.8	4.2	7.2	6.3	9.5	7.9	6.6	8.2	4.2	7.3
	RATIO	0.960	0.318	0.934	0.935	0.961	0.991	0.733	0.952	0.681	0.902
WATERBURY-007 (350)	SO2	228	201	196	168	138	127	119	114	110	106
	DATE	1/23/84	1/17/84	1/22/84	1/18/84	1/24/84	2/ 2/84	11/27/84	1/20/84	1/ 5/84	1/27/84
METEOROLOGICAL SITE	DIR (DEG)	210	250	230	20	20	230	190	260	210	300
NEWARK	VEL (MPH)	4.4	4.4	5.7	2.9	3.3	2.8	3.3	9.7	5.1	1.7
	SPD (MPH)	4.7	4.6	6.2	4.7	5.3	4.2	5.0	10.4	5.6	6.3
	RATIO	0.932	0.958	0.929	0.618	0.612	0.672	0.658	0.935	0.906	0.268
METEOROLOGICAL SITE	DIR (DEG)	160	130	200	20	30	180	180	230	180	350
BRADLEY	VEL (MPH)	2.0	0.7	2.9	3.7	1.7	1.1	2.7	3.2	3.7	1.5
	SPD (MPH)	2.4	1.0	3.4	4.2	3.6	2.0	3.0	5.2	3.7	3.9
	RATIO	0.812	0.714	0.837	0.877	0.473	0.564	0.883	0.624	0.985	0.389

TABLE 17, CONTINUED

1984 TEN HIGHEST 24-HOUR AVERAGE SO2 DAYS WITH WIND DATA

UNITS : MICROGRAMS / CUBIC METER

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	260	250	270	30	200	230	220	270	140	30
BRIDGEPORT	VEL (MPH)	4.4	5.9	6.8	6.1	2.0	5.2	3.4	11.5	2.1	4.2
	SPD (MPH)	7.2	7.0	7.9	6.6	6.9	5.6	5.9	11.6	2.6	4.9
	RATIO	0.608	0.842	0.858	0.926	0.288	0.921	0.576	0.987	0.804	0.866
METEOROLOGICAL SITE	DIR (DEG)	250	270	260	350	200	290	250	270	250	250
WORCESTER	VEL (MPH)	5.5	5.9	6.7	1.3	4.8	7.8	7.8	7.7	2.8	3.3
	SPD (MPH)	5.8	6.3	7.2	4.2	6.6	8.3	8.2	8.1	4.2	6.0
	RATIO	0.960	0.935	0.934	0.318	0.733	0.931	0.952	0.959	0.681	0.546
WATERBURY-123 (334)	SO2	153	136	131	120	90	85	82	78	77	74
	DATE	1/23/84	1/17/84	1/18/84	1/22/84	1/24/84	1/ 5/84	11/27/84	2/ 2/84	1/ 6/84	12/28/84
METEOROLOGICAL SITE	DIR (DEG)	210	250	20	230	20	210	190	230	220	210
NEWARK	VEL (MPH)	4.4	4.4	2.9	5.7	3.3	5.1	3.3	2.8	5.7	2.0
	SPD (MPH)	4.7	4.6	4.7	6.2	5.3	5.6	5.0	4.2	7.5	5.3
	RATIO	0.932	0.958	0.618	0.929	0.612	0.906	0.658	0.672	0.757	0.374
METEOROLOGICAL SITE	DIR (DEG)	160	130	20	200	30	180	180	180	190	190
BRADLEY	VEL (MPH)	2.0	0.7	3.7	2.9	1.7	3.7	2.7	1.1	2.5	4.1
	SPD (MPH)	2.4	1.0	4.2	3.4	3.6	3.7	3.0	2.0	4.0	6.8
	RATIO	0.812	0.714	0.877	0.837	0.473	0.985	0.883	0.564	0.628	0.608
METEOROLOGICAL SITE	DIR (DEG)	260	250	30	270	200	140	220	230	260	260
BRIDGEPORT	VEL (MPH)	4.4	5.9	6.1	6.8	2.0	2.1	3.4	5.2	2.1	4.9
	SPD (MPH)	7.2	7.0	6.6	7.9	6.9	2.6	5.9	5.6	4.9	6.6
	RATIO	0.608	0.842	0.926	0.858	0.288	0.804	0.576	0.921	0.437	0.739
METEOROLOGICAL SITE	DIR (DEG)	250	270	350	260	200	250	250	290	230	270
WORCESTER	VEL (MPH)	5.5	5.9	1.3	6.7	4.8	2.8	7.8	7.8	4.3	10.8
	SPD (MPH)	5.8	6.3	4.2	7.2	6.6	4.2	8.2	8.3	5.6	12.2
	RATIO	0.960	0.935	0.318	0.934	0.733	0.681	0.952	0.931	0.767	0.883

IV. OZONE

Health Effects

Ozone is a poisonous form of oxygen and the principal component of modern smog. Until recently, EPA called this type of pollution "photochemical oxidants." The name has been changed to ozone because ozone is the only oxidant actually measured and is the most plentiful.

Ozone and other oxidants -- including peroxyacetal nitrates (PAN), formaldehyde and peroxides -- are not usually emitted into the air directly. They are formed by chemical reactions in the air from two other pollutants: hydrocarbons and nitrogen oxides. Energy from sunlight is needed for these chemical reactions. This accounts for the term photochemical smog and the daily variation in ozone levels, which increase during the day and decrease at night.

Ozone is a pungent gas with a faintly bluish color. It irritates the mucous membranes of the respiratory system, causing coughing, choking and impaired lung function. It aggravates chronic respiratory diseases like asthma and bronchitis and is believed capable of hastening the death, by pneumonia, of persons in already weakened health. PAN and the other oxidants that accompany ozone are powerful eye irritants.

Conclusions

As in past years, Connecticut experienced very high concentrations of ozone in the summer months of 1984. Levels in excess of the one-hour NAAQS of 0.12 ppm were frequently recorded at each of the ten monitored sites. As a result, the one-hour standard for ozone was violated at every site. Five sites experienced levels greater than 0.20 ppm in 1984, as opposed to nine sites in 1983. Both the highest and the second highest one-hour concentrations decreased at all but one of the ten sites in 1984.

The incidence of ozone levels in excess of the 1-hour 0.12 ppm standard was less in 1984 compared to 1983 (see Table 19). There was a total of 959 exceedances in 1983 and 400 in 1984 at those monitored sites that operated in both years. This represents a drop in the frequency of such exceedances from 24.2 in 1983 to 9.9 per 1000 sampling hours in 1984: a 59% decrease. If one eliminates the duplication that results when two or more sites experience an exceedance in the same hour, then the number of exceedances decreased from 351 to 165. On this basis, the state experienced a 54% decrease in the frequency of hourly exceedances of the standard.

The number of days on which the ozone monitors experienced ozone levels in excess of the 1-hour standard decreased from 267 in 1983 to 150 in 1984 (see Table 18). This represents a decrease in the frequency of such occurrences from 16.2 in 1983 to 8.9 per 100 sampling days in 1984: a 45% decrease. If the duplication that results when two or more sites experience an exceedance on the same day is eliminated, then the number of exceedances decreased from 60 to 37. On this basis, the state experienced a 39% drop in the frequency of daily exceedances of the standard.

The yearly changes in ozone concentrations can be attributed to year-to-year variations in regional weather conditions, especially wind direction, temperature and the amount of sunlight. A large portion of the peak ozone concentrations in Connecticut is caused by the transport of ozone and/or precursors (i.e., hydrocarbons and nitrogen oxides) from the New York City area and other points to the west and southwest. The percentage of southwest winds during the "ozone season" remained about the same from 1983 to 1984, as is shown by the wind roses from Newark (Figures 9 and 10). The wind roses from Bradley (Figures 7 and 8) are believed to be not as representative, since the airport is located in the Connecticut River Valley and the wind gets channeled up or down the valley. The magnitude of the high ozone levels can be partly associated with yearly variations in temperature. Ozone production is greatest at high temperatures and in strong sunlight. The summer season's daily high temperatures were lower in 1984 than in 1983. This is demonstrated by the number of days exceeding 90°F which decreased from eleven in 1983 to nine in 1984 at Sikorsky Airport in Bridgeport. At Bradley International Airport, the number of days exceeding 90°F decreased from thirty in 1983 to twelve in 1984. The percentage of possible sunshine at Bradley averaged 63% in 1984 and 74% in 1983 for the months June through September. The average for the summer months at Bradley is normally about 62%. This large decrease in the percentage of possible sunshine and the resulting decrease in high temperature days are believed to be major factors in the decrease in the number of high ozone days in Connecticut in 1984.

Method of Measurement

The DEP Air Monitoring Unit uses chemiluminescent instruments to measure and record instantaneous concentrations of ozone continuously by means of a fluorescent technique. Properly calibrated, these instruments are shown to be remarkably reliable and stable.

Discussion of Data

Monitoring Network - In order to gather information which will further the understanding of ozone production and transport, and to provide real-time data for the daily Pollutant Standards Index, DEP operated a state-wide ozone monitoring network consisting of four types of sites in 1984 (see Figure 6):

Urban	- Bridgeport, East Hartford, Middletown, New Haven
Advection from Southwest	- Danbury, Greenwich
Suburban	- Groton, Madison, Stratford
Rural	- Stafford

Precision and Accuracy - The ozone monitors had a total of 94 precision checks during 1984. The resulting 95% probability limits were -10% to +6%. Accuracy is determined by introducing a known amount of ozone into each of the monitors. Three different concentration levels are tested: low, medium, and high. The 95% probability limits, based on 6 audits conducted on the monitoring system, were: low, -1% to +7%; medium, -3% to +5%; and high, -3% to +3%.

NAAQS - On February 8, 1979 the EPA established a national ambient air quality standard (NAAQS) for ozone of 0.12 ppm for a one-hour average. Compliance with this standard is determined by summing the number of days at each monitoring site over a consecutive three-year period when the 1-hour standard is exceeded and then computing the average number of exceedances over this interval. If the resulting average value is less than or equal to 1.0 (that is, if the fourth highest daily value in a consecutive three-year period is less than or equal to 0.12 ppm) the ozone standard is considered attained at the site. This standard replaces the old photochemical oxidant standard of 0.08 ppm. The definition of the pollutant was changed along with the numerical value of the standard, partly because the instruments used to measure photochemical oxidants in the air really measure only ozone. Ozone is one of a group of chemicals which are formed photochemically in the air and are called photochemical oxidants. In the past, the two terms have often been used interchangeably. This 1984 Air Quality Summary uses the term "ozone" in conjunction with the NAAQS to reflect the change in both the numerical value of the NAAQS and the definition of the pollutant.

The EPA defines the ozone standard to two decimal places. Therefore, the standard is considered exceeded when a level of 0.13 pm is reached. However, since the DEP still measures ozone levels to three decimal places, any one-hour average ozone reading which equals or is greater than 0.125 ppm is considered an exceedance of the 0.12 ppm standard in Connecticut. This interpretation of the ozone standard differs from the one used by the DEP before 1982, when a one-hour ozone concentration of 0.121 ppm was considered an exceedance of the standard.

1-Hour Average - The 1-hour ozone standard was exceeded at all ten DEP monitoring sites in 1984. Moreover, the highest 1-hour average ozone concentrations were lower in 1984 than in 1983 at all the sites except New Haven 123. Greenwich 017 had the largest decrease of 0.073 ppm.

The number of days on which the 1-hour standard was exceeded at each site during the summertime "ozone season" is presented in Table 18. The number of times the ozone standard was exceeded is presented in Table 19 for each site. Table 20 shows the year's high and second high concentrations at each site.

10 High Days with Wind Data - Table 21 lists the ten highest 1-hour ozone averages and their dates of occurrence for each ozone site in 1984. The wind data associated with these high readings are also presented. (See the discussion of Table 11 in the TSP section for a description of the origin and use of these wind data.)

Nearly all (i.e., 97%) of the high ozone levels occurred on days with southwesterly winds. This is due to the special features of a southwest wind blowing over Connecticut. The first aspect of a southwest wind is that, during the summer, it usually accompanies high temperatures and bright sunshine, which are important to the production of ozone. The second is that it will transport precursor emissions from New York City and other urban areas to the southwest of Connecticut. It is the combination of these factors that often produces unhealthful ozone levels in Connecticut.

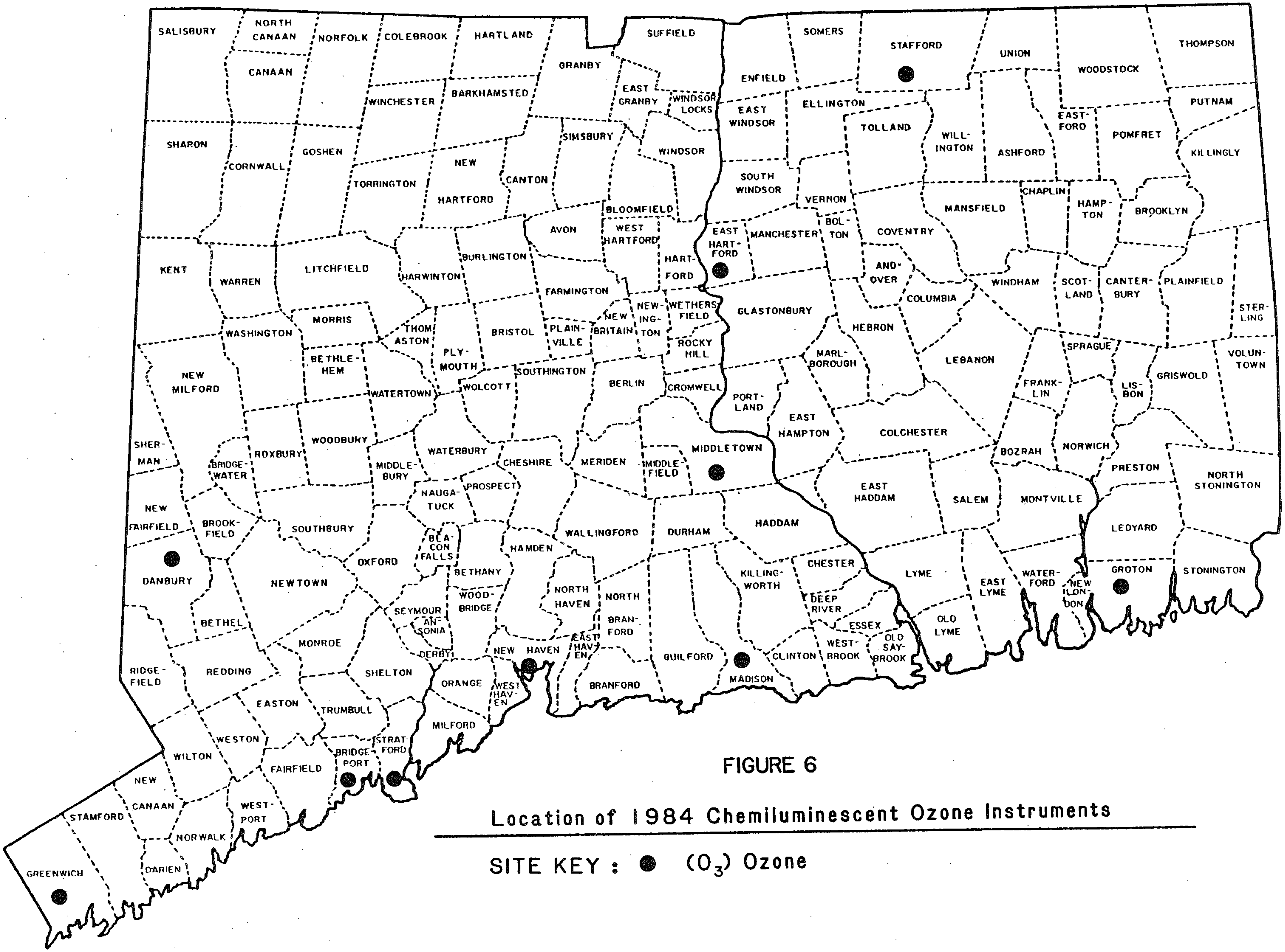


FIGURE 6

Location of 1984 Chemiluminescent Ozone Instruments

SITE KEY : ● (O_3) Ozone

TABLE 18

NUMBER OF DAYS ON WHICH THE 1-HOUR OZONE STANDARD WAS EXCEEDED IN 1984

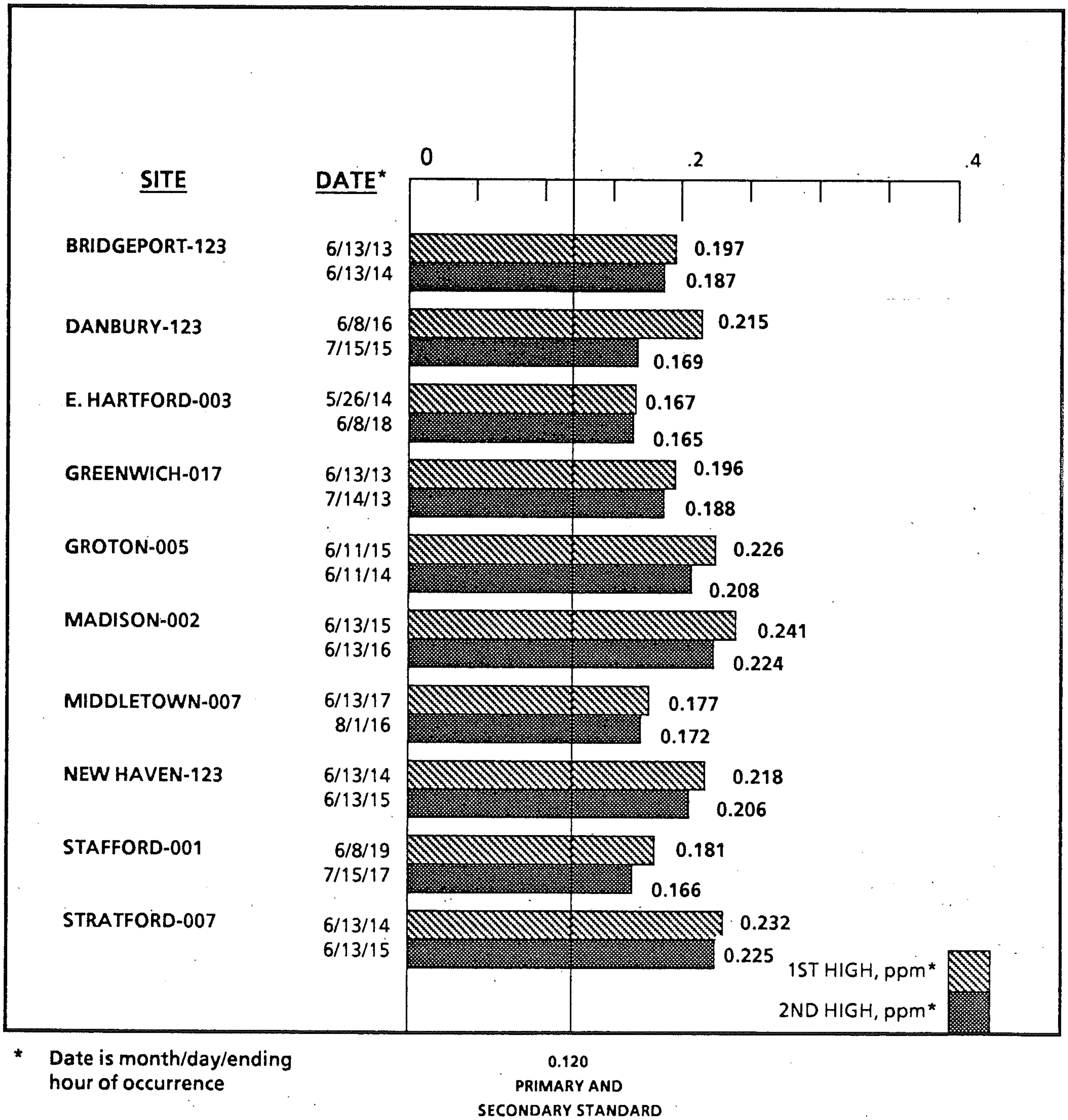
SITE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	TOTAL	TOTAL FOR LAST YEAR
Bridgeport-123	0	0	6	3	3	0	12	24
Danbury-123	0	0	7	4	2	0	13	25
East Hartford-003	0	1	3	2	1	0	7	15
Greenwich-017	0	0	6	6	5	0	17	32
Groton-005	0	2	8	6	6	0	22	36
Madison-002	0	0	7	6	5	0	18	23
Middletown-007	0	0	8	4	2	0	14	20
New Haven-123	0	0	3	6	3	0	12	27
Stafford-001	0	0	2	4	1	0	7	20
Stratford-007	0	0	10	10	8	0	28	45
				TOTAL SITE DAYS			150	267
			TOTAL INDIVIDUAL DAYS				37	60

TABLE 19

NUMBER OF EXCEEDANCES OF THE 1-HOUR OZONE STANDARD IN 1984

SITE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	TOTAL	TOTAL FOR LAST YEAR
Bridgeport-123	0	0	20	7	6	0	33	67
Danbury-123	0	0	14	9	3	0	26	94
East Hartford-003	0	1	4	2	2	0	9	35
Greenwich-017	0	0	23	16	10	0	49	116
Groton-005	0	3	34	18	13	0	68	187
Madison-002	0	0	23	17	13	0	53	81
Middletown-007	0	0	16	5	8	0	29	69
New Haven-123	0	0	6	16	7	0	29	82
Stafford-001	0	0	4	9	2	0	15	60
Stratford-007	0	0	34	32	23	0	89	168
				TOTAL SITE HOURS			400	959
			TOTAL INDIVIDUAL HOURS				165	351

TABLE 20
1984 MAXIMUM 1-HOUR OZONE CONCENTRATIONS



* Date is month/day/ending hour of occurrence

TABLE 21

1984 TEN HIGHEST 1-HOUR AVERAGE OZONE DAYS WITH WIND DATA

UNITS : PARTS PER MILLION

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
BRIDGEPORT-123 (4205)	OZONE	0.197	0.177	0.168	0.160	0.155	0.149	0.145	0.140	0.134	0.133
	DATE	6/13/84	7/15/84	8/ 1/84	6/11/84	7/14/84	6/ 6/84	6/ 8/84	7/ 4/84	8/22/84	6/10/84
METEOROLOGICAL SITE	DIR (DEG)	230	200	230	260	240	230	220	220	220	230
NEWARK	VEL (MPH)	7.6	9.9	8.7	9.8	7.6	6.8	8.9	9.6	9.4	5.3
	SPD (MPH)	9.9	10.5	9.2	11.6	7.9	7.9	9.2	10.2	10.2	7.9
	RATIO	0.770	0.941	0.946	0.840	0.958	0.856	0.967	0.936	0.916	0.670
METEOROLOGICAL SITE	DIR (DEG)	220	210	230	260	260	200	190	200	220	250
BRADLEY	VEL (MPH)	5.0	7.4	4.7	6.4	4.7	3.3	5.9	8.3	5.1	4.9
	SPD (MPH)	7.0	7.9	6.2	9.5	4.9	5.0	6.8	8.5	5.3	5.9
	RATIO	0.716	0.941	0.765	0.672	0.954	0.665	0.866	0.976	0.967	0.827
METEOROLOGICAL SITE	DIR (DEG)	240	220	220	240	220	220	230	220	220	220
BRIDGEPORT	VEL (MPH)	7.7	8.3	8.4	7.3	7.4	5.4	6.3	5.8	8.8	6.3
	SPD (MPH)	7.8	8.6	9.2	7.5	7.8	6.0	6.3	6.0	9.3	6.9
	RATIO	0.988	0.968	0.910	0.977	0.953	0.900	0.996	0.952	0.937	0.914
METEOROLOGICAL SITE	DIR (DEG)	260	280	280	280	290	280	260	240	280	280
WORCESTER	VEL (MPH)	9.4	6.4	5.7	7.2	6.3	2.7	6.3	5.3	4.5	6.7
	SPD (MPH)	9.6	9.6	7.0	8.1	9.1	4.9	6.8	7.8	7.8	7.6
	RATIO	0.973	0.664	0.805	0.893	0.690	0.553	0.926	0.686	0.584	0.879
DANBURY-123 (3990)	OZONE	0.215	0.169	0.152	0.144	0.141	0.139	0.137	0.136	0.135	0.132
	DATE	6/ 8/84	7/15/84	6/ 6/84	7/10/84	7/ 4/84	7/31/84	6/ 7/84	6/13/84	6/10/84	8/22/84
METEOROLOGICAL SITE	DIR (DEG)	220	200	230	210	220	210	240	230	230	220
NEWARK	VEL (MPH)	8.9	9.9	6.8	6.8	9.6	7.2	7.7	7.6	5.3	9.4
	SPD (MPH)	9.2	10.5	7.9	8.2	10.2	7.9	8.5	9.9	7.9	10.2
	RATIO	0.967	0.941	0.856	0.828	0.936	0.907	0.907	0.770	0.670	0.916
METEOROLOGICAL SITE	DIR (DEG)	190	210	200	190	200	220	250	220	250	220
BRADLEY	VEL (MPH)	5.9	7.4	3.3	4.0	8.3	4.9	2.4	5.0	4.9	5.1
	SPD (MPH)	6.8	7.9	5.0	6.2	8.5	5.8	4.0	7.0	5.9	5.3
	RATIO	0.866	0.941	0.665	0.650	0.976	0.852	0.593	0.716	0.827	0.967
METEOROLOGICAL SITE	DIR (DEG)	230	220	220	210	220	220	220	240	220	220
BRIDGEPORT	VEL (MPH)	6.3	8.3	5.4	6.5	5.8	8.2	6.4	7.7	6.3	8.8
	SPD (MPH)	6.3	8.6	6.0	6.9	6.0	8.3	6.5	7.8	6.9	9.3
	RATIO	0.996	0.968	0.900	0.940	0.952	0.978	0.989	0.988	0.914	0.937
METEOROLOGICAL SITE	DIR (DEG)	260	280	280	310	240	270	280	260	280	280
WORCESTER	VEL (MPH)	6.3	6.4	2.7	3.5	5.3	5.8	3.3	9.4	6.7	4.5
	SPD (MPH)	6.8	9.6	4.9	6.6	7.8	6.0	5.8	9.6	7.6	7.8
	RATIO	0.926	0.664	0.553	0.528	0.686	0.953	0.579	0.973	0.879	0.584
EAST HARTFORD-003 (4045)	OZONE	0.167	0.165	0.148	0.133	0.132	0.132	0.130	0.123	0.115	0.111
	DATE	5/26/84	6/ 8/84	7/15/84	6/27/84	8/22/84	6/28/84	7/ 4/84	7/10/84	6/ 6/84	6/23/84
METEOROLOGICAL SITE	DIR (DEG)	230	220	200	230	220	220	220	210	230	210
NEWARK	VEL (MPH)	10.5	8.9	9.9	10.7	9.4	8.8	9.6	6.8	6.8	10.0
	SPD (MPH)	13.9	9.2	10.5	11.4	10.2	10.1	10.2	8.2	7.9	10.4
	RATIO	0.756	0.967	0.941	0.943	0.916	0.870	0.936	0.828	0.856	0.966
METEOROLOGICAL SITE	DIR (DEG)	200	190	210	220	220	200	200	190	200	220
BRADLEY	VEL (MPH)	7.1	5.9	7.4	4.9	5.1	7.6	8.3	4.0	3.3	2.8
	SPD (MPH)	10.1	6.8	7.9	5.8	5.3	8.9	8.5	6.2	5.0	4.9
	RATIO	0.702	0.866	0.941	0.848	0.967	0.857	0.976	0.650	0.665	0.579

TABLE 21, CONTINUED

1984 TEN HIGHEST 1-HOUR AVERAGE OZONE DAYS WITH WIND DATA

UNITS : PARTS PER MILLION

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	210	230	220	220	220	210	220	210	220	220
BRIDGEPORT	VEL (MPH)	6.0	6.3	8.3	4.4	8.8	6.1	5.8	6.5	5.4	6.1
	SPD (MPH)	8.2	6.3	8.6	5.2	9.3	6.6	6.0	6.9	6.0	6.2
	RATIO	0.736	0.996	0.968	0.843	0.937	0.918	0.952	0.940	0.900	0.990
METEOROLOGICAL SITE	DIR (DEG)	240	260	280	240	280	240	240	310	280	340
WORCESTER	VEL (MPH)	13.5	6.3	6.4	5.8	4.5	7.9	5.3	3.5	2.7	2.1
	SPD (MPH)	14.1	6.8	9.6	6.9	7.8	8.5	7.8	6.6	4.9	7.5
	RATIO	0.961	0.926	0.664	0.833	0.584	0.937	0.686	0.528	0.553	0.285
GREENWICH-017 (4172)	OZONE	0.196	0.188	0.185	0.175	0.174	0.161	0.159	0.151	0.150	0.147
	DATE	6/13/84	7/14/84	6/10/84	6/ 8/84	6/ 7/84	8/16/84	6/11/84	6/28/84	8/ 1/84	7/31/84
METEOROLOGICAL SITE	DIR (DEG)	230	240	230	220	240	330	260	220	230	210
NEWARK	VEL (MPH)	7.6	7.6	5.3	8.9	7.7	7.1	9.8	8.8	8.7	7.2
	SPD (MPH)	9.9	7.9	7.9	9.2	8.5	8.3	11.6	10.1	9.2	7.9
	RATIO	0.770	0.958	0.670	0.967	0.907	0.853	0.840	0.870	0.946	0.907
METEOROLOGICAL SITE	DIR (DEG)	220	260	250	190	250	340	260	200	230	220
BRADLEY	VEL (MPH)	5.0	4.7	4.9	5.9	2.4	3.8	6.4	7.6	4.7	4.9
	SPD (MPH)	7.0	4.9	5.9	6.8	4.0	4.7	9.5	8.9	6.2	5.8
	RATIO	0.716	0.954	0.827	0.866	0.593	0.800	0.672	0.857	0.765	0.852
METEOROLOGICAL SITE	DIR (DEG)	240	220	220	230	220	250	240	210	220	220
BRIDGEPORT	VEL (MPH)	7.7	7.4	6.3	6.3	6.4	6.0	7.3	6.1	8.4	8.2
	SPD (MPH)	7.8	7.8	6.9	6.3	6.5	8.1	7.5	6.6	9.2	8.3
	RATIO	0.988	0.953	0.914	0.996	0.989	0.748	0.977	0.918	0.910	0.978
METEOROLOGICAL SITE	DIR (DEG)	260	290	280	260	280	320	280	240	280	270
WORCESTER	VEL (MPH)	9.4	6.3	6.7	6.3	3.3	5.9	7.2	7.9	5.7	5.8
	SPD (MPH)	9.6	9.1	7.6	6.8	5.8	6.8	8.1	8.5	7.0	6.0
	RATIO	0.973	0.690	0.879	0.926	0.579	0.879	0.893	0.937	0.805	0.953
GROTON-005 (4077)	OZONE	0.226	0.192	0.183	0.183	0.174	0.171	0.160	0.159	0.154	0.150
	DATE	6/11/84	6/ 9/84	6/ 8/84	7/14/84	6/13/84	7/31/84	8/ 7/84	7/15/84	6/14/84	6/10/84
METEOROLOGICAL SITE	DIR (DEG)	260	250	220	240	230	210	240	200	260	230
NEWARK	VEL (MPH)	9.8	10.6	8.9	7.6	7.6	7.2	8.6	9.9	9.5	5.3
	SPD (MPH)	11.6	11.2	9.2	7.9	9.9	7.9	9.5	10.5	12.4	7.9
	RATIO	0.840	0.943	0.967	0.958	0.770	0.907	0.906	0.941	0.765	0.670
METEOROLOGICAL SITE	DIR (DEG)	260	250	190	260	220	220	180	210	280	250
BRADLEY	VEL (MPH)	6.4	6.2	5.9	4.7	5.0	4.9	3.4	7.4	6.6	4.9
	SPD (MPH)	9.5	8.1	6.8	4.9	7.0	5.8	5.5	7.9	9.6	5.9
	RATIO	0.672	0.765	0.866	0.954	0.716	0.852	0.617	0.941	0.690	0.827
METEOROLOGICAL SITE	DIR (DEG)	240	230	230	220	240	220	230	220	250	220
BRIDGEPORT	VEL (MPH)	7.3	8.1	6.3	7.4	7.7	8.2	6.0	8.3	5.9	6.3
	SPD (MPH)	7.5	8.2	6.3	7.8	7.8	8.3	7.2	8.6	6.6	6.9
	RATIO	0.977	0.994	0.996	0.953	0.988	0.978	0.837	0.968	0.885	0.914
METEOROLOGICAL SITE	DIR (DEG)	280	260	260	290	260	270	260	280	290	280
WORCESTER	VEL (MPH)	7.2	8.6	6.3	6.3	9.4	5.8	3.9	6.4	9.2	6.7
	SPD (MPH)	8.1	8.9	6.8	9.1	9.6	6.0	4.9	9.6	9.6	7.6
	RATIO	0.893	0.962	0.926	0.690	0.973	0.953	0.797	0.664	0.958	0.879

TABLE 21, CONTINUED

1984 TEN HIGHEST 1-HOUR AVERAGE OZONE DAYS WITH WIND DATA

UNITS : PARTS PER MILLION

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
MADISON-002 (3701)	OZONE	0.241	0.204	0.174	0.166	0.158	0.150	0.149	0.147	0.145	0.143
	DATE	6/13/84	6/11/84	8/22/84	8/ 7/84	7/14/84	6/ 8/84	7/15/84	8/ 1/84	6/ 9/84	7/20/84
METEOROLOGICAL SITE	DIR (DEG)	230	260	220	240	240	220	200	230	250	220
NEWARK	VEL (MPH)	7.6	9.8	9.4	8.6	7.6	8.9	9.9	8.7	10.6	7.6
	SPD (MPH)	9.9	11.6	10.2	9.5	7.9	9.2	10.5	9.2	11.2	7.9
	RATIO	0.770	0.840	0.916	0.906	0.958	0.967	0.941	0.946	0.943	0.956
METEOROLOGICAL SITE	DIR (DEG)	220	260	220	180	260	190	210	230	250	240
BRADLEY	VEL (MPH)	5.0	6.4	5.1	3.4	4.7	5.9	7.4	4.7	6.2	4.8
	SPD (MPH)	7.0	9.5	5.3	5.5	4.9	6.8	7.9	6.2	8.1	5.9
	RATIO	0.716	0.672	0.967	0.617	0.954	0.866	0.941	0.765	0.765	0.820
METEOROLOGICAL SITE	DIR (DEG)	240	240	220	230	220	230	220	220	230	220
BRIDGEPORT	VEL (MPH)	7.7	7.3	8.8	6.0	7.4	6.3	8.3	8.4	8.1	7.9
	SPD (MPH)	7.8	7.5	9.3	7.2	7.8	6.3	8.6	9.2	8.2	8.3
	RATIO	0.988	0.977	0.937	0.837	0.953	0.996	0.968	0.910	0.994	0.950
METEOROLOGICAL SITE	DIR (DEG)	260	280	280	260	290	260	280	280	260	260
WORCESTER	VEL (MPH)	9.4	7.2	4.5	3.9	6.3	6.3	6.4	5.7	8.6	4.2
	SPD (MPH)	9.6	8.1	7.8	4.9	9.1	6.8	9.6	7.0	8.9	8.5
	RATIO	0.973	0.893	0.584	0.797	0.690	0.926	0.664	0.805	0.962	0.494
MIDDLETOWN-007 (4173)	OZONE	0.177	0.172	0.157	0.157	0.157	0.150	0.144	0.141	0.141	0.141
	DATE	6/13/84	8/ 1/84	8/22/84	7/15/84	6/ 8/84	6/ 7/84	6/27/84	7/14/84	6/ 6/84	6/28/84
METEOROLOGICAL SITE	DIR (DEG)	230	230	220	200	220	240	230	240	230	220
NEWARK	VEL (MPH)	7.6	8.7	9.4	9.9	8.9	7.7	10.7	7.6	6.8	8.8
	SPD (MPH)	9.9	9.2	10.2	10.5	9.2	8.5	11.4	7.9	7.9	10.1
	RATIO	0.770	0.946	0.916	0.941	0.967	0.907	0.943	0.958	0.856	0.870
METEOROLOGICAL SITE	DIR (DEG)	220	230	220	210	190	250	220	260	200	200
BRADLEY	VEL (MPH)	5.0	4.7	5.1	7.4	5.9	2.4	4.9	4.7	3.3	7.6
	SPD (MPH)	7.0	6.2	5.3	7.9	6.8	4.0	5.8	4.9	5.0	8.9
	RATIO	0.716	0.765	0.967	0.941	0.866	0.593	0.848	0.954	0.665	0.857
METEOROLOGICAL SITE	DIR (DEG)	240	220	220	220	230	220	220	220	220	210
BRIDGEPORT	VEL (MPH)	7.7	8.4	8.8	8.3	6.3	6.4	4.4	7.4	5.4	6.1
	SPD (MPH)	7.8	9.2	9.3	8.6	6.3	6.5	5.2	7.8	6.0	6.6
	RATIO	0.988	0.910	0.937	0.968	0.996	0.989	0.843	0.953	0.900	0.918
METEOROLOGICAL SITE	DIR (DEG)	260	280	280	280	260	280	240	290	280	240
WORCESTER	VEL (MPH)	9.4	5.7	4.5	6.4	6.3	3.3	5.8	6.3	2.7	7.9
	SPD (MPH)	9.6	7.0	7.8	9.6	6.8	5.8	6.9	9.1	4.9	8.5
	RATIO	0.973	0.805	0.584	0.664	0.926	0.579	0.833	0.690	0.553	0.937
NEW HAVEN-123 (3837)	OZONE	0.218	0.162	0.156	0.156	0.150	0.142	0.141	0.134	0.133	0.126
	DATE	6/13/84	7/15/84	8/ 1/84	7/ 4/84	7/14/84	6/27/84	8/22/84	7/ 2/84	7/31/84	6/23/84
METEOROLOGICAL SITE	DIR (DEG)	230	200	230	220	240	230	220	250	210	210
NEWARK	VEL (MPH)	7.6	9.9	8.7	9.6	7.6	10.7	9.4	3.6	7.2	10.0
	SPD (MPH)	9.9	10.5	9.2	10.2	7.9	11.4	10.2	7.2	7.9	10.4
	RATIO	0.770	0.941	0.946	0.936	0.958	0.943	0.916	0.507	0.907	0.966
METEOROLOGICAL SITE	DIR (DEG)	220	210	230	200	260	220	220	250	220	220
BRADLEY	VEL (MPH)	5.0	7.4	4.7	8.3	4.7	4.9	5.1	2.2	4.9	2.8
	SPD (MPH)	7.0	7.9	6.2	8.5	4.9	5.8	5.3	3.9	5.8	4.9
	RATIO	0.716	0.941	0.765	0.976	0.954	0.848	0.967	0.557	0.852	0.579

TABLE 21, CONTINUED

1984 TEN HIGHEST 1-HOUR AVERAGE OZONE DAYS WITH WIND DATA

UNITS : PARTS PER MILLION

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	240	220	220	220	220	220	220	230	220	220
BRIDGEPORT	VEL (MPH)	7.7	8.3	8.4	5.8	7.4	4.4	8.8	5.4	8.2	6.1
	SPD (MPH)	7.8	8.6	9.2	6.0	7.8	5.2	9.3	5.6	8.3	6.2
	RATIO	0.988	0.968	0.910	0.952	0.953	0.843	0.937	0.967	0.978	0.990
METEOROLOGICAL SITE	DIR (DEG)	260	280	280	240	290	240	280	280	270	340
WORCESTER	VEL (MPH)	9.4	6.4	5.7	5.3	6.3	5.8	4.5	3.7	5.8	2.1
	SPD (MPH)	9.6	9.6	7.0	7.8	9.1	6.9	7.8	6.0	6.0	7.5
	RATIO	0.973	0.664	0.805	0.686	0.690	0.833	0.584	0.608	0.953	0.285
STAFFORD-001 (4091)	OZONE	0.181	0.166	0.162	0.142	0.139	0.136	0.134	0.129	0.123	0.121
	DATE	6/ 8/84	7/15/84	6/27/84	8/22/84	7/10/84	7/ 4/84	6/28/84	7/31/84	6/ 6/84	9/20/84
METEOROLOGICAL SITE	DIR (DEG)	220	200	230	220	210	220	220	210	230	230
NEWARK	VEL (MPH)	8.9	9.9	10.7	9.4	6.8	9.6	8.8	7.2	6.8	11.7
	SPD (MPH)	9.2	10.5	11.4	10.2	8.2	10.2	10.1	7.9	7.9	11.9
	RATIO	0.967	0.941	0.943	0.916	0.828	0.936	0.870	0.907	0.856	0.977
METEOROLOGICAL SITE	DIR (DEG)	190	210	220	220	190	200	200	220	200	220
BRADLEY	VEL (MPH)	5.9	7.4	4.9	5.1	4.0	8.3	7.6	4.9	3.3	7.3
	SPD (MPH)	6.8	7.9	5.8	5.3	6.2	8.5	8.9	5.8	5.0	8.6
	RATIO	0.866	0.941	0.848	0.967	0.650	0.976	0.857	0.852	0.665	0.851
METEOROLOGICAL SITE	DIR (DEG)	230	220	220	220	210	220	210	220	220	220
BRIDGEPORT	VEL (MPH)	6.3	8.3	4.4	8.8	6.5	5.8	6.1	8.2	5.4	8.5
	SPD (MPH)	6.3	8.6	5.2	9.3	6.9	6.0	6.6	8.3	6.0	8.8
	RATIO	0.996	0.968	0.843	0.937	0.940	0.952	0.918	0.978	0.900	0.975
METEOROLOGICAL SITE	DIR (DEG)	260	280	240	280	310	240	240	270	280	220
WORCESTER	VEL (MPH)	6.3	6.4	5.8	4.5	3.5	5.3	7.9	5.8	2.7	8.4
	SPD (MPH)	6.8	9.6	6.9	7.8	6.6	7.8	8.5	6.0	4.9	8.8
	RATIO	0.926	0.664	0.833	0.584	0.528	0.686	0.937	0.953	0.553	0.954
STRATFORD-007 (3978)	OZONE	0.232	0.224	0.207	0.202	0.193	0.188	0.178	0.170	0.165	0.162
	DATE	6/13/84	8/ 1/84	7/14/84	6/11/84	6/ 8/84	8/ 7/84	6/ 7/84	7/15/84	8/16/84	7/31/84
METEOROLOGICAL SITE	DIR (DEG)	230	230	240	260	220	240	240	200	330	210
NEWARK	VEL (MPH)	7.6	8.7	7.6	9.8	8.9	8.6	7.7	9.9	7.1	7.2
	SPD (MPH)	9.9	9.2	7.9	11.6	9.2	9.5	8.5	10.5	8.3	7.9
	RATIO	0.770	0.946	0.958	0.840	0.967	0.906	0.907	0.941	0.853	0.907
METEOROLOGICAL SITE	DIR (DEG)	220	230	260	260	190	180	250	210	340	220
BRADLEY	VEL (MPH)	5.0	4.7	4.7	6.4	5.9	3.4	2.4	7.4	3.8	4.9
	SPD (MPH)	7.0	6.2	4.9	9.5	6.8	5.5	4.0	7.9	4.7	5.8
	RATIO	0.716	0.765	0.954	0.672	0.866	0.617	0.593	0.941	0.800	0.852
METEOROLOGICAL SITE	DIR (DEG)	240	220	220	240	230	230	220	220	250	220
BRIDGEPORT	VEL (MPH)	7.7	8.4	7.4	7.3	6.3	6.0	6.4	8.3	6.0	8.2
	SPD (MPH)	7.8	9.2	7.8	7.5	6.3	7.2	6.5	8.6	8.1	8.3
	RATIO	0.988	0.910	0.953	0.977	0.996	0.837	0.989	0.968	0.748	0.978
METEOROLOGICAL SITE	DIR (DEG)	260	280	290	280	260	260	280	280	320	270
WORCESTER	VEL (MPH)	9.4	5.7	6.3	7.2	6.3	3.9	3.3	6.4	5.9	5.8
	SPD (MPH)	9.6	7.0	9.1	8.1	6.8	4.9	5.8	9.6	6.8	6.0
	RATIO	0.973	0.805	0.690	0.893	0.926	0.797	0.579	0.664	0.879	0.953

FIGURE 7

WIND ROSE FOR APRIL - SEPTEMBER 1983
BRADLEY INTERNATIONAL AIRPORT
WINDSOR LOCKS, CONNECTICUT

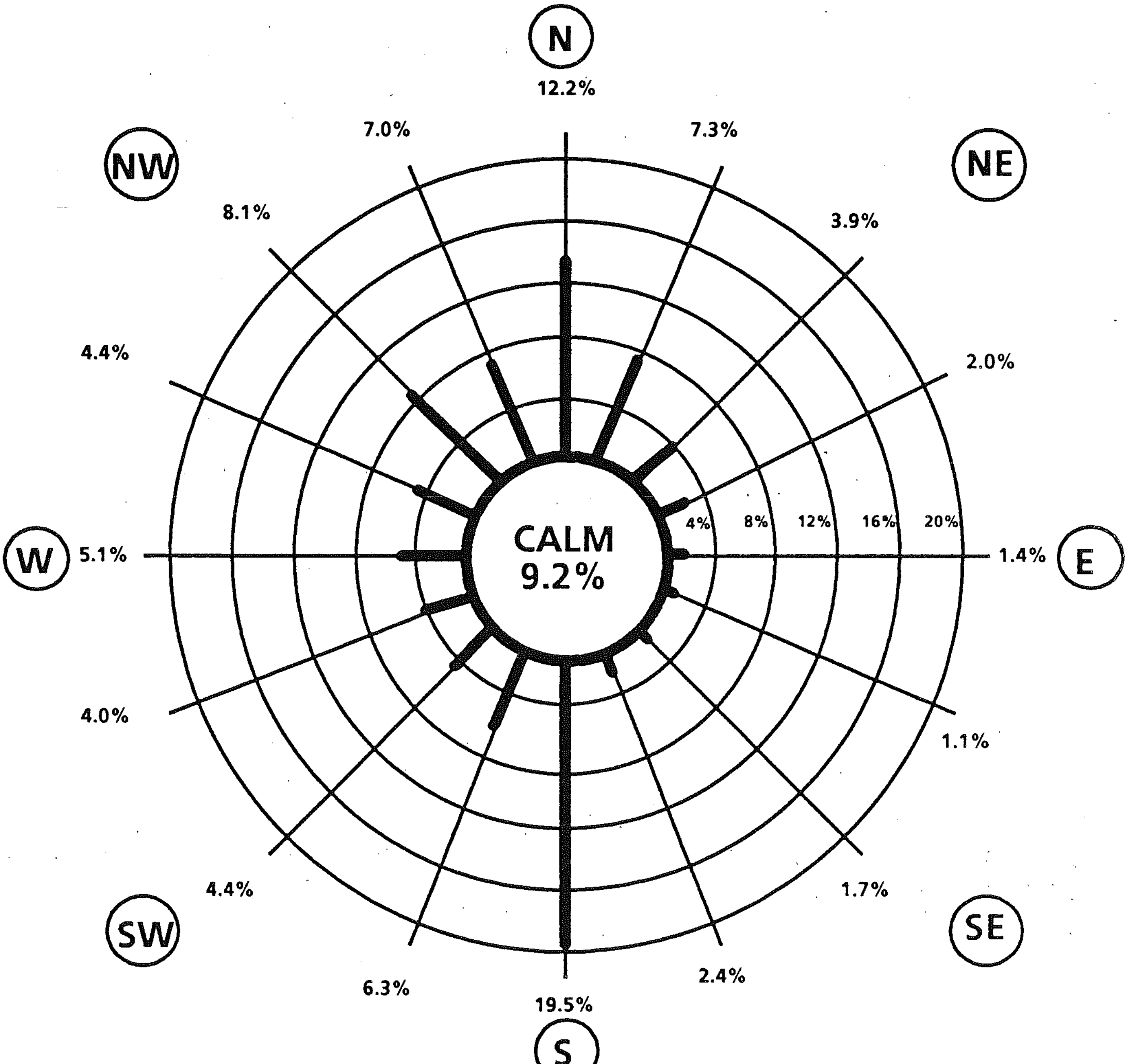


FIGURE 8

WIND ROSE FOR APRIL - SEPTEMBER 1984
BRADLEY INTERNATIONAL AIRPORT
WINDSOR LOCKS, CONNECTICUT

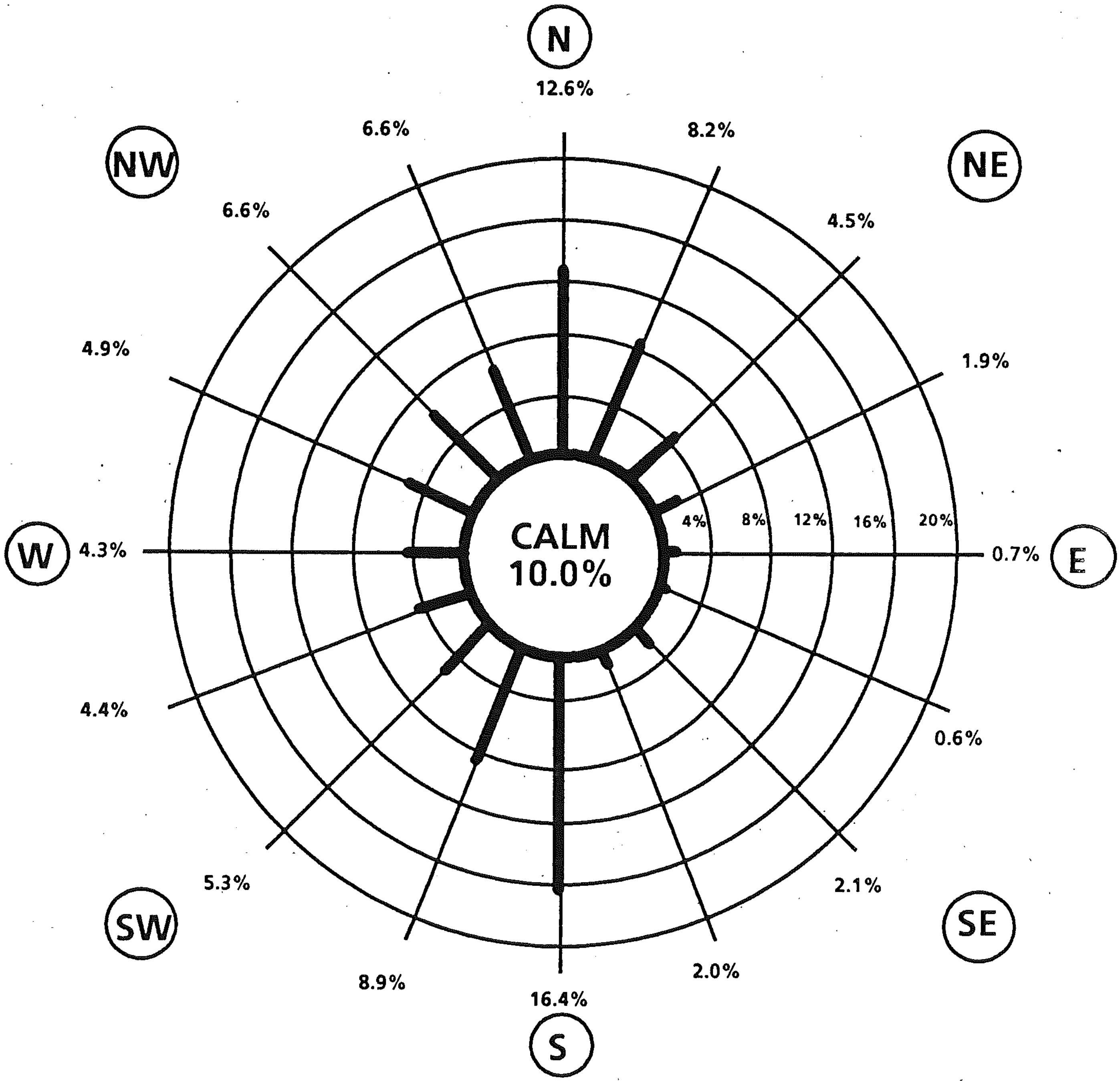


FIGURE 9

WIND ROSE FOR APRIL - SEPTEMBER 1983
NEWARK INTERNATIONAL AIRPORT
NEWARK, NEW JERSEY

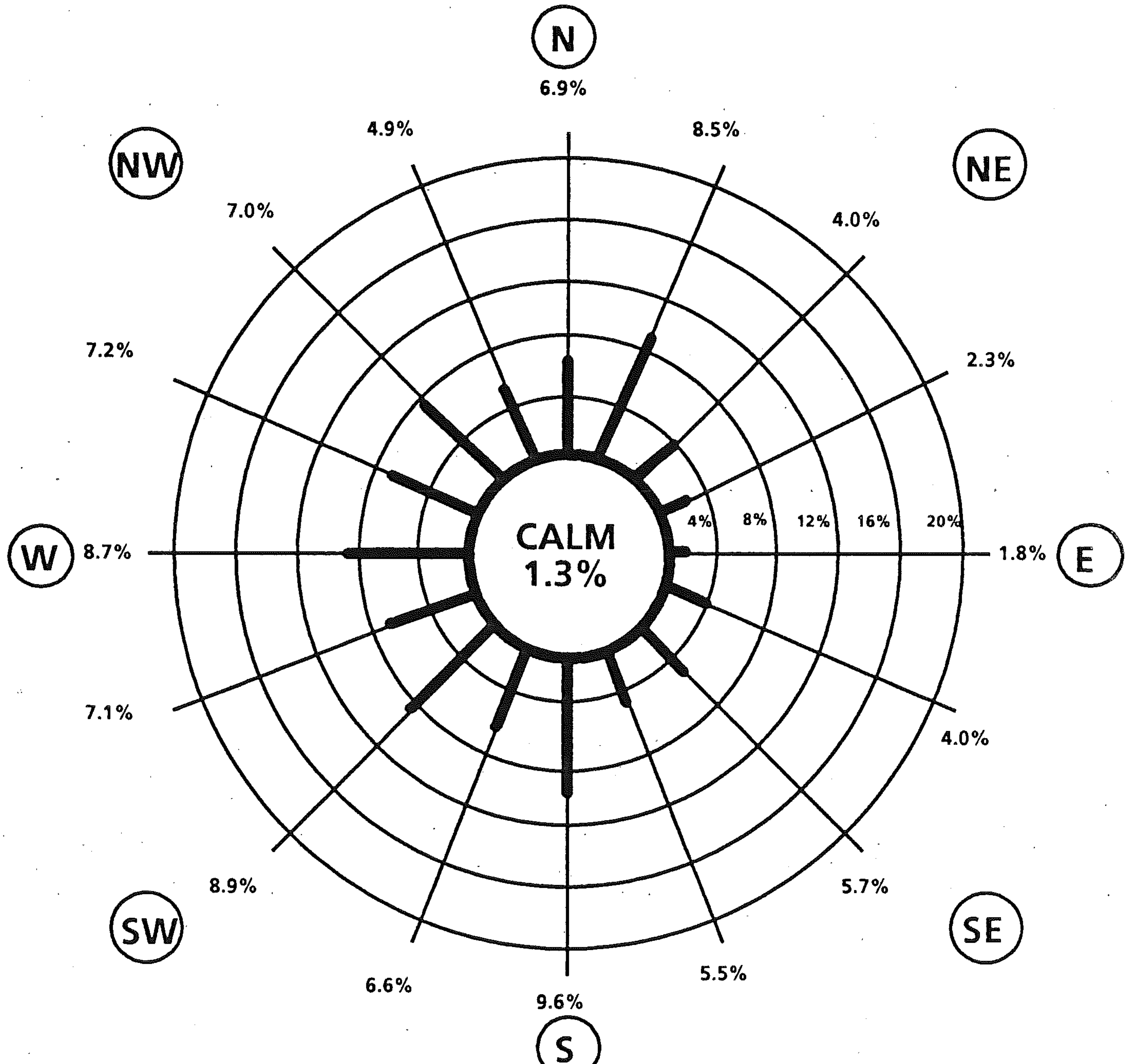
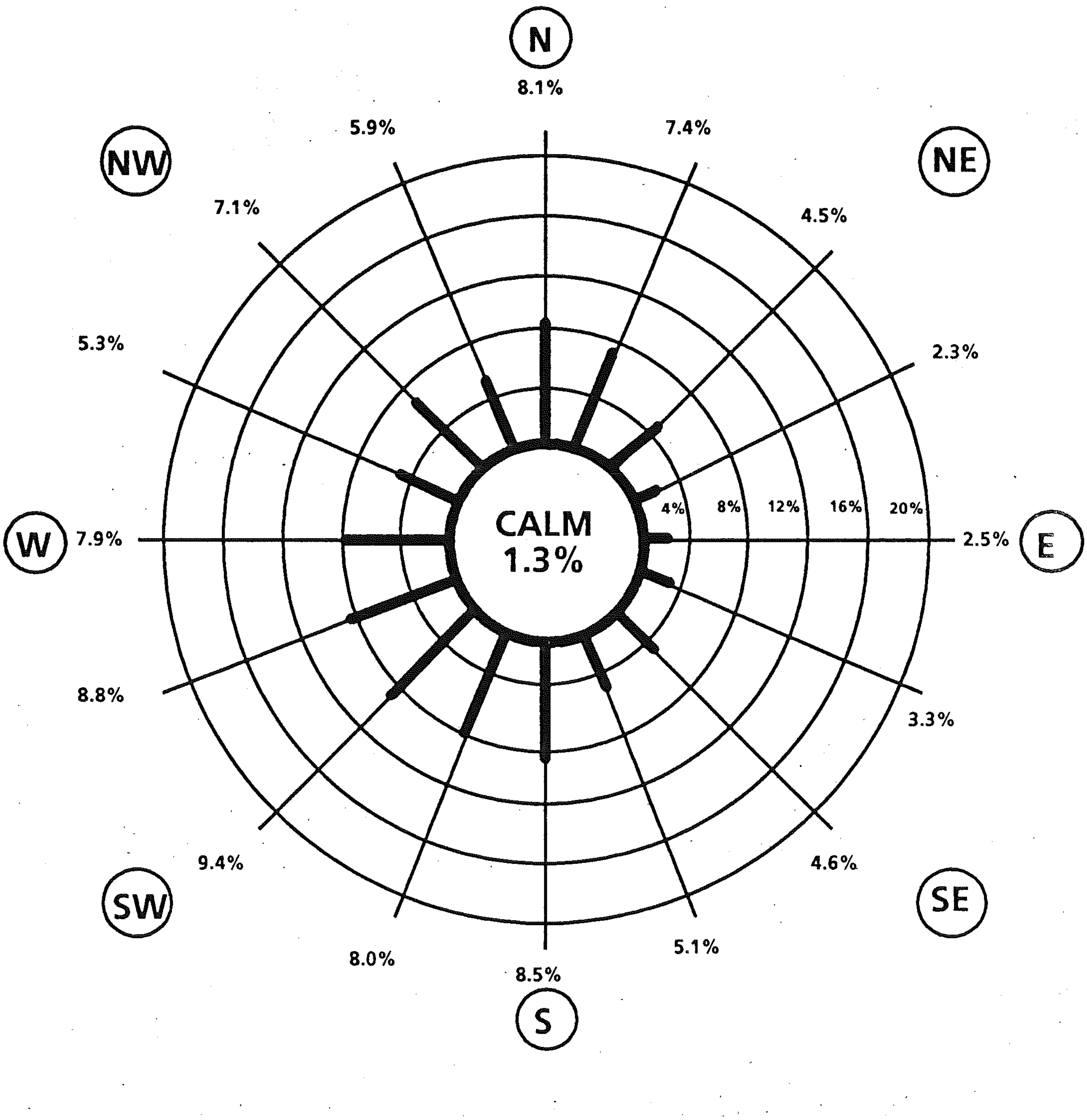


FIGURE 10

WIND ROSE FOR APRIL - SEPTEMBER 1984
NEWARK INTERNATIONAL AIRPORT
NEWARK, NEW JERSEY



V. NITROGEN DIOXIDE

Health Effects

Nitrogen dioxide (NO_2) is a toxic gas with a characteristic pungent odor and a reddish-orange-brown color. It is highly oxidizing and extremely corrosive.

Nitrogen dioxide is not emitted into the atmosphere to any great extent by man-made sources. However, its presence in the atmosphere is accounted for by the photochemical oxidation of nitric oxide (NO), large amounts of which are emitted into the air by high temperature combustion processes. Industrial furnaces, power plants and motor vehicles are the primary sources of nitric oxide emissions.

Exposure to NO_2 is believed to increase the risks of acute respiratory disease and susceptibility to chronic respiratory infection. NO_2 also contributes to heart, lung, liver and kidney damage. At high concentrations, this pollutant can be fatal. At lower levels of 25 to 100 parts per million, it can cause acute bronchitis and pneumonia. Occasional exposure to low levels of NO_2 can irritate the eyes and skin.

Other effects of nitrogen dioxide are its toxicity to vegetation and its ability to combine with water vapor to form nitric acid. Furthermore, NO_2 is an essential ingredient, along with hydrocarbons, in the formation of ozone.

Conclusions

Nitrogen dioxide (NO_2) concentrations at all monitoring sites were well below the NAAQS for NO_2 in 1984. This was the third year the DEP used continuous electronic analyzers to measure NO_2 levels. NO_2 trend analyses or comparisons can be made when two full years of data are available at a monitoring site. This condition was satisfied at all three sites this year.

Sample Collection and Analysis

The DEP Air Monitoring Unit used continuous electronic analyzers employing the chemiluminescent reference method to continuously measure NO_2 levels.

Discussion of Data

Monitoring Network - There were three nitrogen dioxide monitoring sites in 1984 (see Figure 11). The sites – Bridgeport 123, East Hartford 003 and New Haven 123 -- were located in three urban areas in order to obtain data alongside ozone monitors.

Precision and Accuracy - Sixty precision checks were made on the NO_2 monitors in 1984, yielding 95% probability limits ranging from -17% to +13%. Accuracy is determined by introducing a known amount of NO_2 into each of the monitors. Four audits for accuracy were conducted on the monitoring network in 1984. Four different concentration levels were tested on each monitor: low, low/medium, medium/high and high. The 95% probability limits for the low level test ranged from -22% to +12%; those for the low/medium level test ranged from -9% to +2%; those for the medium/high level test ranged from -11% to -2%; and those for the high level test ranged from -11% to -7%.

Historical Data - The DEP's historical file of annual average nitrogen dioxide data from gas bubblers for 1973-1980 is available in the 1980 Air Quality Summary.

Annual Averages - The annual average NO_2 standard of 100 ug/m^3 was not exceeded in 1984 at any site in Connecticut (see Table 22). In 1984 all three sites had sufficient data to compute valid arithmetic means. This permits comparisons with the 1983 annual averages, but not with the 1982 annual averages which are based on incomplete data. The arithmetic mean NO_2 concentration at each site decreased between 1983 and 1984.

Statistical Projections - The format of Table 22 is the same as that used to present the TSP and sulfur dioxide data. However, Table 22 gives the annual arithmetic mean of the hourly NO_2 concentrations to allow direct comparison to the annual NO_2 standard. The 95% confidence limits about the arithmetic mean for each site demonstrate that it is unlikely that any site exceeded the primary annual standard of 100 ug/m^3 in 1984.

10-High Days with Wind Data - Table 23 presents for each site the ten days in 1984 when the highest hourly NO_2 readings occurred, along with the associated wind conditions for each day. (See the discussion of Table 11 in the TSP section for a description of the original use of the wind data.)

According to National Weather Service local climatological data recorded at Bradley Airport, 13 of the 20 days listed in the table had more then 50% of the possible sunshine. Of the seven remaining days, five followed days when the percent of possible sunshine exceeded 78%. This is interpreted to confirm the importance of photochemical oxidation in the formation of NO_2.

High NO_2 levels occurred most often (i.e., 45% of the time) during the winter season. Six out of the eight high NO_2 days that occurred at at least 2 of the sites had persistent winds out of the southwest quadrant. This was also true of 70% of the days listed in Table 23.

Given the above observations and the fact that two of the three NO_2 sites are located on the coast of Connecticut, it appears that a combination of pollutant transport and a high percent of possible sunshine (both of which occur on days with persistent southwest winds) tend to produce high NO_2 levels in Connecticut.

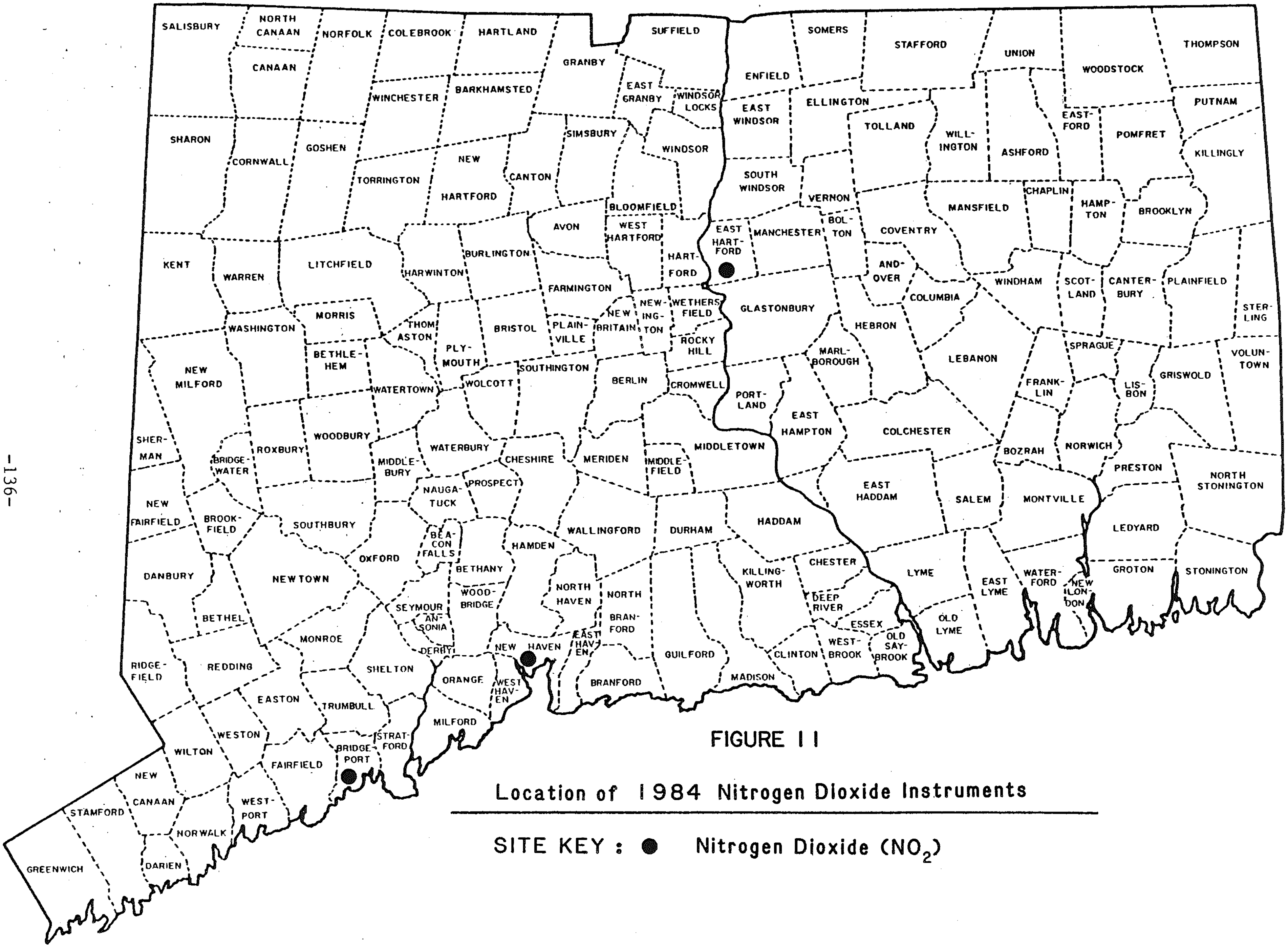


FIGURE 11

Location of 1984 Nitrogen Dioxide Instruments

SITE KEY : ● Nitrogen Dioxide (NO_2)

TABLE 22

1982-1984 NITROGEN DIOXIDE ANNUAL AVERAGES AND STATISTICAL PROJECTIONS

Town Name	Site	Year	Samples	Arithmetic Mean	95-PCT-Limits Lower	95-PCT-Limits Upper	Standard Deviation
Bridgeport	123	1982	6480*	53.7	53.3	54.1	30.9
Bridgeport	123	1983	8328	56.4	56.2	56.6	34.7
Bridgeport	123	1984	8689	51.5	51.4	51.6	29.7
East Hartford	003	1982	6521*	36.5	36.2	36.8	22.5
East Hartford	003	1983	8576	43.5	43.4	43.6	31.3
East Hartford	003	1984	8172	39.8	39.6	40.0	26.2
New Haven	123	1982	6420*	54.2	54.0	54.4	17.2
New Haven	123	1983	7971	62.8	62.7	62.9	13.5
New Haven	123	1984	8530	58.2	58.1	58.3	29.0

* Sampling not random or of insufficient size for representative annual statistics

N.B. The arithmetic mean and standard deviation have units of ug/m^3.

TABLE 23

1984 TEN HIGHEST 1-HOUR AVERAGE NO2 DAYS WITH WIND DATA

UNITS : PARTS PER MILLION

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
BRIDGEPORT-123 (8689)	NO2	0.163	0.128	0.116	0.112	0.110	0.110	0.106	0.104	0.102	0.100
	DATE	7/10/84	2/11/84	6/13/84	6/ 6/84	11/27/84	12/13/84	12/28/84	1/23/84	6/ 8/84	6/ 9/84
METEOROLOGICAL SITE	DIR (DEG)	210	240	230	230	190	240	210	210	220	250
NEWARK	VEL (MPH)	6.8	0.6	7.6	6.8	3.3	6.7	2.0	4.4	8.9	10.6
	SPD (MPH)	8.2	0.6	9.9	7.9	5.0	7.9	5.3	4.7	9.2	11.2
	RATIO	0.828	1.000	0.770	0.856	0.658	0.847	0.374	0.932	0.967	0.943
METEOROLOGICAL SITE	DIR (DEG)	190	190	220	200	180	210	190	160	190	250
BRADLEY	VEL (MPH)	4.0	3.9	5.0	3.3	2.7	2.2	4.1	2.0	5.9	6.2
	SPD (MPH)	6.2	4.2	7.0	5.0	3.0	5.6	6.8	2.4	6.8	8.1
	RATIO	0.650	0.947	0.716	0.665	0.883	0.395	0.608	0.812	0.866	0.765
METEOROLOGICAL SITE	DIR (DEG)	210	180	240	220	220	260	260	260	230	230
BRIDGEPORT	VEL (MPH)	6.5	0.4	7.7	5.4	3.4	5.8	4.9	4.4	6.3	8.1
	SPD (MPH)	6.9	2.9	7.8	6.0	5.9	6.9	6.6	7.2	6.3	8.2
	RATIO	0.940	0.146	0.988	0.900	0.576	0.834	0.739	0.608	0.996	0.994
METEOROLOGICAL SITE	DIR (DEG)	310	250	260	280	250	250	270	250	260	260
WORCESTER	VEL (MPH)	3.5	7.4	9.4	2.7	7.8	6.6	10.8	5.5	6.3	8.6
	SPD (MPH)	6.6	7.8	9.6	4.9	8.2	7.3	12.2	5.8	6.8	8.9
	RATIO	0.528	0.960	0.973	0.553	0.952	0.902	0.883	0.960	0.926	0.962
EAST HARTFORD-003 (8172)	NO2	0.112	0.104	0.104	0.104	0.094	0.090	0.090	0.086	0.080	0.080
	DATE	1/17/84	1/18/84	1/23/84	11/27/84	11/26/84	1/24/84	11/ 2/84	2/13/84	2/ 2/84	2/ 3/84
METEOROLOGICAL SITE	DIR (DEG)	250	20	210	190	210	20	310	100	230	160
NEWARK	VEL (MPH)	4.4	2.9	4.4	3.3	6.3	3.3	8.4	1.1	2.8	6.4
	SPD (MPH)	4.6	4.7	4.7	5.0	6.8	5.3	14.2	1.1	4.2	6.9
	RATIO	0.958	0.618	0.932	0.658	0.939	0.612	0.594	0.966	0.672	0.929
METEOROLOGICAL SITE	DIR (DEG)	130	20	160	180	190	30	290	200	180	190
BRADLEY	VEL (MPH)	0.7	3.7	2.0	2.7	3.0	1.7	6.9	1.5	1.1	6.6
	SPD (MPH)	1.0	4.2	2.4	3.0	3.2	3.6	12.1	2.4	2.0	6.9
	RATIO	0.714	0.877	0.812	0.883	0.934	0.473	0.575	0.607	0.564	0.952
METEOROLOGICAL SITE	DIR (DEG)	250	30	260	220	250	200	330	70	230	170
BRIDGEPORT	VEL (MPH)	5.9	6.1	4.4	3.4	7.7	2.0	8.4	7.1	5.2	9.7
	SPD (MPH)	7.0	6.6	7.2	5.9	8.1	6.9	11.6	7.2	5.6	10.1
	RATIO	0.842	0.926	0.608	0.576	0.959	0.288	0.726	0.991	0.921	0.966
METEOROLOGICAL SITE	DIR (DEG)	270	350	250	250	260	200	270	210	290	210
WORCESTER	VEL (MPH)	5.9	1.3	5.5	7.8	9.6	4.8	10.0	1.7	7.8	8.7
	SPD (MPH)	6.3	4.2	5.8	8.2	9.6	6.6	13.9	4.7	8.3	8.9
	RATIO	0.935	0.318	0.960	0.952	0.992	0.733	0.718	0.353	0.931	0.979
NEW HAVEN-123 (8530)	NO2	0.159	0.126	0.122	0.114	0.112	0.112	0.110	0.106	0.104	0.098
	DATE	4/ 4/84	6/ 8/84	1/23/84	6/ 6/84	1/24/84	11/27/84	12/13/84	11/26/84	6/ 9/84	5/19/84
METEOROLOGICAL SITE	DIR (DEG)	70	220	210	230	20	190	240	210	250	230
NEWARK	VEL (MPH)	7.6	8.9	4.4	6.8	3.3	3.3	6.7	6.3	10.6	11.5
	SPD (MPH)	9.3	9.2	4.7	7.9	5.3	5.0	7.9	6.8	11.2	11.8
	RATIO	0.815	0.967	0.932	0.856	0.612	0.658	0.847	0.939	0.943	0.975
METEOROLOGICAL SITE	DIR (DEG)	30	190	160	200	30	180	210	190	250	190
BRADLEY	VEL (MPH)	3.7	5.9	2.0	3.3	1.7	2.7	2.2	3.0	6.2	6.1
	SPD (MPH)	5.3	6.8	2.4	5.0	3.6	3.0	5.6	3.2	8.1	6.2
	RATIO	0.698	0.866	0.812	0.665	0.473	0.883	0.395	0.934	0.765	0.980

TABLE 23, CONTINUED

1984 TEN HIGHEST 1-HOUR AVERAGE NO2 DAYS WITH WIND DATA

UNITS : PARTS PER MILLION

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	70	230	260	220	200	220	260	250	230	210
BRIDGEPORT	VEL (MPH)	14.0	6.3	4.4	5.4	2.0	3.4	5.8	7.7	8.1	4.7
	SPD (MPH)	14.2	6.3	7.2	6.0	6.9	5.9	6.9	8.1	8.2	5.2
	RATIO	0.987	0.996	0.608	0.900	0.288	0.576	0.834	0.959	0.994	0.901
METEOROLOGICAL SITE	DIR (DEG)	140	260	250	280	200	250	250	260	260	270
WORCESTER	VEL (MPH)	1.6	6.3	5.5	2.7	4.8	7.8	6.6	9.6	8.6	6.4
	SPD (MPH)	6.2	6.8	5.8	4.9	6.6	8.2	7.3	9.6	8.9	8.5
	RATIO	0.252	0.926	0.960	0.553	0.733	0.952	0.902	0.992	0.962	0.751

VI. CARBON MONOXIDE

Health Effects

Carbon monoxide (CO) is a colorless, odorless, poison gas formed when carbon-containing fuel is not burned completely. It is by far the most plentiful air pollutant. Fortunately, this deadly gas does not persist in the atmosphere. It is apparently converted by natural processes to harmless carbon dioxide in ways not yet understood, and this is done quickly enough to prevent any general buildup. However, CO can reach dangerous levels in local areas, such as city-street canyons with heavy auto traffic and little wind.

Clinical experience with accidental CO poisoning has shown clearly how it affects the body. When the gas is breathed, CO replaces oxygen in the red blood cells, reducing the amount of oxygen that can reach the body cells and maintain life. Lack of oxygen affects the brain, and the first symptoms are impaired perception and thinking. Reflexes are slowed, judgement weakened, and drowsiness ensues. An auto driver breathing high levels of CO is more likely to have an accident; an athlete's performance and skill drop suddenly. Lack of oxygen then affects the heart. Death can come from heart failure or general asphyxiation, if a person is exposed to very high levels of CO.

Conclusions

The eight-hour National Ambient Air Quality Standard of 9 parts per million (ppm) was exceeded at ~~four~~ two of the five carbon monoxide monitoring sites in Connecticut during 1984. The standard was exceeded ~~three~~ two times at Stamford 020 and ~~twelve~~ seven times at Hartford 017. No site measured an exceedance of the one-hour standard of 35 ppm in 1984.

In order to put the monitoring data into proper perspective, it must be realized that carbon monoxide concentrations vary greatly from place-to-place. More than 95% of the CO emissions in Connecticut come from motor vehicles. Therefore, concentrations are greatest in areas of traffic congestion. The magnitude and frequency of high concentrations observed at any monitoring site are not necessarily indicative of widespread CO levels.

The CO standards are likely to be exceeded in any city in the state where there are areas of traffic congestion. However, as Connecticut's SIP control strategies are implemented, there should continue to be a decrease in the number of congested areas. Also, as federally - mandated controls which reduce emissions from new motor vehicles are implemented, a reduction in ambient CO levels should be achieved.

Unlike SO_2, TSP and O_3, elevated CO levels are not often associated with southwesterly winds, indicating that this pollutant is more of a local-scale (not regional-scale) problem.

Method of Measurement

The DEP Air Monitoring Unit uses instruments employing a non-dispersive infrared technique to continuously measure carbon monoxide levels. The instantaneous concentrations are recorded on strip charts from which hourly averages are extracted. Due to the relative inertness of CO, a long sampling line can be used without the danger of CO being depleted by chemical reactions within the lines. The most important consideration in the measurement of CO is the placement of the sampling probe inlet; that is, its proximity to traffic lanes.

Discussion of Data

Monitoring Network - The network in 1984 consisted of five carbon monoxide monitors: Bridgeport 004, Hartford 017, New Britain 002, New Haven 007, and Stamford 020. They are all located in urban areas. All sites are located west of the Connecticut River, with three of them in coastal towns (see Figure 12). Hartford 017 is a new site and it replaces Hartford 012.

Precision and Accuracy - The carbon monoxide monitors had a total of 114 precision checks during 1984. The resulting 95% probability limits were -10% to +11%. Accuracy is determined by introducing a known amount of CO into each of the monitors. Eight audits for accuracy were conducted on the monitoring network in 1984. Three different concentration levels were tested on each monitor: low, medium and high. The 95% probability limits for the low level test ranged from -14% to +21%; those for the medium level test ranged from -6% to +6%; and those for the high level test ranged from -4% to +3%.

8-Hour and 1-Hour Averages - Hartford 017 and Stamford 020 had second high CO concentrations exceeding the 8-hour standard of 9 ppm, which means that the standard was violated at these sites in 1984 (see Table 24). In 1983, Hartford 012 and New Britain 002 recorded violations of the standard. Regarding the maximum 8-hour running average at each site, there were decreases from 1983 to 1984 at Bridgeport, New Britain and New Haven. Increases occured at Stamford and Hartford 017 (compared to Hartford 012). The second highest values were higher in 1984 vs. 1983 at Bridgeport, Hartford and Stamford and lower at New Britain and New Haven.

As for 1-hour averages, no site in the state recorded a value exceeding the primary 1-hour standard of 35 ppm. Stamford 020 recorded a maximum 1-hour value greater than the year before, and Hartford 017 had a higher maximum in 1984 than Hartford 012 in 1983. Second high 1-hour values were higher at these sites as well. The Bridgeport, New Haven and New Britain sites had lower maximum and second high values than last year.

The maximum and second high CO concentrations at each site are presented in Table 24. Table 25 presents highs and a tally of the number of times the standards were exceeded at each site. Seasonal variations in CO levels can be observed using this table.

10-High Days with Wind Data - Table 26 lists for each site the ten days in 1984 when the 1-hour CO averages were highest. The wind data associated with these high readings are also presented. (See the discussion of Table 11 in the TSP section for a description of the origin and use of these wind data.)

The high CO levels tended to occur during the colder months at all five CO sites. Low atmospheric mixing heights and stable atmospheric conditions are two reasons CO levels are high during the fall and winter. Also, cold starts and warmups (rich mixtures) contribute to an increase in CO. A noteworthy feature of the high CO days is that the persistence of a wind is more important than the direction to which or from which it is blowing. Since 95% of the CO emissions in Connecticut come from motor vehicles, it is likely that the high CO levels are caused when persistent winds are blowing CO emissions from the direction of nearby roads toward the monitors.

Trends - Due to the local nature of CO emissions, it is not appropriate to give an estimate of widespread CO trends. However, local CO trends can be addressed in a number of ways. Exceedances of the 8-hour standard can be tracked in order to determine if a CO problem is worsening or abating at a site. This is illustrated in Table 26a and in Figure 13. One can see that over the past five years the number of exceedances has dropped significantly at the New Britain and Stamford sites and has remained low and relatively unchanged at the Bridgeport and New Haven sites. The Hartford-017 site is not included here because it has been in existence for only one year. The Stamford-020 site is excluded from Figure 13 because the range of the number of exceedances is too large to illustrate satisfactorily.

Another way of illustrating local CO trends is to use running averages. Running averages have the advantage of smoothing out the abrupt, transitory changes in pollutant levels that are often evident in consecutive sampling periods. Figure 14 shows the 36-month running average CO concentrations at four sites. The Hartford-017 site is not included due to the lack of adequate data. There appears to be no common trend at these sites.

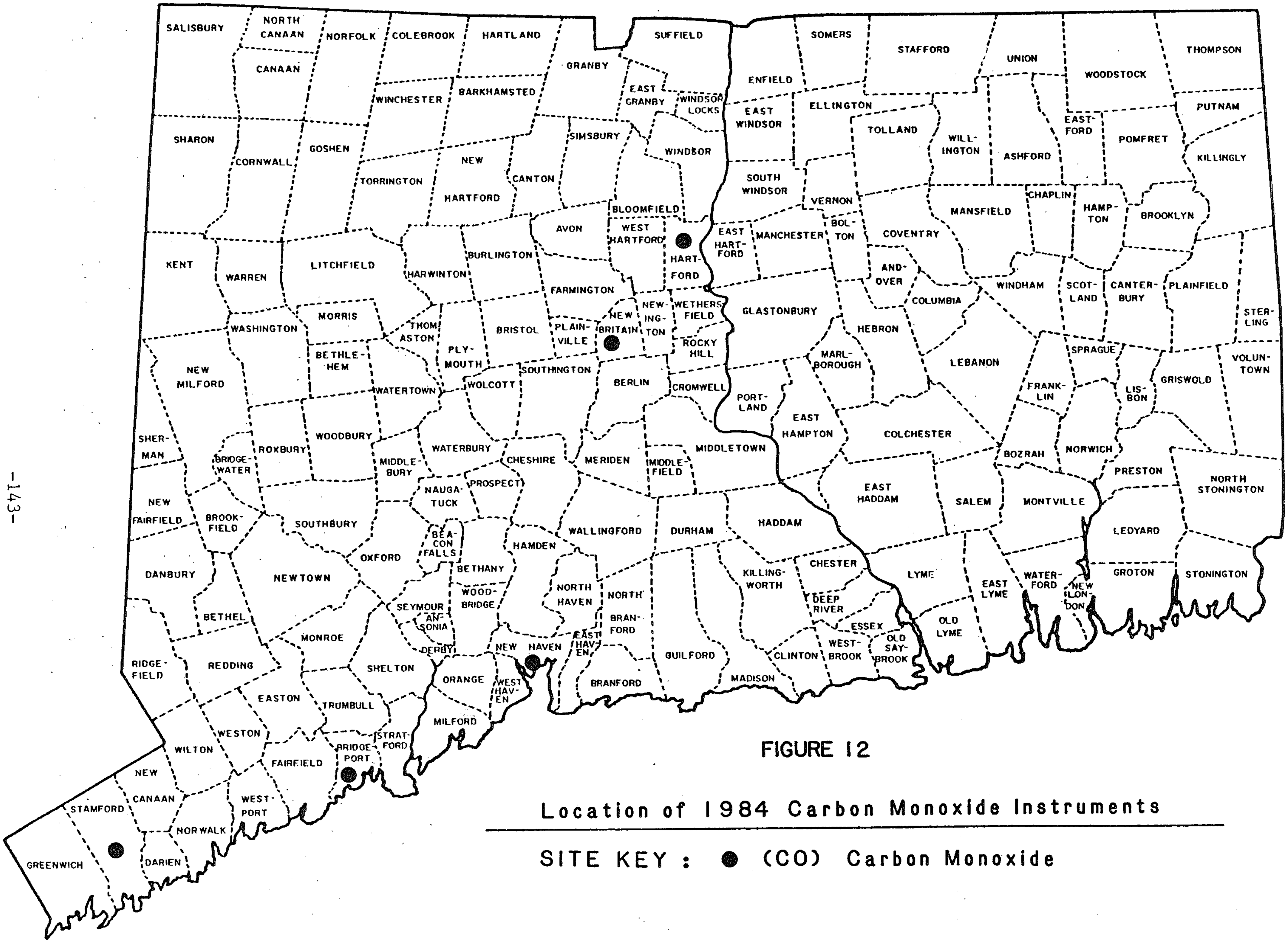


FIGURE 12

Location of 1984 Carbon Monoxide Instruments

SITE KEY : ● (CO) Carbon Monoxide

TABLE 24

1984 CARBON MONOXIDE STANDARDS ASSESSMENT SUMMARY

TOWN-SITE	MAXIMUM 8-HOUR RUNNING AVERAGE	TIME OF MAXIMUM 8-HOUR RUNNING AVERAGE [1]	2ND HIGH 8-HOUR RUNNING AVERAGE	TIME OF 2ND HIGH 8-HOUR RUNNING AVERAGE [1]	MAXIMUM 1-HOUR AVERAGE	TIME OF MAXIMUM 1-HOUR AVERAGE [2]	2ND HIGH 1-HOUR AVERAGE	TIME OF 2ND HIGH 1-HOUR AVERAGE [2]
Bridgeport-004	8.6	1/23/24	8.1	1/27/15	13.1	1/23/20	11.8	1/23/21
Hartford-017	13.~~3~~4	1/23/~~23~~24	11.8	1/27/21	22.6	2/17/18	21.3	1/27/19
New Britain-002	9.0	1/24/1	8.5	1/27/14	15.4	2/3/8	14.5	12/17/19
New Haven-007[a]	7.5	12/28/18	6.4	11/27/12	13.6	11/27/9	11.6	12/28/17
Stamford-020	10.7	1/23/23	10.5	12/13/21	18.4	12/13/19	17.9	1/27/19

[1] Time of 8-hour averages is reported as follows: month/day/hour (EST), specifying the end of the 8-hour average period

[2] Time of 1-hour averages is reported as follows: month/day/hour (EST), specifying the end of the 1-hour average period

N.B. CO averages are expressed in terms of parts per million (ppm).

[a] Site operated from October through December only.

TABLE 25

1984 CARBON MONOXIDE SEASONAL FEATURES

TOWN-SITE		JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Bridgeport -004	Max. 1-Hr.	13.1	8.1	8.5	6.2	5.2	4.6	3.0	4.9	5.0	8.8	11.3	10.1
	Max. Running 8-Hr.	8.6	5.7	5.9	4.5	3.7	3.8	2.2	2.8	3.2	5.0	6.4	5.9
	# Times 8-Hr. Exceeded	0	0	0	0	0	0	0	0	0	0	0	0
Hartford -017	Max. 1-Hr.	21.3	14.5	14.2	15.0	9.0	10.0	7.5	9.2	10.7	13.9	14.1	22.6
	Max. Running 8-Hr.	13.4	8.3	8.2	10.0	6.5	6.7	6.2	5.4	7.1	9.4	9.3	9.3
	# Times 8-Hr. Exceeded	6	0	0	1	0	0	0	0	0	0	0	0
New Britain -002	Max. 1-Hr.	13.5	15.4	8.0	7.6	12.0	7.8	5.1	4.0	4.3	6.6	12.2	14.5
	Max. Running 8-Hr.	9.0	6.7	6.1	5.9	6.8	5.7	3.3	3.3	3.3	4.6	7.3	7.0
	# Times 8-Hr. Exceeded	0	0	0	0	0	0	0	0	0	0	0	0
New Haven -007	Max. 1-Hr.	-	-	-	-	-	-	-	-	-	7.1	13.6	11.6
	Max. Running 8-Hr.	-	-	-	-	-	-	-	-	-	5.0	6.4	7.5
	# Times 8-Hr. Exceeded	-	-	-	-	-	-	-	-	-	0	0	0
Stamford -020	Max. 1-Hr.	17.9	10.8	8.0	6.5	6.6	6.4	7.1	10.7	8.0	11.1	13.5	18.4
	Max. Running 8-Hr.	10.7	9.1	6.0	4.9	5.0	5.1	5.1	5.4	4.9	6.2	8.0	10.5
	# Times 8-Hr. Exceeded	1	0	0	0	0	0	0	0	0	0	0	1

N.B. The CO concentrations are in terms of parts per million (ppm)

TABLE 26

1984 TEN HIGHEST 1-HOUR AVERAGE CO DAYS WITH WIND DATA

UNITS : PARTS PER MILLION

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
BRIDGEPORT-004 (8455)	CO	13.1	11.3	10.1	9.8	9.1	9.0	8.8	8.5	8.5	8.5
	DATE	1/23/84	11/27/84	12/17/84	1/27/84	11/26/84	1/ 5/84	10/19/84	1/24/84	3/ 5/84	10/11/84
METEOROLOGICAL SITE	DIR (DEG)	210	190	240	300	210	210	160	20	150	20
NEWARK	VEL (MPH)	4.4	3.3	10.4	1.7	6.3	5.1	3.2	3.3	2.5	2.0
	SPD (MPH)	4.7	5.0	11.1	6.3	6.8	5.6	4.2	5.3	5.0	6.9
	RATIO	0.932	0.658	0.938	0.268	0.939	0.906	0.765	0.612	0.499	0.286
METEOROLOGICAL SITE	DIR (DEG)	160	180	220	350	190	180	180	30	200	20
BRADLEY	VEL (MPH)	2.0	2.7	6.5	1.5	3.0	3.7	3.8	1.7	0.1	1.5
	SPD (MPH)	2.4	3.0	8.2	3.9	3.2	3.7	5.8	3.6	4.2	2.9
	RATIO	0.812	0.883	0.798	0.389	0.934	0.985	0.652	0.473	0.020	0.519
METEOROLOGICAL SITE	DIR (DEG)	260	220	240	30	250	140	220	200	90	170
BRIDGEPORT	VEL (MPH)	4.4	3.4	7.4	4.2	7.7	2.1	4.2	2.0	4.2	1.4
	SPD (MPH)	7.2	5.9	7.5	4.9	8.1	2.6	4.5	6.9	5.8	4.9
	RATIO	0.608	0.576	0.986	0.866	0.959	0.804	0.932	0.288	0.729	0.293
METEOROLOGICAL SITE	DIR (DEG)	250	250	240	250	260	250	230	200	140	290
WORCESTER	VEL (MPH)	5.5	7.8	7.2	3.3	9.6	2.8	5.6	4.8	4.0	5.4
	SPD (MPH)	5.8	8.2	8.5	6.0	9.6	4.2	6.0	6.6	5.2	5.8
	RATIO	0.960	0.952	0.853	0.546	0.992	0.681	0.932	0.733	0.782	0.931
HARTFORD-017 (7964)	CO	22.6	21.3	20.0	17.5	16.0	15.0	14.8	14.5	14.2	14.1
	DATE	12/17/84	1/27/84	1/23/84	1/17/84	1/24/84	4/16/84	12/10/84	2/24/84	3/ 5/84	11/26/84
METEOROLOGICAL SITE	DIR (DEG)	240	300	210	250	20	360	20	340	150	210
NEWARK	VEL (MPH)	10.4	1.7	4.4	4.4	3.3	4.0	4.7	8.6	2.5	6.3
	SPD (MPH)	11.1	6.3	4.7	4.6	5.3	11.4	7.9	12.9	5.0	6.8
	RATIO	0.938	0.268	0.932	0.958	0.612	0.351	0.595	0.665	0.499	0.939
METEOROLOGICAL SITE	DIR (DEG)	220	350	160	130	30	20	10	360	200	190
BRADLEY	VEL (MPH)	6.5	1.5	2.0	0.7	1.7	6.6	4.9	9.4	0.1	3.0
	SPD (MPH)	8.2	3.9	2.4	1.0	3.6	7.5	4.9	11.2	4.2	3.2
	RATIO	0.798	0.389	0.812	0.714	0.473	0.883	0.998	0.840	0.020	0.934
METEOROLOGICAL SITE	DIR (DEG)	240	30	260	250	200	40	30	350	90	250
BRIDGEPORT	VEL (MPH)	7.4	4.2	4.4	5.9	2.0	6.3	7.2	9.1	4.2	7.7
	SPD (MPH)	7.5	4.9	7.2	7.0	6.9	13.5	7.8	10.6	5.8	8.1
	RATIO	0.986	0.866	0.608	0.842	0.288	0.463	0.924	0.857	0.729	0.959
METEOROLOGICAL SITE	DIR (DEG)	240	250	250	270	200	60	40	360	140	260
WORCESTER	VEL (MPH)	7.2	3.3	5.5	5.9	4.8	8.6	4.0	9.8	4.0	9.6
	SPD (MPH)	8.5	6.0	5.8	6.3	6.6	9.8	5.2	12.9	5.2	9.6
	RATIO	0.853	0.546	0.960	0.935	0.733	0.884	0.768	0.758	0.782	0.992
NEW BRITAIN-002 (8418)	CO	15.4	14.5	13.5	12.2	12.0	11.7	11.0	10.0	10.0	9.9
	DATE	2/ 3/84	12/17/84	1/27/84	11/27/84	5/31/84	11/26/84	1/23/84	2/24/84	1/24/84	12/10/84
METEOROLOGICAL SITE	DIR (DEG)	160	240	300	190	10	210	210	340	20	20
NEWARK	VEL (MPH)	6.4	10.4	1.7	3.3	10.1	6.3	4.4	8.6	3.3	4.7
	SPD (MPH)	6.9	11.1	6.3	5.0	11.2	6.8	4.7	12.9	5.3	7.9
	RATIO	0.929	0.938	0.268	0.658	0.899	0.939	0.932	0.665	0.612	0.595
METEOROLOGICAL SITE	DIR (DEG)	190	220	350	180	10	190	160	360	30	10
BRADLEY	VEL (MPH)	6.6	6.5	1.5	2.7	8.1	3.0	2.0	9.4	1.7	4.9
	SPD (MPH)	6.9	8.2	3.9	3.0	8.3	3.2	2.4	11.2	3.6	4.9
	RATIO	0.952	0.798	0.389	0.883	0.973	0.934	0.812	0.840	0.473	0.998

TABLE 26, CONTINUED

1984 TEN HIGHEST 1-HOUR AVERAGE CO DAYS WITH WIND DATA

UNITS : PARTS PER MILLION

TOWN-SITE (SAMPLES)	RANK	1	2	3	4	5	6	7	8	9	10
METEOROLOGICAL SITE	DIR (DEG)	170	240	30	220	350	250	260	350	200	30
BRIDGEPORT	VEL (MPH)	9.7	7.4	4.2	3.4	7.6	7.7	4.4	9.1	2.0	7.2
	SPD (MPH)	10.1	7.5	4.9	5.9	7.9	8.1	7.2	10.6	6.9	7.8
	RATIO	0.966	0.986	0.866	0.576	0.965	0.959	0.608	0.857	0.288	0.924
METEOROLOGICAL SITE	DIR (DEG)	210	240	250	250	360	260	250	360	200	40
WORCESTER	VEL (MPH)	8.7	7.2	3.3	7.8	6.8	9.6	5.5	9.8	4.8	4.0
	SPD (MPH)	8.9	8.5	6.0	8.2	7.8	9.6	5.8	12.9	6.6	5.2
	RATIO	0.979	0.853	0.546	0.952	0.877	0.992	0.960	0.758	0.733	0.768
					2	0.877	0.992	0.960	0.758	0.733	0.768
NEW HAVEN-007 (2084)	CO	13.6	11.6	10.2	8.8	8.8	8.5	7.1	7.0	6.5	6.3
	DATE	11/27/84	12/28/84	12/17/84	11/26/84	12/13/84	12/24/84	10/10/84	10/19/84	12/20/84	12/18/84
METEOROLOGICAL SITE	DIR (DEG)	190	210	240	210	240	210	150	160	260	330
NEWARK	VEL (MPH)	3.3	2.0	10.4	6.3	6.7	5.4	3.5	3.2	5.6	6.1
	SPD (MPH)	5.0	5.3	11.1	6.8	7.9	5.9	4.5	4.2	9.3	10.5
	RATIO	0.658	0.374	0.938	0.939	0.847	0.922	0.783	0.765	0.597	0.579
METEOROLOGICAL SITE	DIR (DEG)	180	190	220	190	210	200	170	180	290	330
BRADLEY	VEL (MPH)	2.7	4.1	6.5	3.0	2.2	6.8	4.0	3.8	4.4	4.0
	SPD (MPH)	3.0	6.8	8.2	3.2	5.6	7.3	4.5	5.8	6.0	5.6
	RATIO	0.883	0.608	0.798	0.934	0.395	0.934	0.900	0.652	0.727	0.722
METEOROLOGICAL SITE	DIR (DEG)	220	260	240	250	260	190	90	220	280	330
BRIDGEPORT	VEL (MPH)	3.4	4.9	7.4	7.7	5.8	2.3	3.5	4.2	7.3	5.7
	SPD (MPH)	5.9	6.6	7.5	8.1	6.9	3.7	4.3	4.5	7.8	5.9
	RATIO	0.576	0.739	0.986	0.959	0.834	0.613	0.812	0.932	0.944	0.965
METEOROLOGICAL SITE	DIR (DEG)	250	270	240	260	250	220	220	230	260	270
WORCESTER	VEL (MPH)	7.8	10.8	7.2	9.6	6.6	7.8	2.9	5.6	9.5	6.8
	SPD (MPH)	8.2	12.2	8.5	9.6	7.3	7.9	3.3	6.0	9.9	7.5
	RATIO	0.952	0.883	0.853	0.992	0.902	0.991	0.872	0.932	0.958	0.907
STAMFORD-020 (8675)	CO	18.4	17.9	15.7	14.9	13.5	12.8	12.7	11.1	10.8	10.7
	DATE	12/13/84	1/27/84	1/23/84	1/26/84	11/27/84	11/26/84	1/24/84	10/25/84	2/24/84	8/31/84
METEOROLOGICAL SITE	DIR (DEG)	240	300	210	250	190	210	20	270	340	320
NEWARK	VEL (MPH)	6.7	1.7	4.4	7.4	3.3	6.3	3.3	2.1	8.6	8.3
	SPD (MPH)	7.9	6.3	4.7	8.5	5.0	6.8	5.3	6.9	12.9	10.4
	RATIO	0.847	0.268	0.932	0.873	0.658	0.939	0.612	0.304	0.665	0.800
METEOROLOGICAL SITE	DIR (DEG)	210	350	160	300	180	190	30	310	360	330
BRADLEY	VEL (MPH)	2.2	1.5	2.0	4.7	2.7	3.0	1.7	3.3	9.4	5.8
	SPD (MPH)	5.6	3.9	2.4	5.6	3.0	3.2	3.6	4.0	11.2	7.9
	RATIO	0.395	0.389	0.812	0.836	0.883	0.934	0.473	0.815	0.840	0.739
METEOROLOGICAL SITE	DIR (DEG)	260	30	260	260	220	250	200	220	350	300
BRIDGEPORT	VEL (MPH)	5.8	4.2	4.4	4.2	3.4	7.7	2.0	2.9	9.1	7.5
	SPD (MPH)	6.9	4.9	7.2	8.1	5.9	8.1	6.9	5.8	10.6	7.9
	RATIO	0.834	0.866	0.608	0.526	0.576	0.959	0.288	0.507	0.857	0.945
METEOROLOGICAL SITE	DIR (DEG)	250	250	250	280	250	260	200	280	360	340
WORCESTER	VEL (MPH)	6.6	3.3	5.5	14.0	7.8	9.6	4.8	4.5	9.8	4.8
	SPD (MPH)	7.3	6.0	5.8	14.1	8.2	9.6	6.6	4.6	12.9	5.2
	RATIO	0.902	0.546	0.960	0.992	0.952	0.992	0.733	0.968	0.758	0.937

TABLE 26a

Exceedances of 8-hour CO Standard

SITE	1980	1981	1982	1983	1984
Bridgeport-004	0	0	0	1	0
New Britain-002	~~8~~ 7	1	~~3~~ 2	2	0
New Haven-007	~~1~~ 0	~~1~~ 0	0	1	0[a]
Stamford-020	~~241~~ 203	~~113~~[b] 100	2[c]	1[d]	~~3~~ 2

[a]Missing data from January through September.

[b]Missing data from October through December.

[c]Local road was changed from 2-way to 1-way traffic.

[d]90% of the data is missing from November and December.

FIGURE 13

EXCEEDANCES OF THE 8-HOUR CO STANDARD

SITE: BRIDGEPORT-004

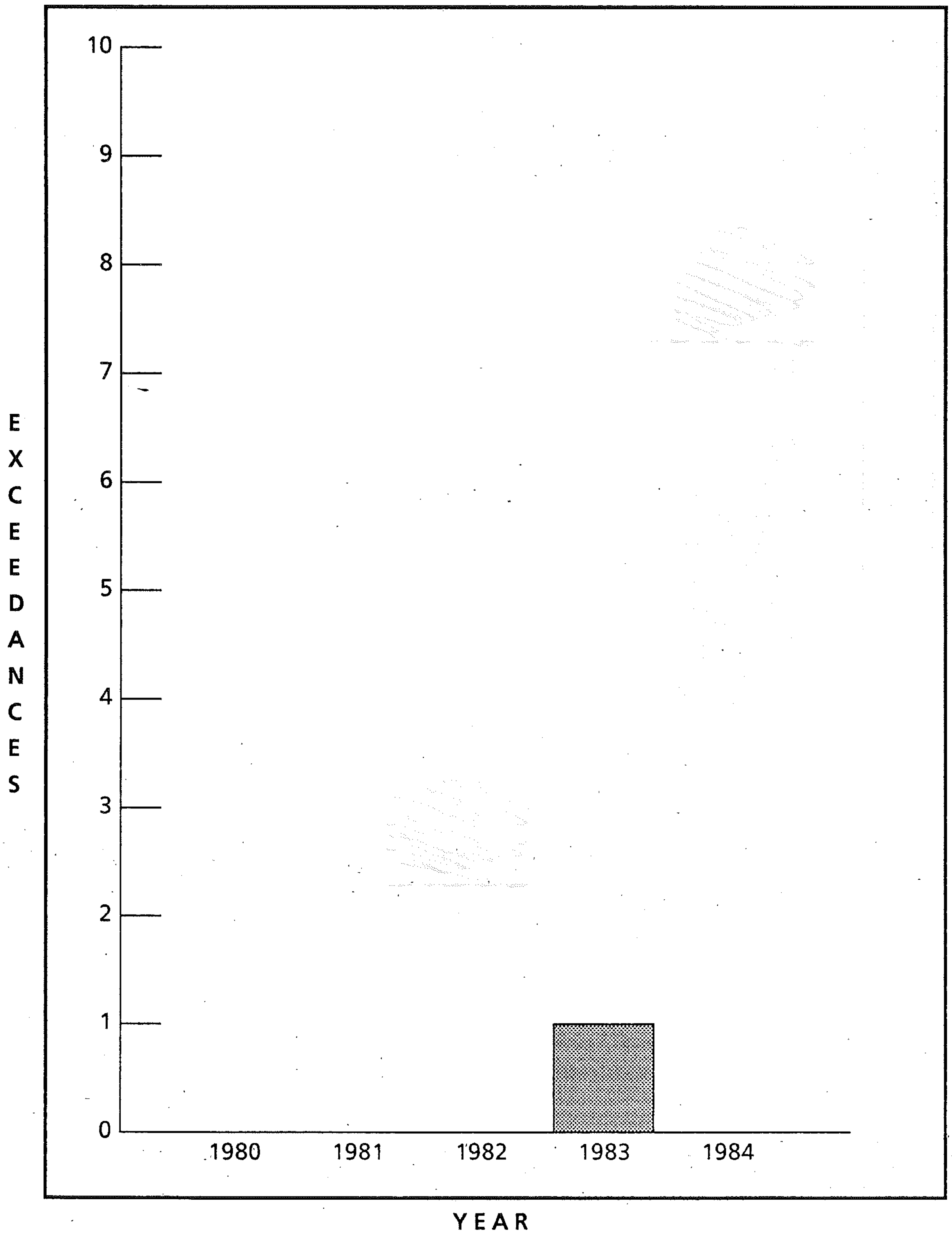
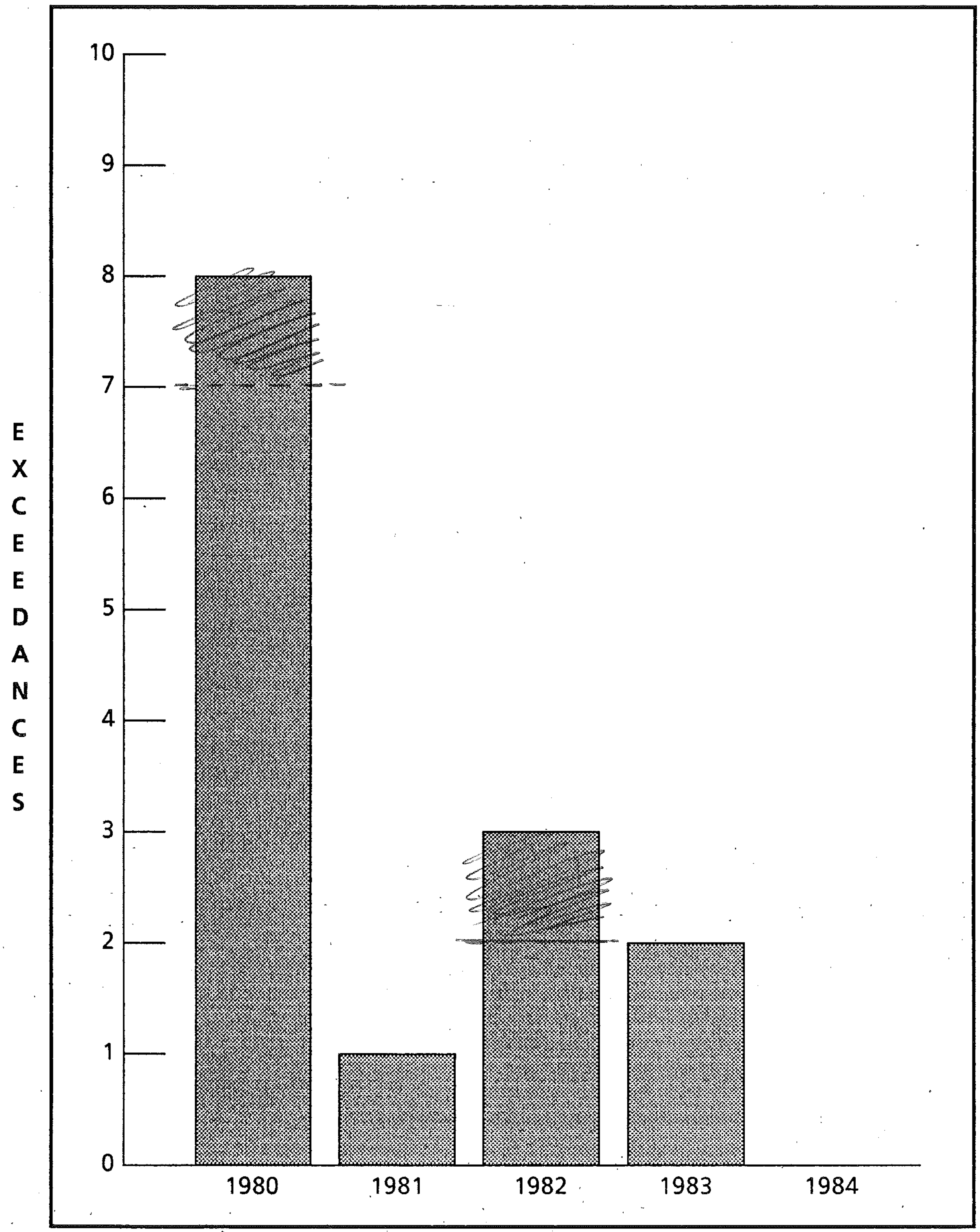


FIGURE 13, CONTINUED
EXCEEDANCES OF THE 8-HOUR CO STANDARD
SITE: NEW BRITAIN-002



YEAR

FIGURE 13, CONTINUED

EXCEEDANCES OF THE 8-HOUR CO STANDARD

SITE: NEW HAVEN-007

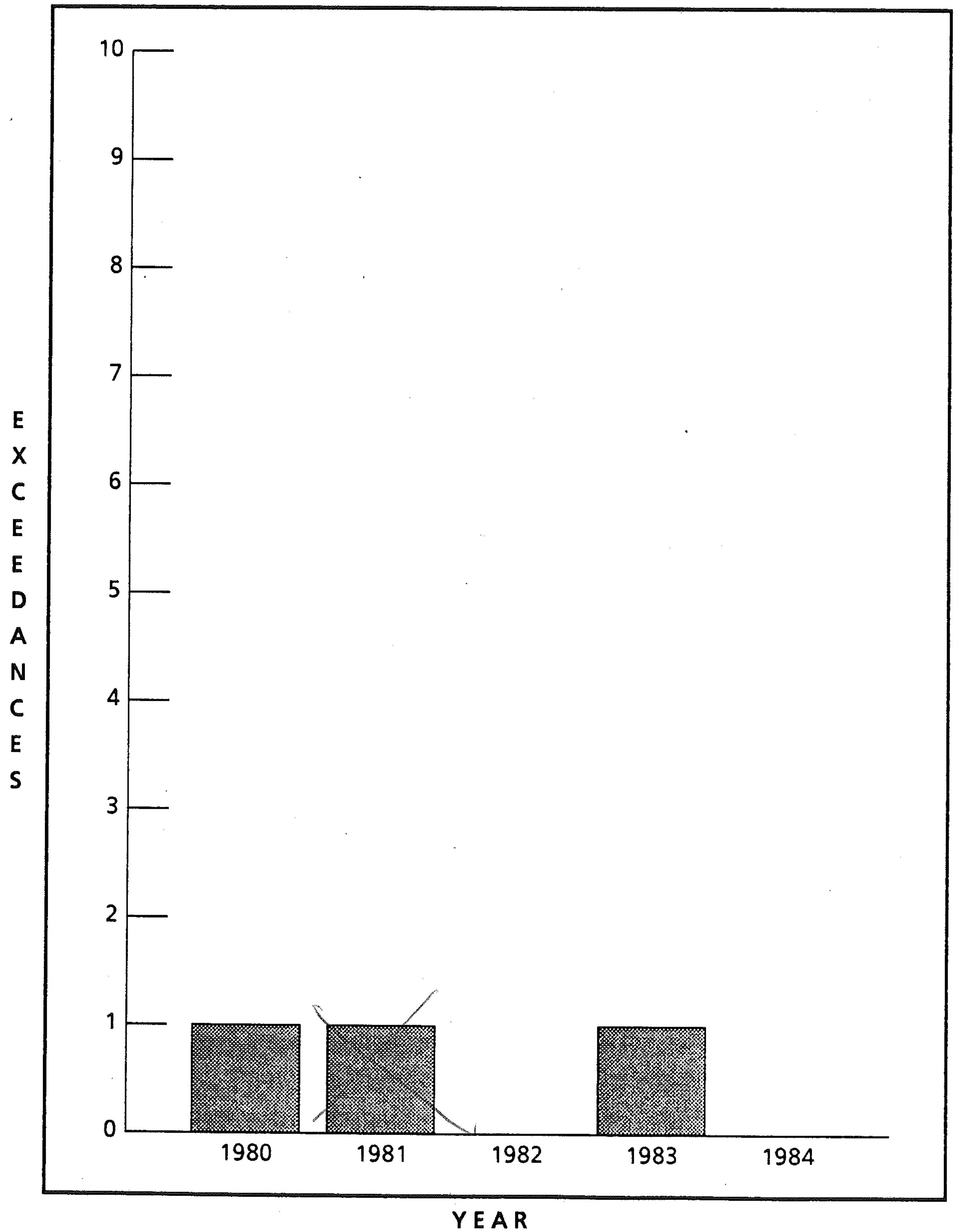


FIGURE 14

36-MONTH RUNNING AVERAGE CO CONCENTRATION

SITE: BRIDGEPORT-004

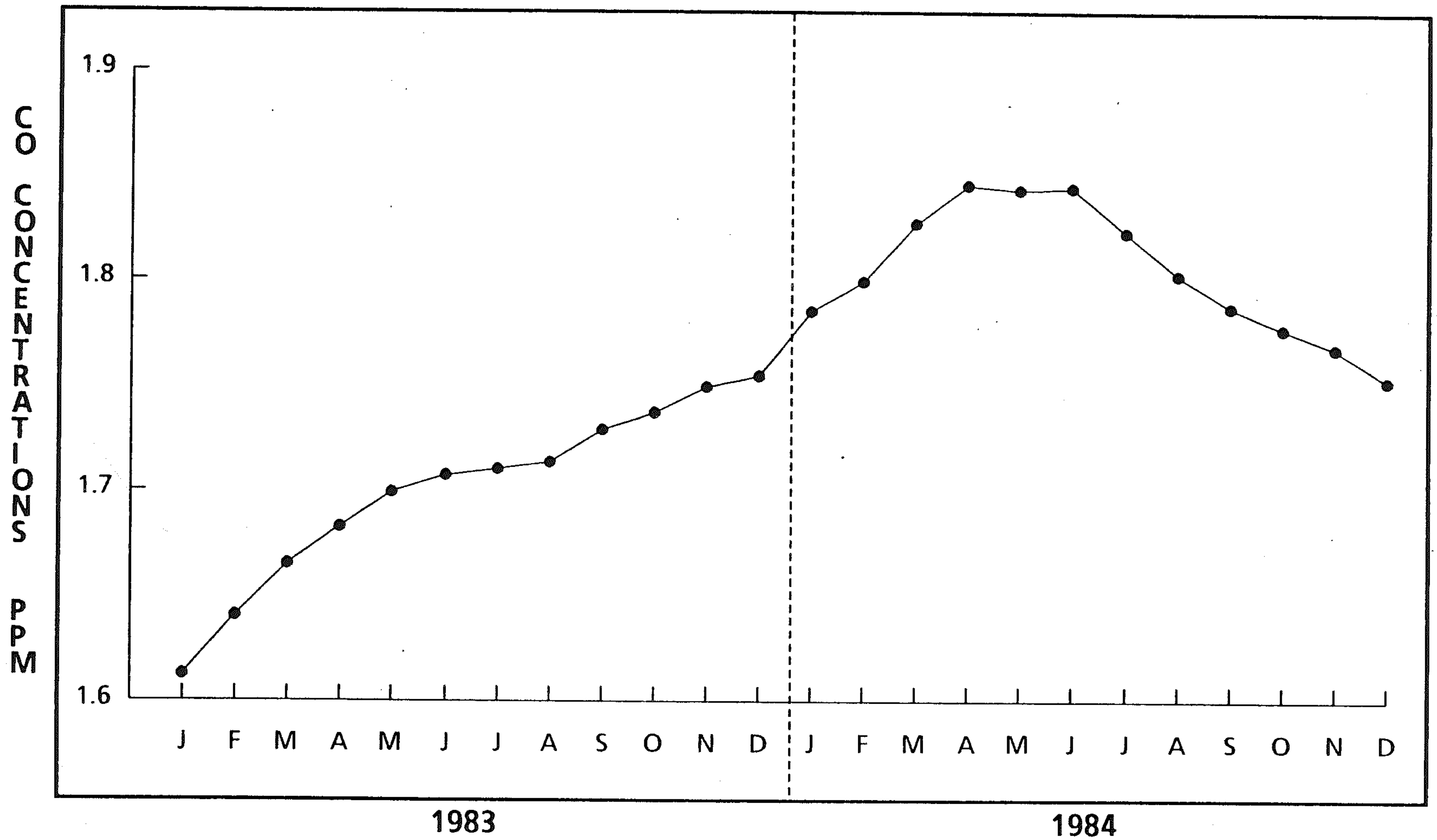


FIGURE 14, CONTINUED

36-MONTH RUNNING AVERAGE CO CONCENTRATION

SITE: NEW BRITAIN-002

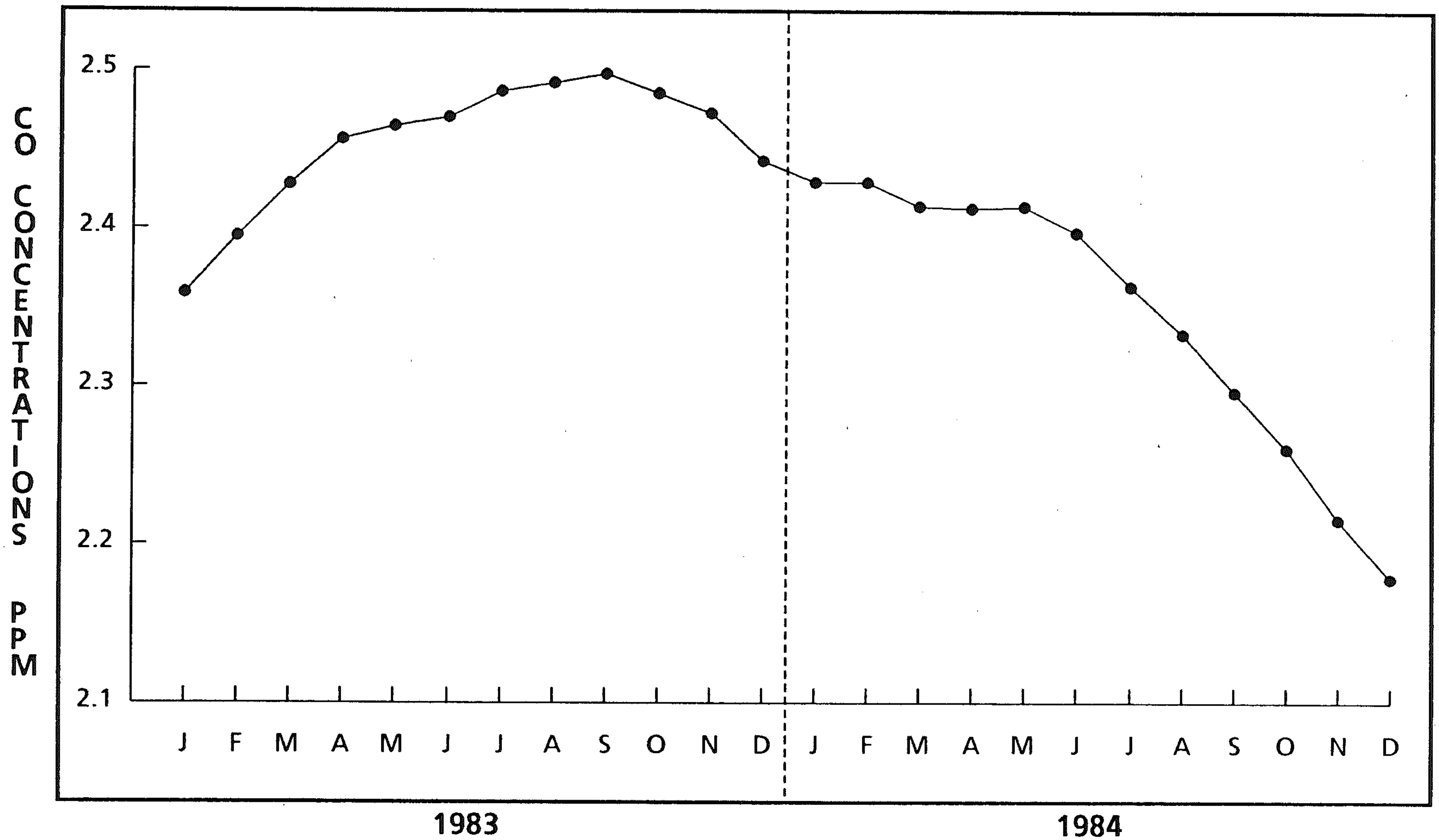


FIGURE 14, CONTINUED

36-MONTH RUNNING AVERAGE CO CONCENTRATION

SITE: NEW HAVEN-007

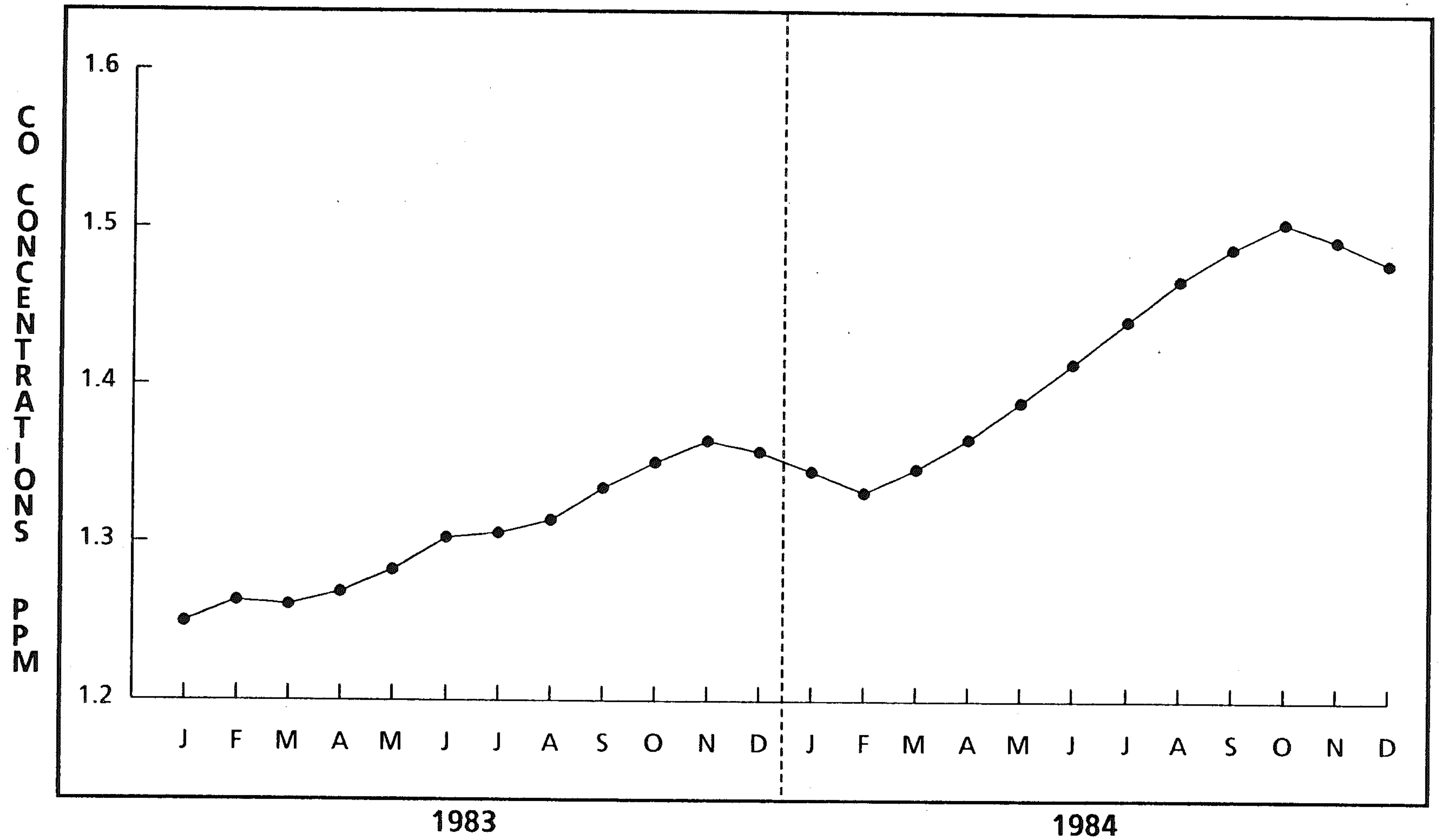
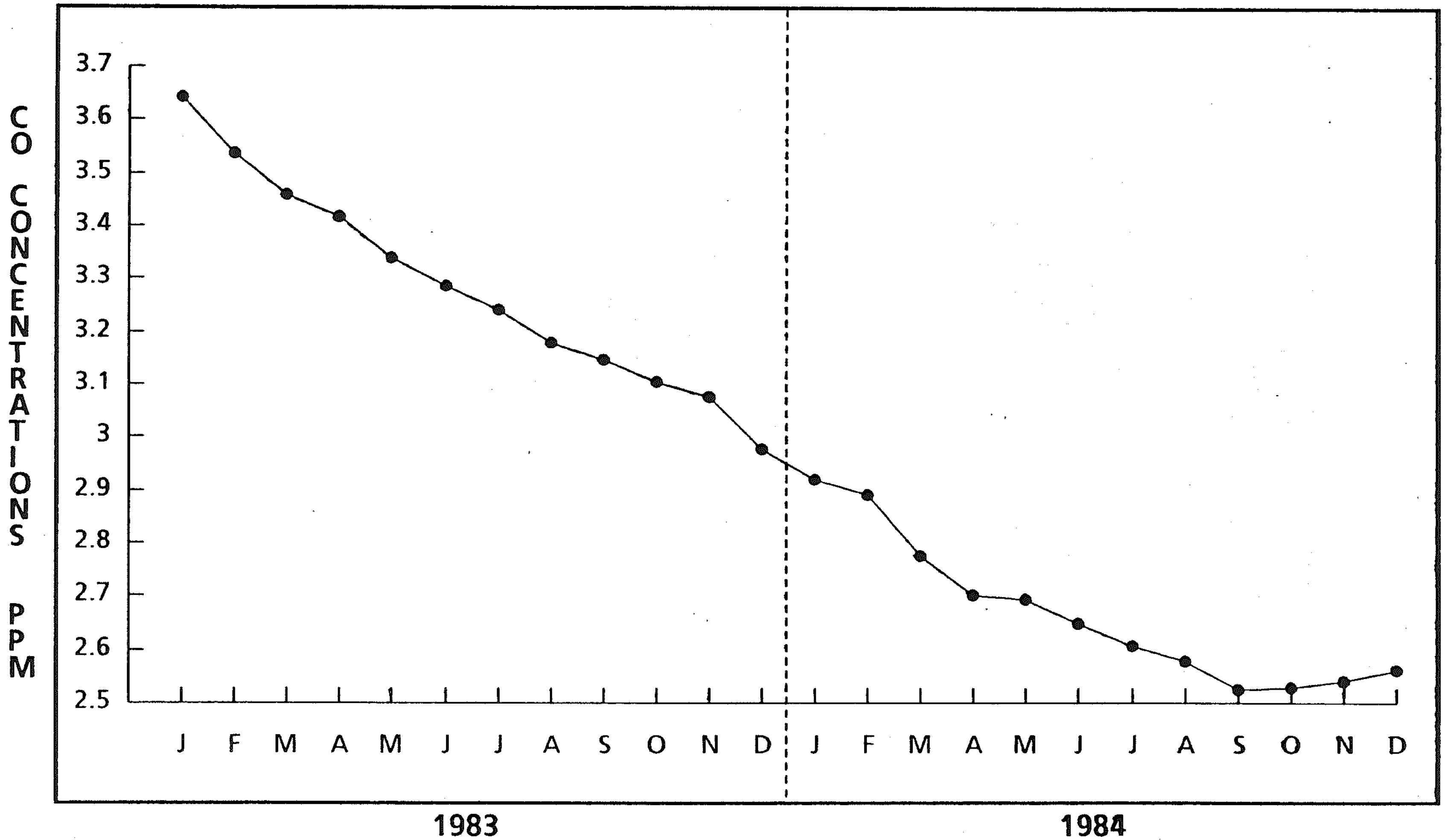


FIGURE 14, CONTINUED

36-MONTH RUNNING AVERAGE CO CONCENTRATION

SITE: STAMFORD-020



VII. LEAD

Health Effects

Lead (Pb) is a soft, dull gray, odorless and tasteless heavy metal. It is a ubiquitous element that is widely distributed in small amounts, particularly in soil and in all living things. Although the metallic form of lead is reactive and rarely occurs in nature, lead is prevalent in the environment in the form of various inorganic compounds, and occasional concentrated deposits of lead compounds occur in the earth's crust.

The presence of lead in the atmosphere is primarily accounted for by the emissions of lead compounds from man-made processes, such as the extraction and processing of metallic ores, the incineration of solid wastes, and the operation of motor vehicles. The combustion of lead-containing gasoline by motor vehicles is the largest source of airborne lead emissions and is responsible for approximately 90% of the total. These emissions are in the form of fine-to-course particulate matter and are comprised of lead sulfate, ammonium lead halides, and lead halides, of which the chief component is lead bromochloride. The halide compounds appear to undergo chemical changes over a period of hours and are converted to lead carbonate, oxide and oxycarbonate.

The most important sources of lead in humans and other animals are ingestion of foods and beverages, inhalation of airborne lead, and the eating of non-food substances. From the standpoint of the general population, the intake of lead into the body is primarily through ingestion. The direct intake of lead from the ambient air is relatively small. Except in special cases, the contribution to the total body burden of lead via inhalation of airborne lead in urban areas is usually less than 30%. In non-urban areas, it is usually less than 5%.

Overexposure to lead in the United States is primarily a problem in children. Age, pica, diet, nutritional status, and multiple sources of exposure serve to increase the risk of lead poisoning in children. This is especially true in the inner cities where the prevalence of lead poisoning is greatest. Overexposure to lead compounds may result in undesirable biologic effects. These effects range from reversible clinical or metabolic symptoms that disappear after cessation of exposure to permanent damage or death from a single extreme dose or prolonged overexposure. Clinical lead poisoning is accompanied by symptoms of intestinal cramps, peripheral nerve paralysis, anemia, and severe fatigue. Very severe exposure results in permanent neurological, renal, or cardiovascular damage or death.

Conclusions

The Connecticut primary and secondary ambient air quality standard for lead and its compounds was not exceeded at any site in Connecticut during 1984.

The monitoring sites where the lead levels were highest were generally in urban locations with moderate to heavy traffic. This is due to the fact that in Connecticut the primary source of lead in the atmosphere is the combustion of leaded gasoline in motor vehicles.

A downward trend in measured concentrations of lead has been observed since 1978. This is probably due to the increasing use of unleaded gasoline. Figure A shows that the decrease in lead emissions from gasoline combustion from 1975 to 1984 has been commensurate with a decrease in statewide ambient average led concentrations. In fact, this relationship is so close, it has a correlation coefficient of 0.971 (see Figure B). Regarding Figures A and B, the reader should note that after 1981 a change occurred in the way in which lead concentrations were determined. Before 1982, lead concentrations were determined by analysis of quarterly composite samples from existing TSP monitors. Beginning in 1982, lead concentrations were determined by analysis of monthly composite samples from only approved lead monitors. Both data points are depicted in Figure A for 1982. The discontinued method gives a lower average lead concentration in 1982 than the new method. The higher average lead concentration is used in Figure B.

Sample Collection and Analysis

The Air Monitoring Unit uses hi-vol and lo-vol samplers to obtain ambient concentrations of lead. These samplers are used to collect particulate matter onto fiberglass filters. The particulate matter collected on the filters is subsequently analyzed for its chemical composition. Wet chemistry techniques are used to separate the particulate matter into various components. The lead content of the TSP is determined using an atomic absorption spectrophotometer. (The use of these sampling devices and the chemical analysis techniques were fully described in the TSP section.) Unlike hi-vol TSP samples which are analyzed separately, the hi-vol lead sample is a composite of all the individual samples obtained at a site in a single month. That is, a cutting is taken from each filter during the month and these cuttings are collectively chemically analyzed for lead.

Discussion of Data

Monitoring Network - In 1984, both hi-vol and lo-vol samplers were operated in Connecticut to monitor lead levels (see Figure 15). There were 16 hi-vol sites and 5 lo-vol sites operated throughout the State (see Table 35) as part of the State and Local Air Monitoring Stations (SLAMS) network. The DEP operated the five lo-vol monitors in cities with populations greater than 200,000. They are Hartford 015 and 016, Stamford 022, New Haven 016, and Bridgeport 010. These "micro-scale" lead sites are situated near some of the busiest city streets in order to monitor "worst-case" lead concentrations. EPA approval for these lo-vol was granted in February, 1984.

Precision and Accuracy - The hi-vol lead monitors had a total of 24 precision checks in 1984. The resulting 95% probability limits were -9% to +10%. Accuracy for lead is defined as the accuracy of the analysis method. It is determined by chemical analysis of known lead samples. There were 14 audits for accuracy conducted on the monitoring network in 1984. Two different concentration levels were tested: low and high. The 95% probability limits for the low level test ranged from -7% to +9%; those for the high level test ranged from -6% to +7%.

NAAQS - Connecticut's ambient air quality standard for lead and its compounds, measured as elemental lead, is: 1.5 micrograms per cubic meter (ug/m^3) , maximum arithmetic mean averaged over three consecutive calendar months. This standard was enacted on November 2, 1981. Previously, Connecticut's lead standard was substantially identical: 1.5 ug/m^3 for a calendar quarter-year average. The change to a 3-month running average means that a more stringent standard now applies, since there are three times as many data blocks within a calendar year which must be below the limiting concentration of 1.5 ug/m^3.

3-Month Running Averages - Three-month running average lead concentrations are given in Table 27 for the year 1984. These values are also presented in graphical form in Figure 16 for the period 1982-84.

Trends - As was mentioned above, airborne concentrations of lead have been trending steadily downward. This was demonstrated on a statewide level in Figure A. The trend in lead levels can also be shown on a regional or a site-specific basis. Figure C shows the trend in annual average lead concentrations at each of nine monitoring sites. (Twelve sites from the lead monitoring network are not included here because they have not been in existence long enough to be able to demonstrate a long term trend.) Figure D shows the trends in the 3-year running average lead concentrations at the same nine sites. A downward trend in lead levels is apparent at all the sites, especially since 1978. This decrease in lead levels is commensurate with the decrease in lead emissions from gasoline combustion.

FIGURE A

STATEWIDE ANNUAL LEAD EMISSIONS FROM GASOLINE

AND

STATEWIDE ANNUAL AVERAGE LEAD CONCENTRATIONS

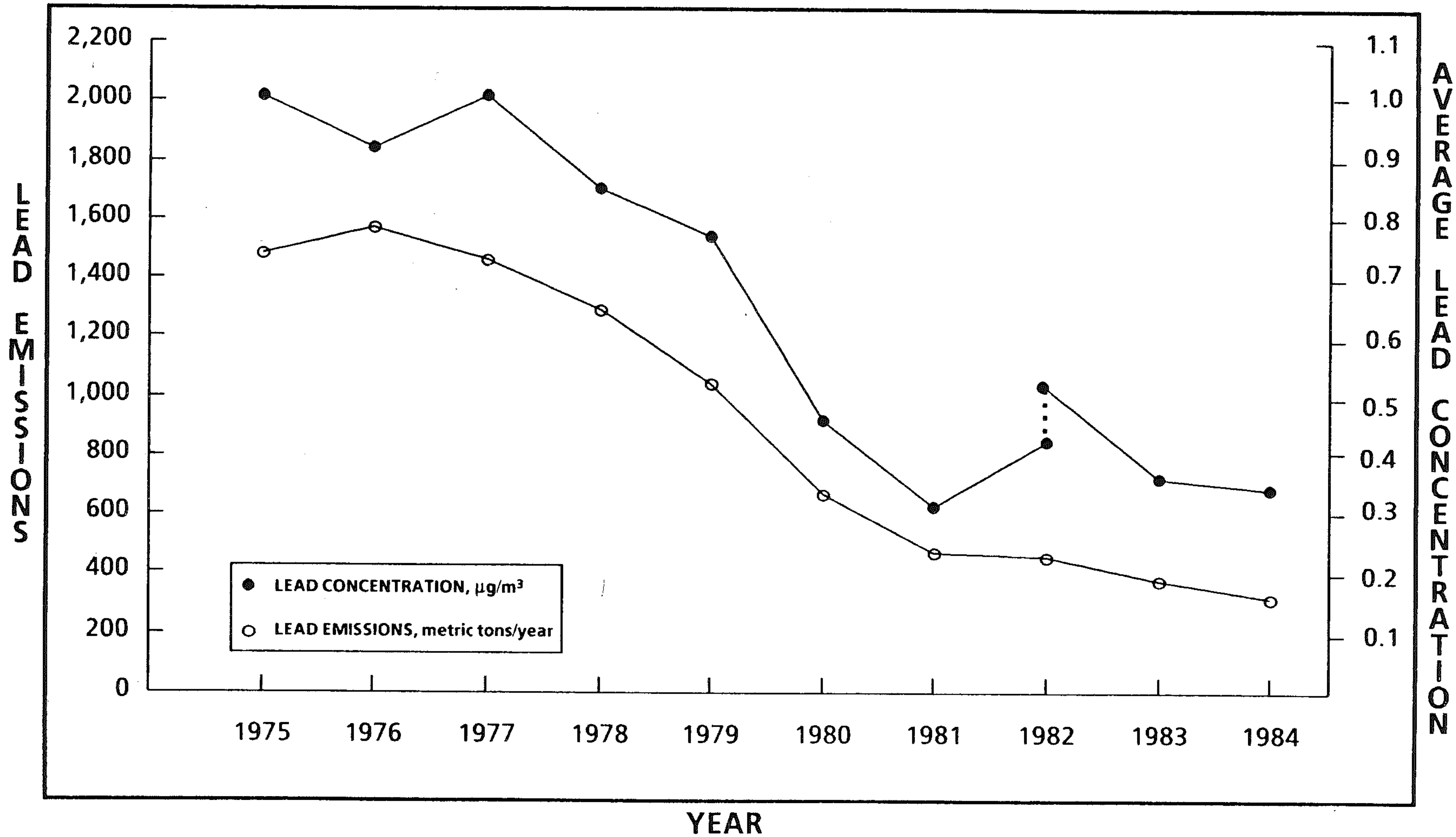
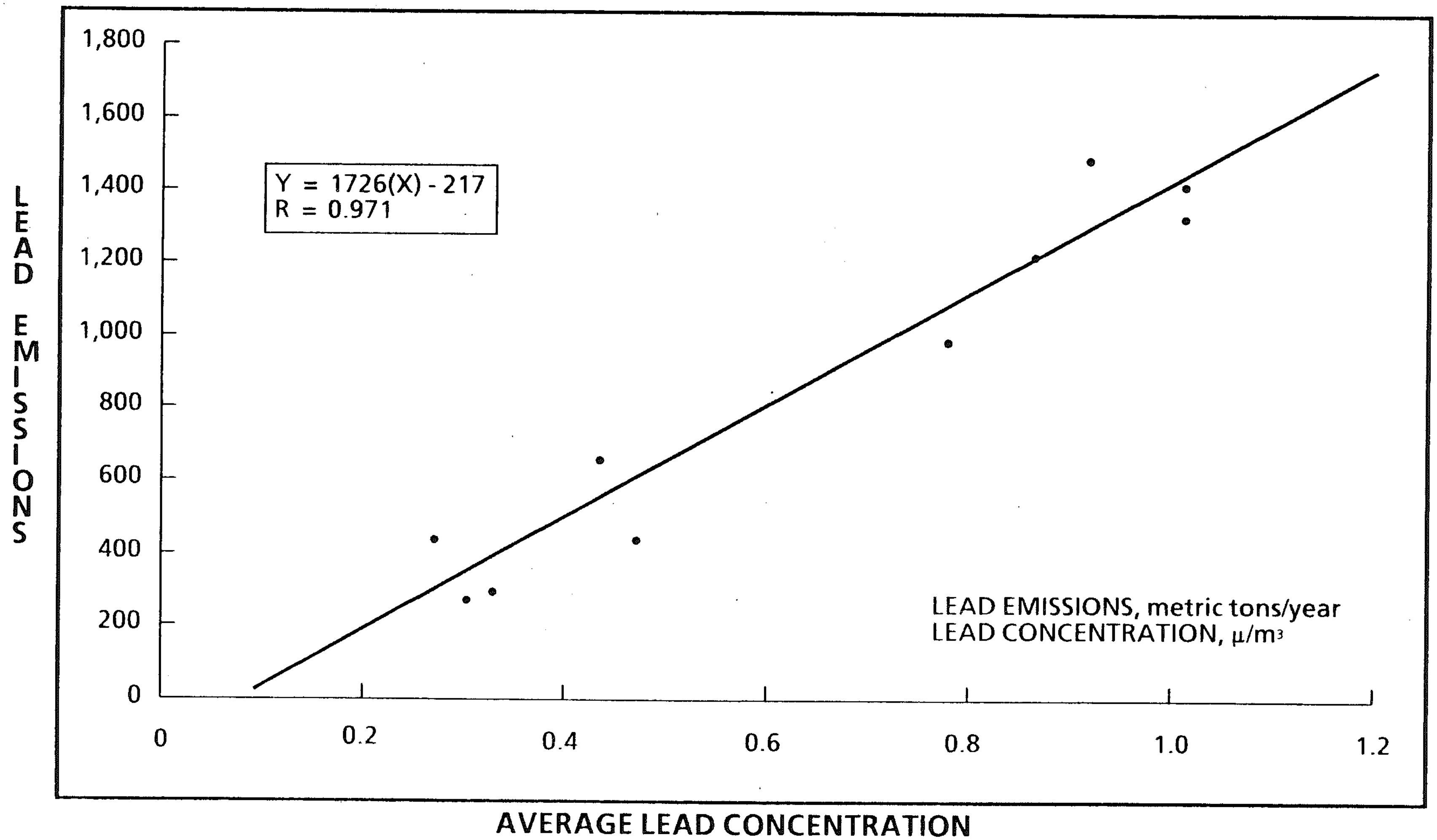


FIGURE B

STATEWIDE ANNUAL LEAD EMISSIONS FROM GASOLINE

VS.

STATEWIDE ANNUAL AVERAGE LEAD CONCENTRATIONS



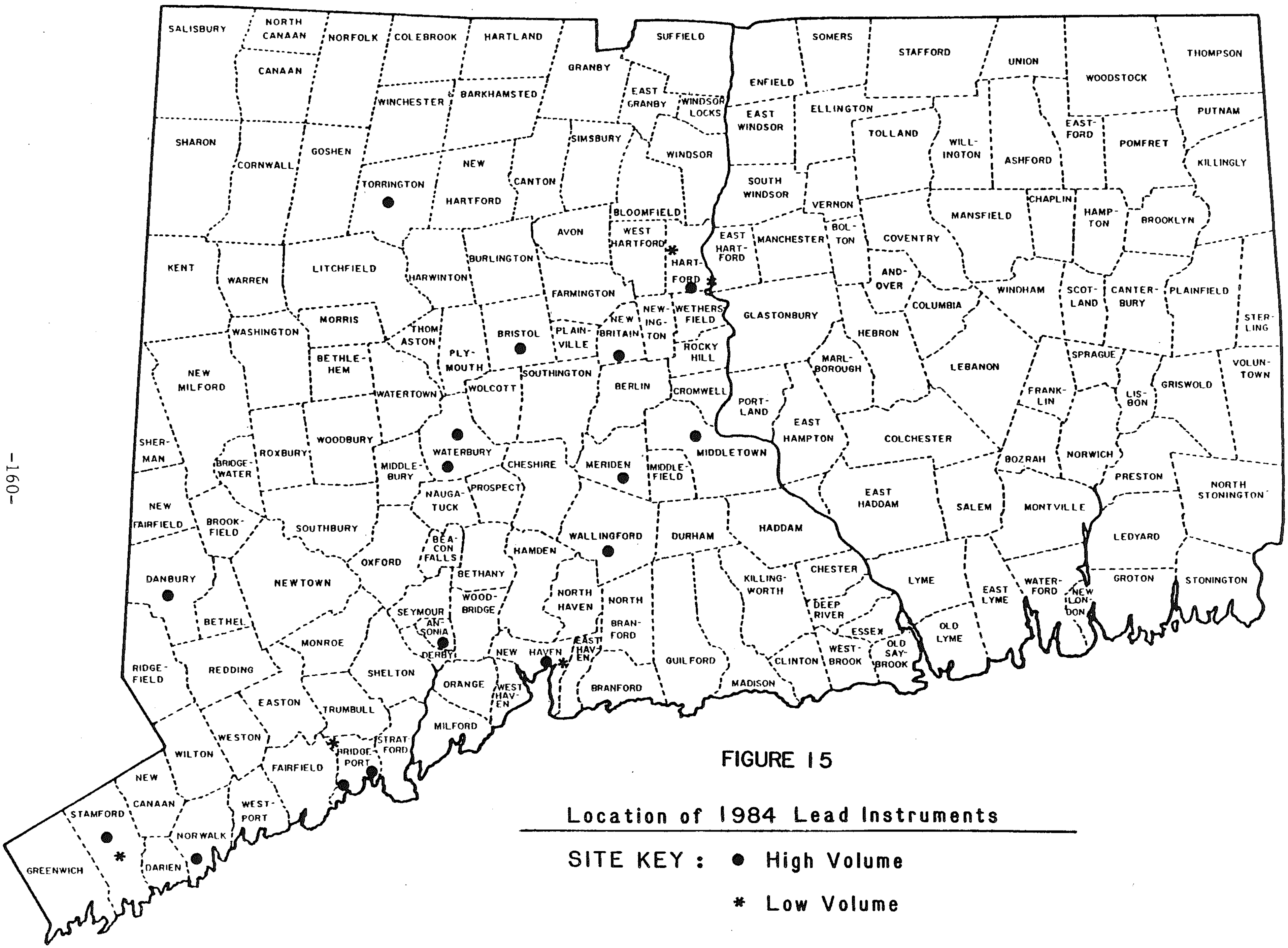


FIGURE 15

Location of 1984 Lead Instruments

SITE KEY : ● High Volume

* Low Volume

TABLE 27

1984 3-MONTH RUNNING AVERAGE LEAD CONCENTRATIONS (ug/m3)

SITE	Jan.*	Feb.*	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Ansonia-003	0.42	0.34	0.29	0.24	0.22	0.26	0.26	0.27	0.24	0.26	0.30	----
Bridgeport-009	0.35	0.31	0.23	0.24	0.20	0.25	0.22	0.24	0.22	0.24	0.27	0.30
Bridgeport-010	----	----	----	----	0.37	0.45	0.47	0.49	0.42	0.44	0.45	0.50
Bridgeport-123	0.44	0.37	0.31	0.33	0.32	0.33	0.32	0.34	0.32	0.36	0.41	0.49
Bristol-001	0.25	0.18	0.15	0.16	0.15	0.16	0.16	0.18	0.20	0.22	0.25	0.26
Danbury-002	0.37	0.31	0.25	0.25	0.19	0.20	0.19	0.21	0.22	0.24	0.26	0.29
Hartford-014	0.39	0.34	0.30	0.25	0.23	0.25	0.25	0.25	0.24	0.28	0.38	0.48
Hartford-015	0.58	0.53	0.53	0.45	0.38	0.40	0.41	0.43	0.40	0.51	0.55	0.67
Hartford-016	0.75	0.68	0.63	0.49	0.41	0.46	0.50	0.54	0.52	0.50	0.56	0.67
Meriden-002	0.34	0.32	0.28	0.22	0.19	0.20	0.21	0.22	0.26	0.30	0.41	0.44
Middletown-003	0.37	0.32	0.27	0.24	0.22	0.21	0.21	0.25	0.27	0.33	0.30	0.35
New Britain-007	0.30	0.23	0.21	0.19	0.16	0.14	0.15	0.18	0.20	0.23	0.28	0.32
New Haven-016	0.47	0.44	0.41	0.30	0.31	0.42	0.50	0.54	0.49	0.49	0.46	0.48
New Haven-123	0.57	0.53	0.45	0.43	0.42	0.41	0.39	0.34	0.36	0.43	0.52	0.54
Norwalk-012	0.41	0.39	0.31	0.30	0.24	0.28	0.28	0.27	0.24	0.28	0.33	0.36
Stamford-001	0.32	0.29	0.24	0.26	0.21	0.26	0.26	0.28	0.23	0.25	0.27	0.29
Stamford-022	0.36	0.35	0.35	0.30	0.29	0.35	0.40	0.41	0.38	0.37	0.39	0.37
Torrington-123	0.48	0.29	0.27	0.22	0.23	0.22	----	----	----	----	----	----
Wallingford-001	0.39	0.31	0.25	0.21	0.19	0.22	0.23	0.26	0.24	0.26	0.33	0.40
Waterbury-007	0.53	0.43	0.34	0.31	0.31	0.35	0.39	0.41	0.37	0.40	0.51	0.56
Waterbury-123	0.74	0.53	0.41	0.38	0.37	0.43	0.45	0.46	0.44	0.47	0.62	0.72

* 3-month running average includes data from the last 2 months of 1983

FIGURE 16

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=ANSONIA 003

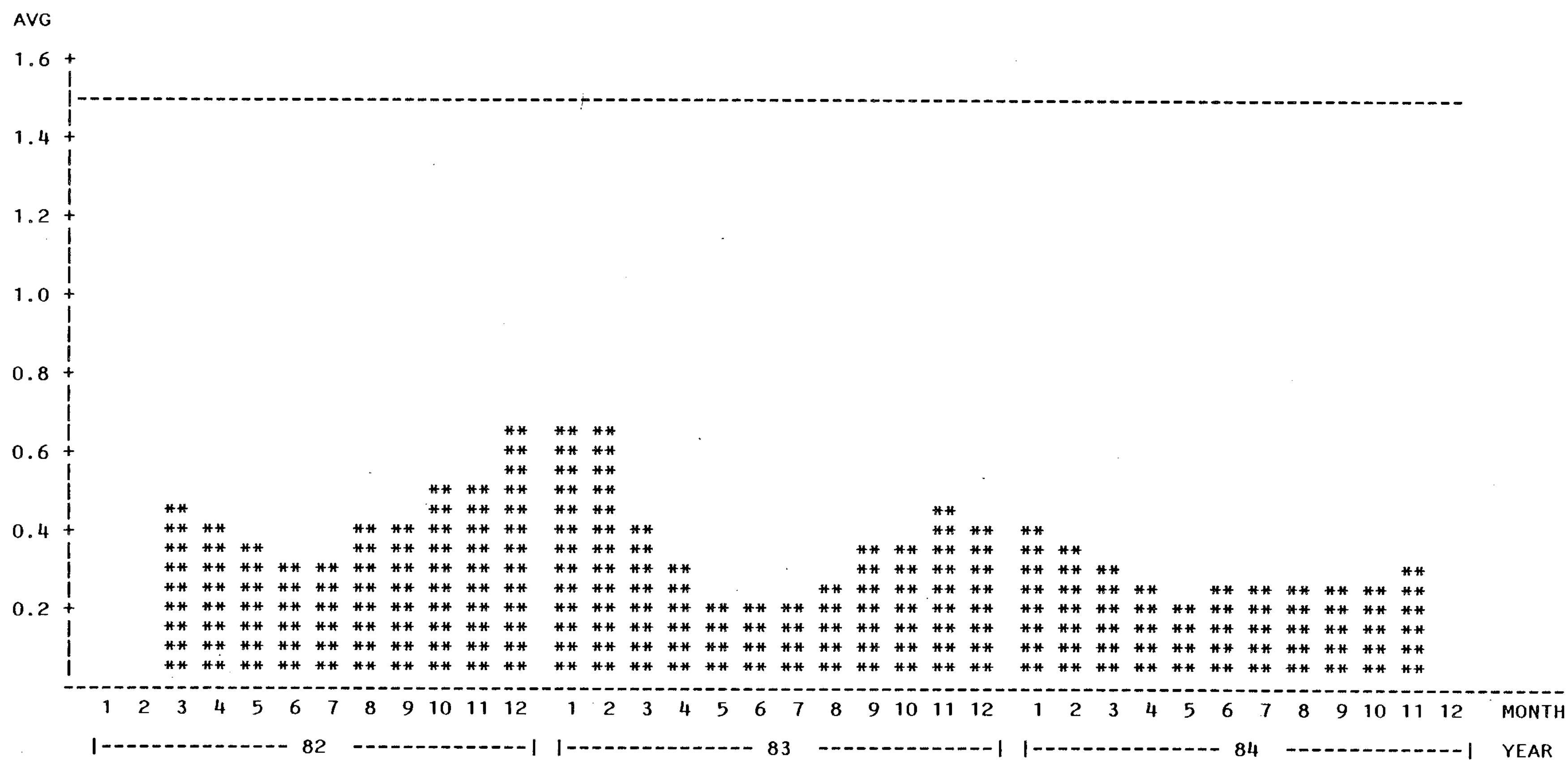


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=BRIDGEPORT 009

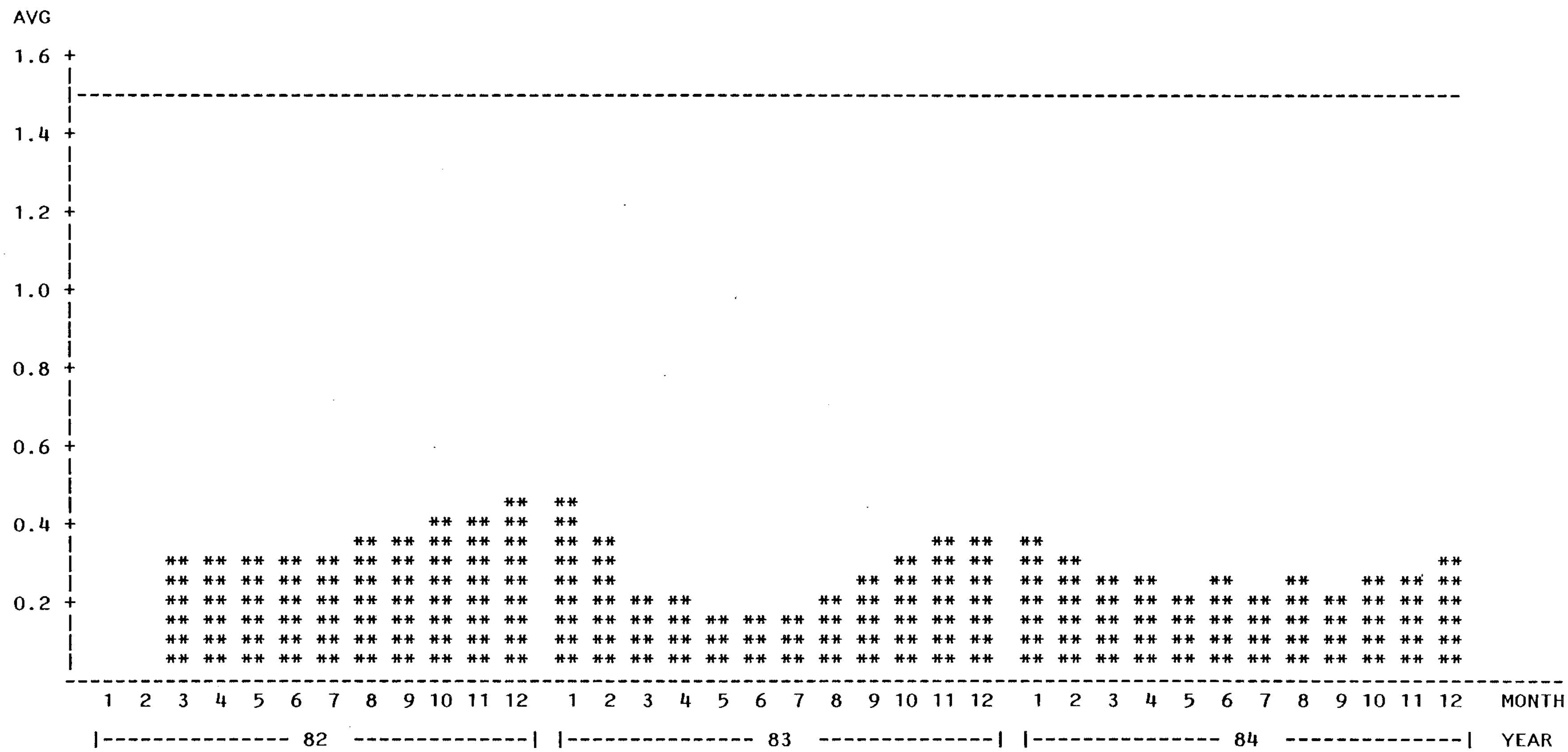


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=BRIDGEPORT 010

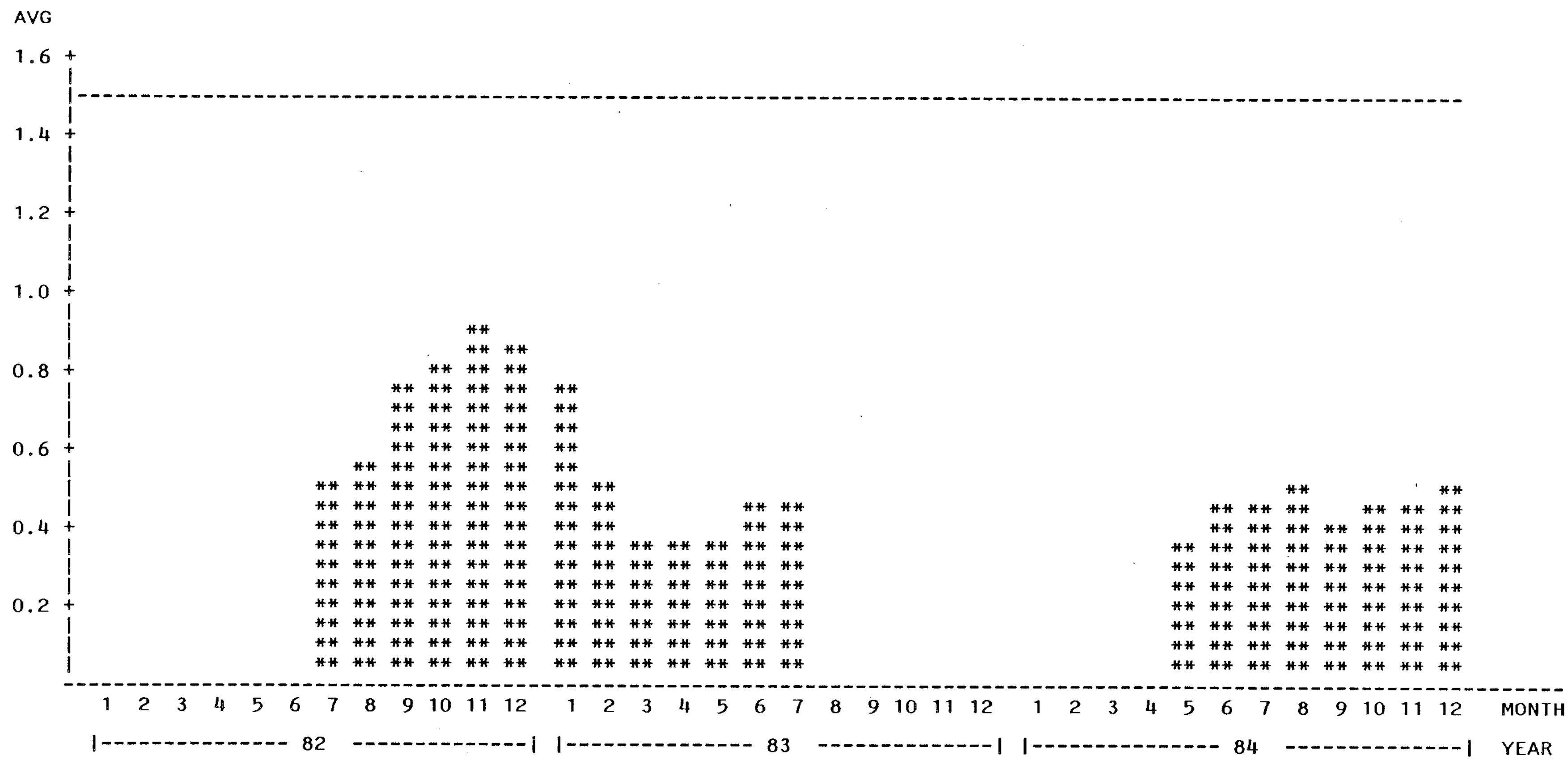


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=BRIDGEPORT 123

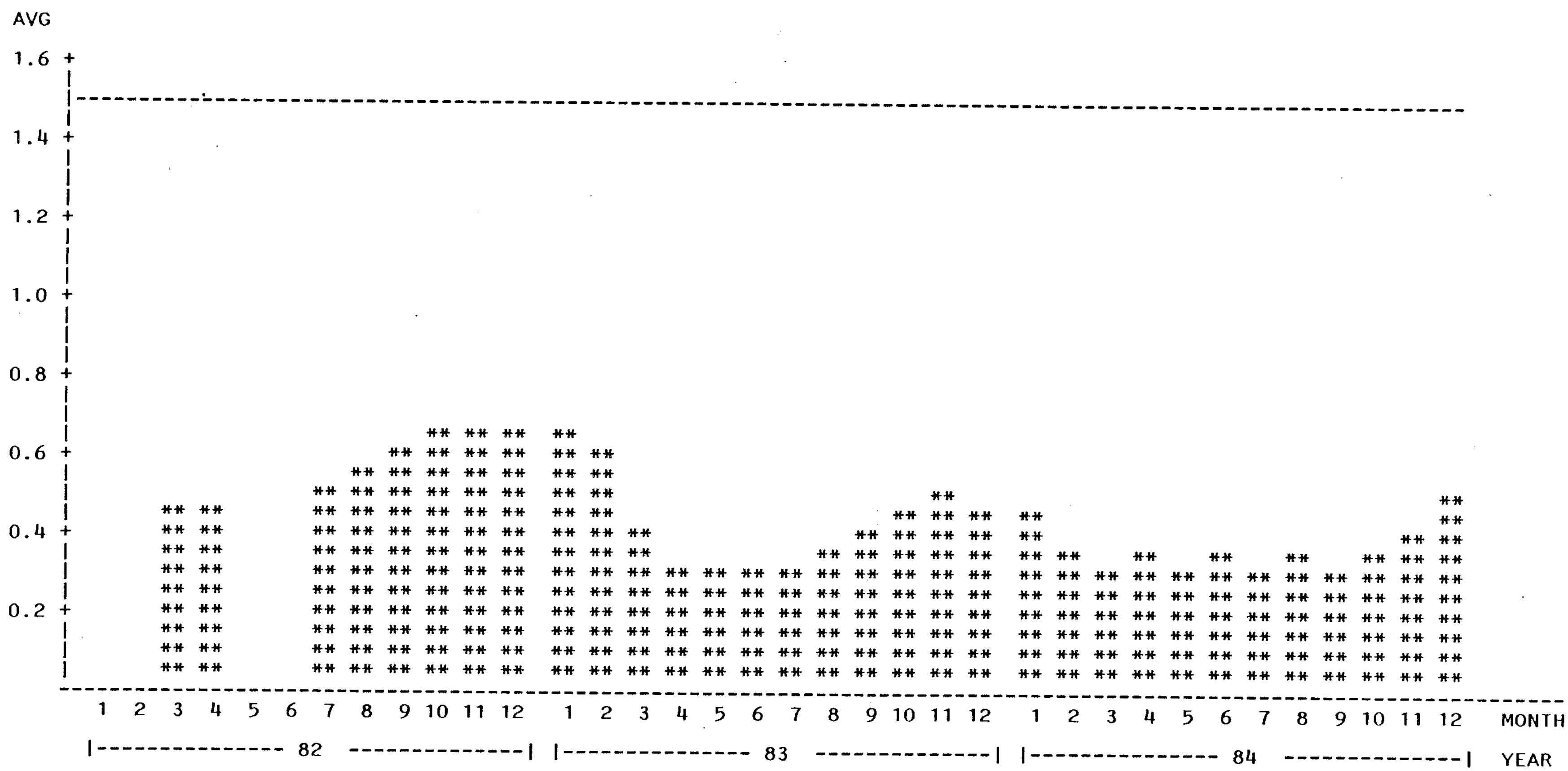


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=BRISTOL 001

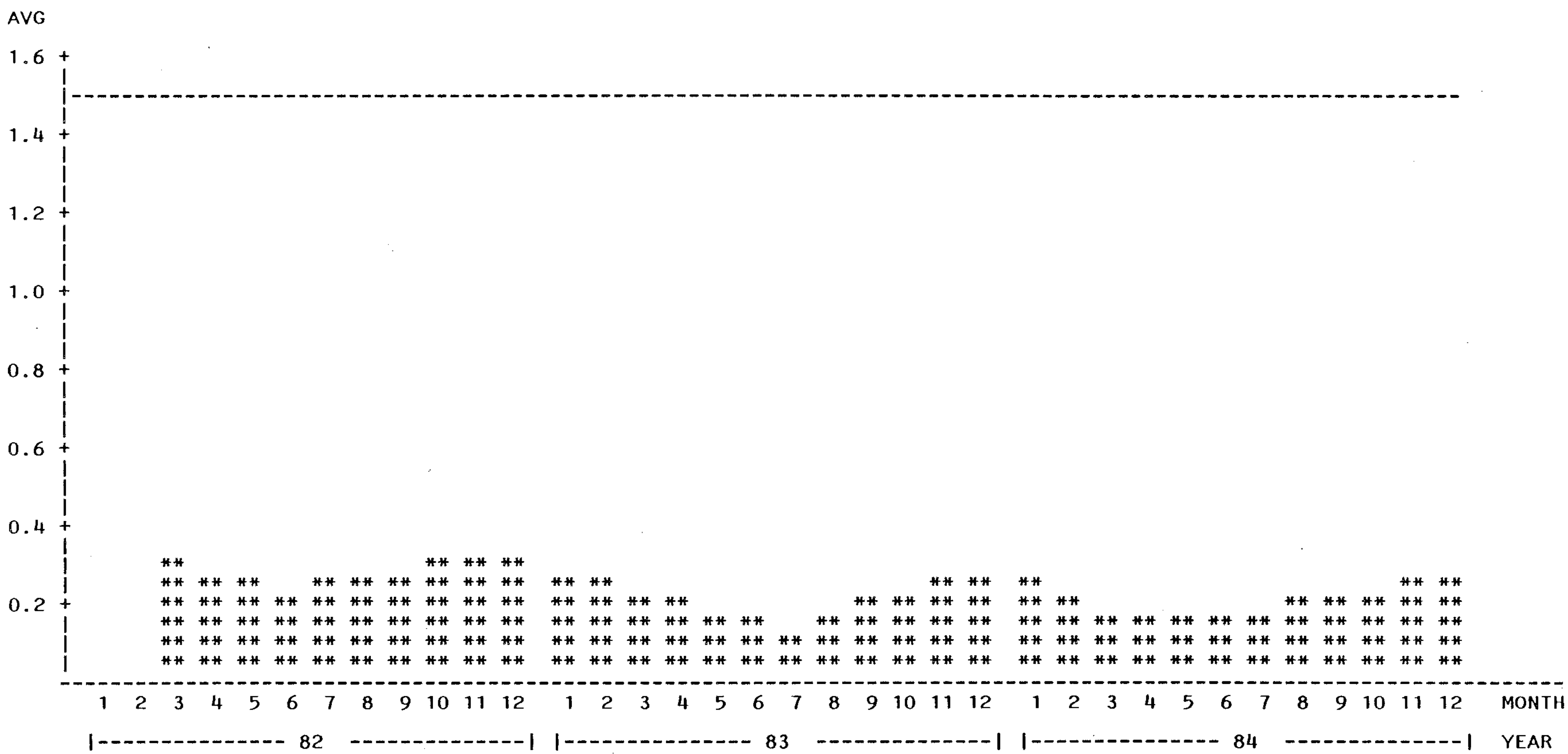


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=DANBURY 002

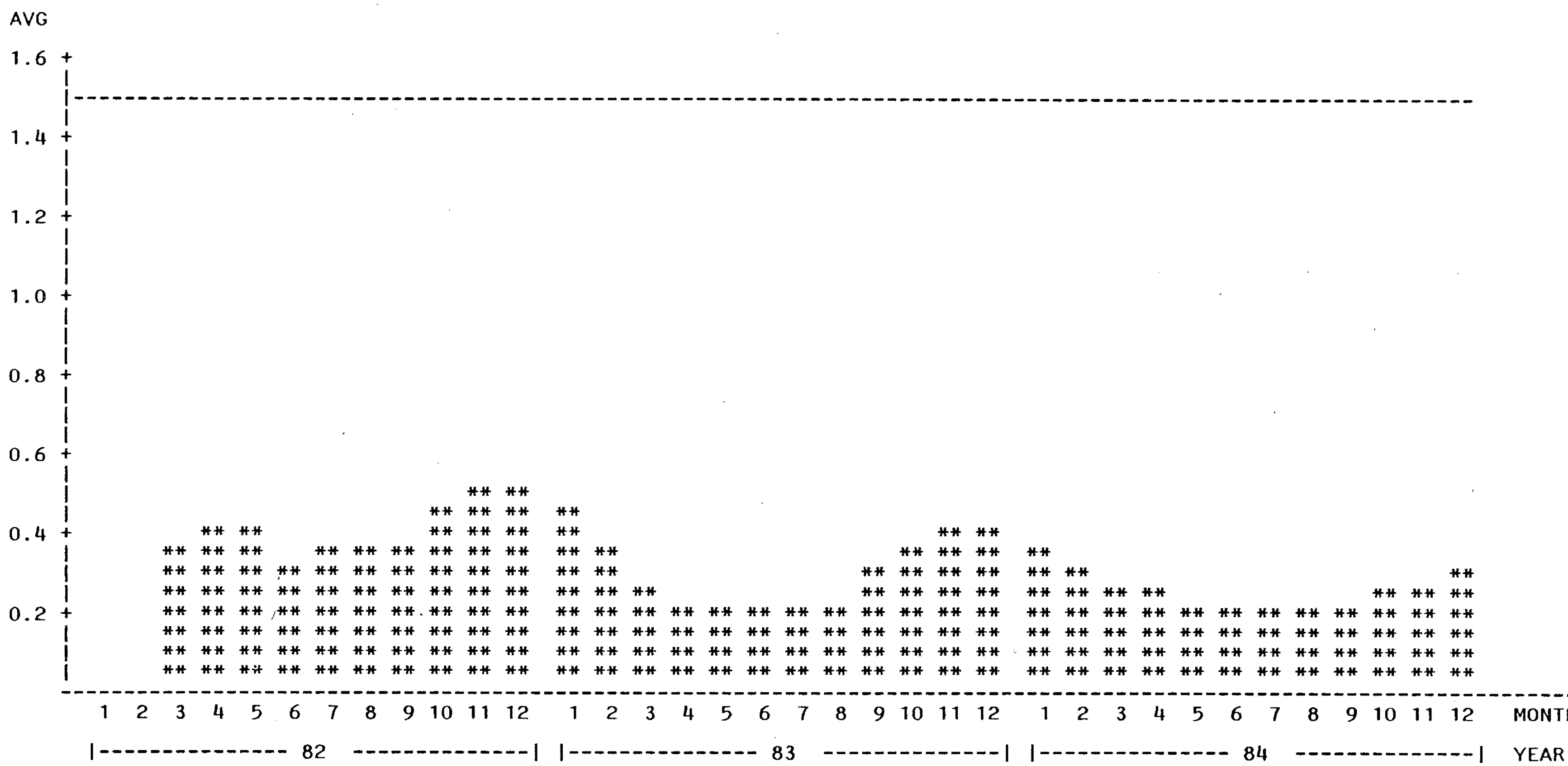


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=HARTFORD 014

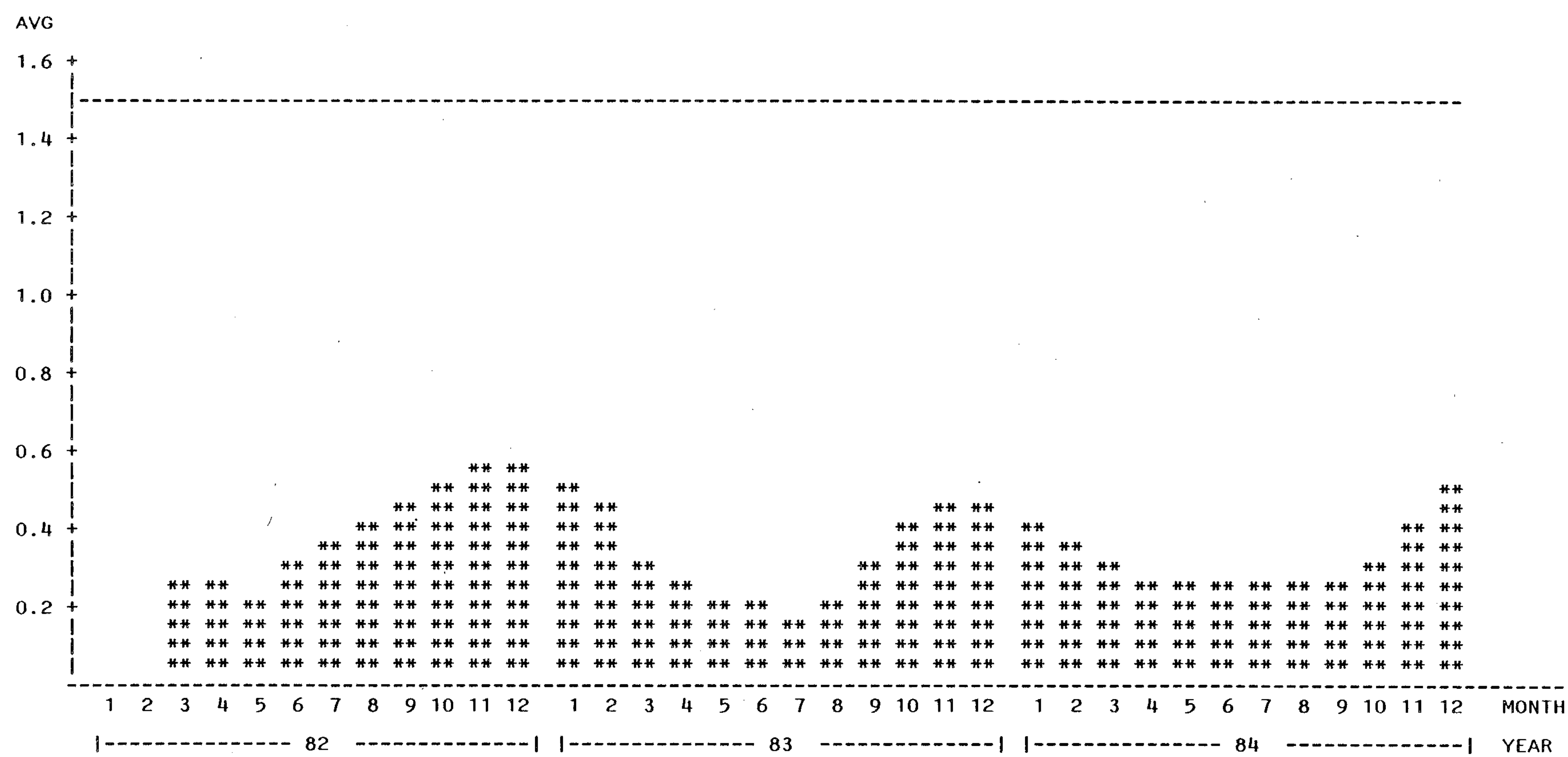


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=HARTFORD 015

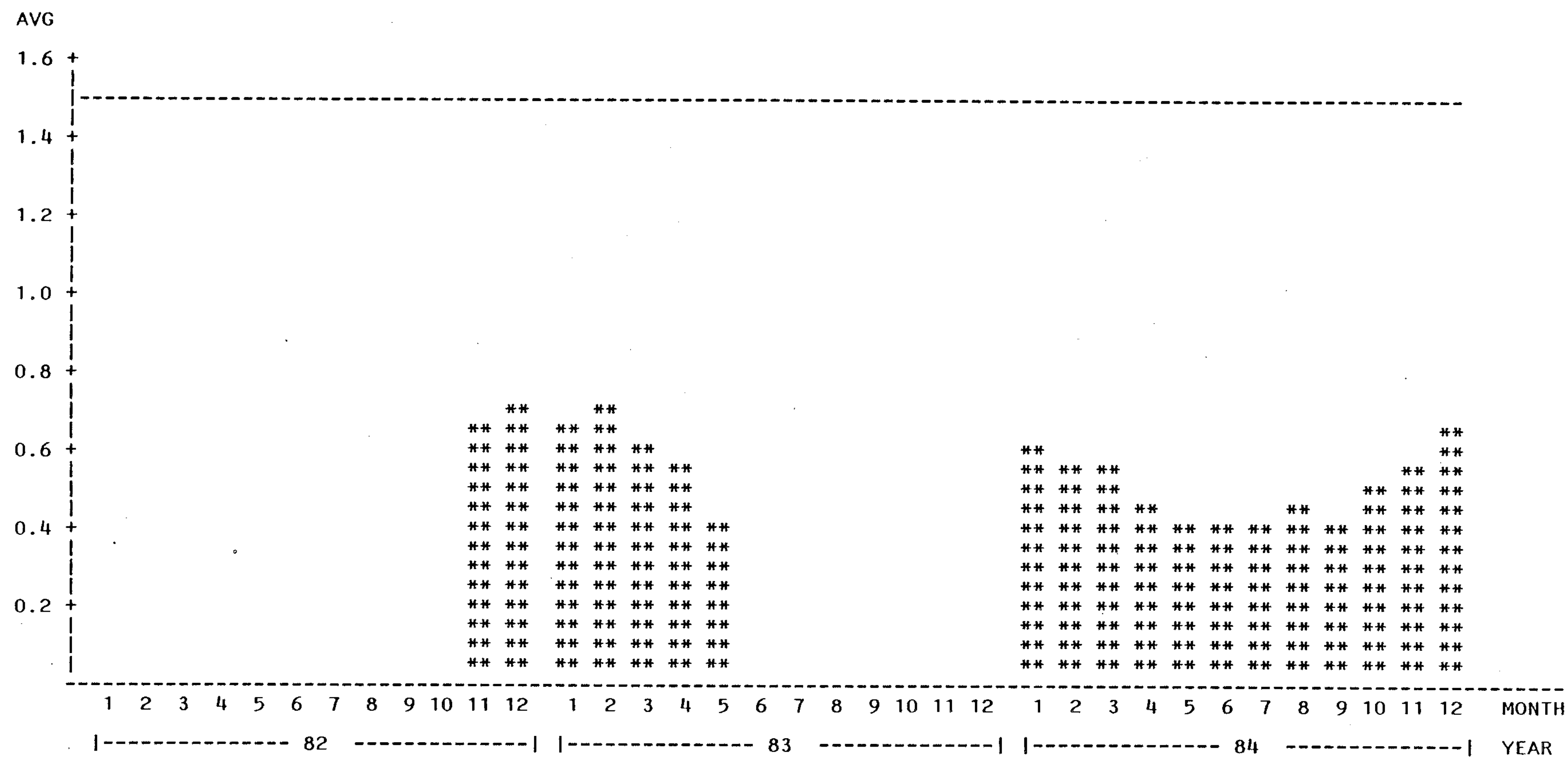


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=HARTFORD 016

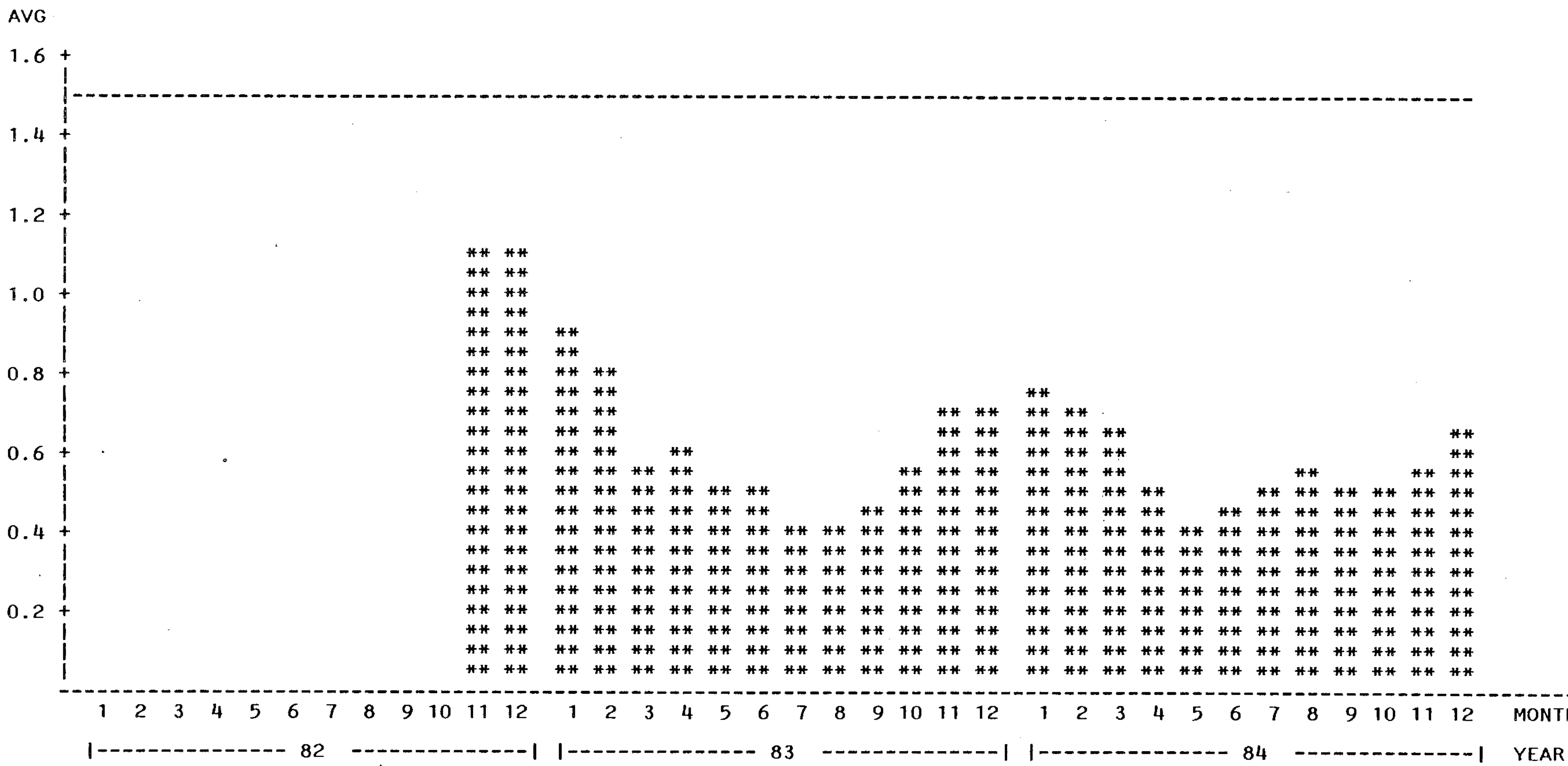


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=MERIDEN 002

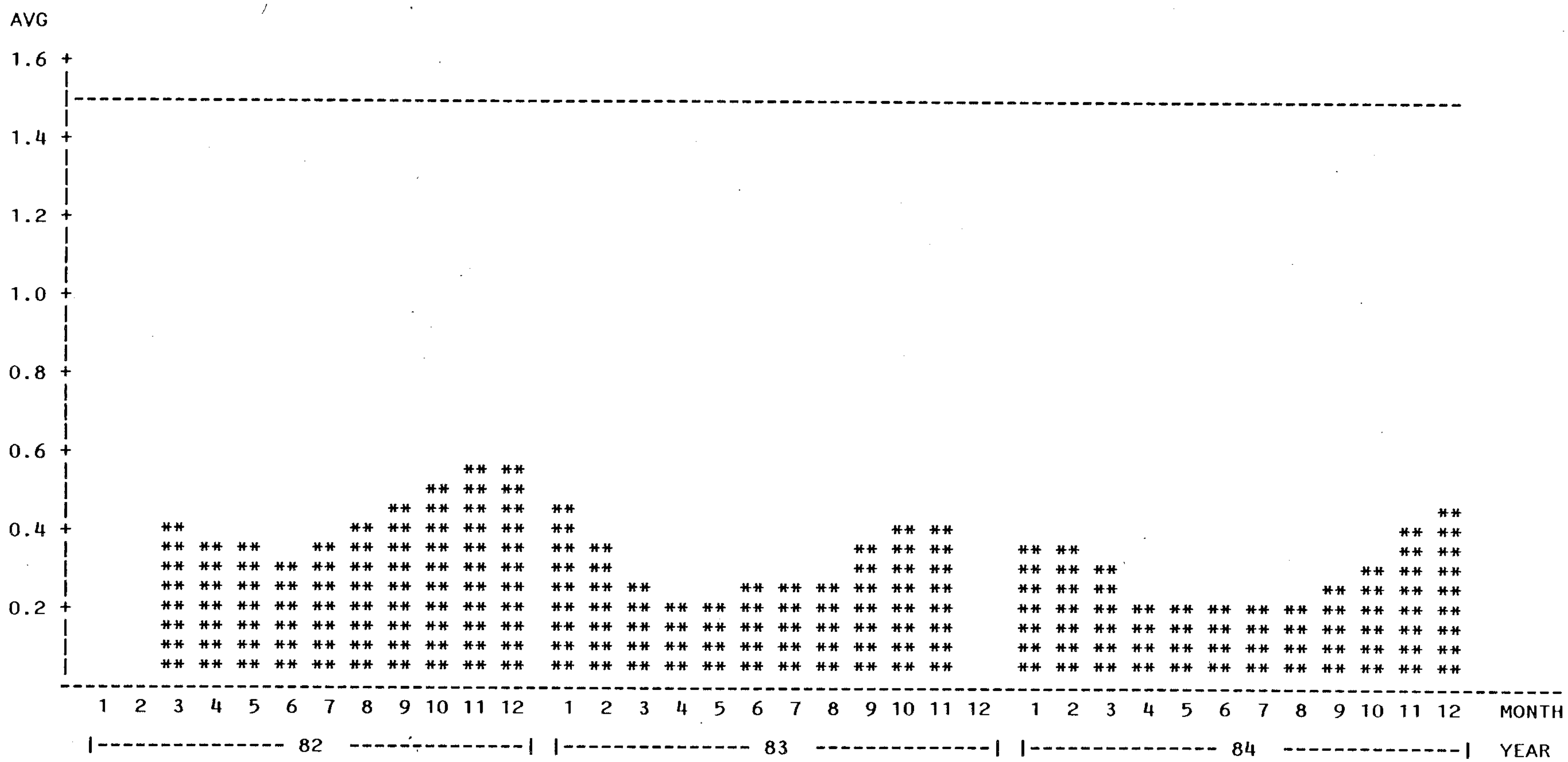


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=MIDDLETOWN 003

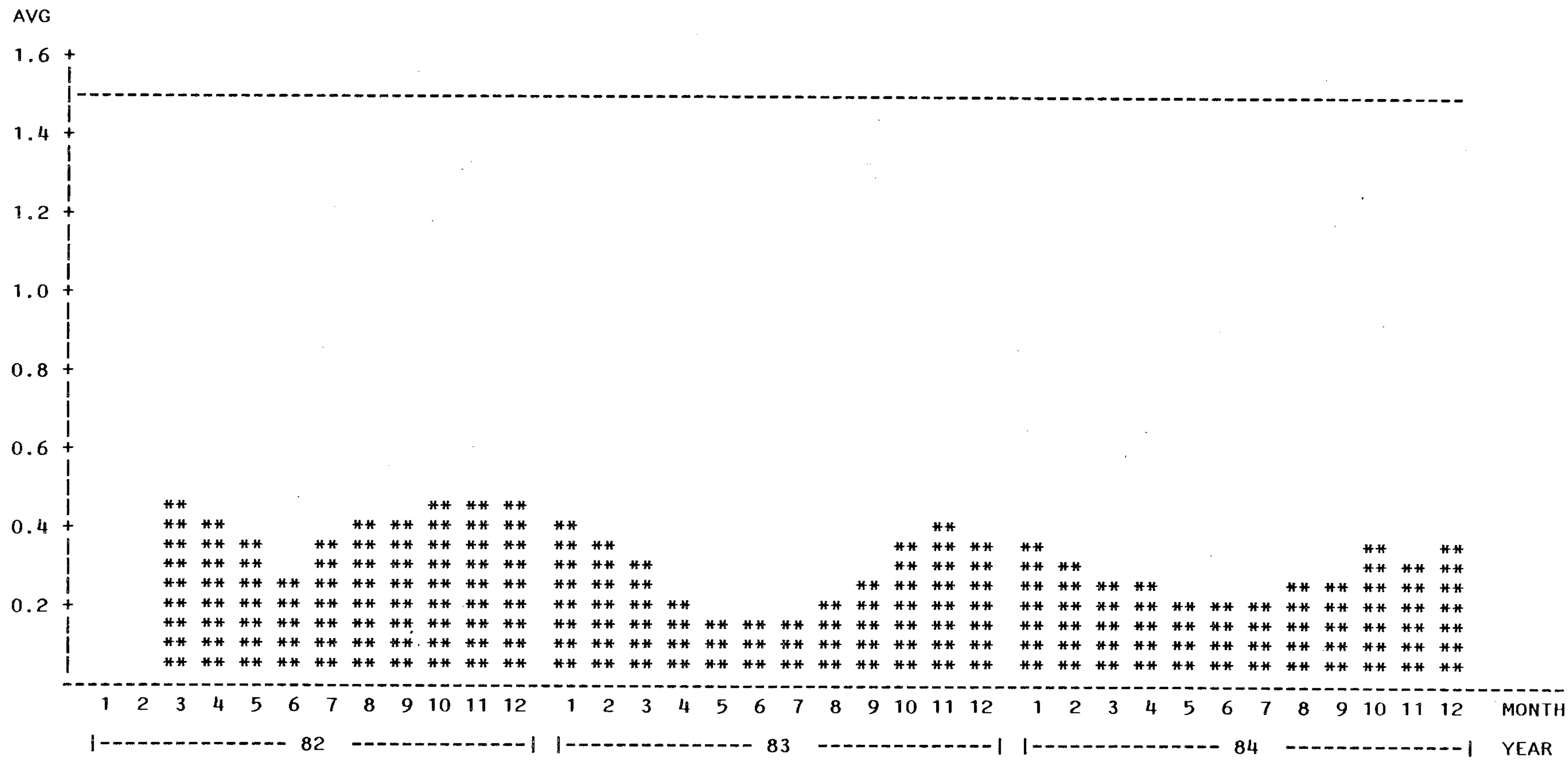


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=NEW BRITAIN 007

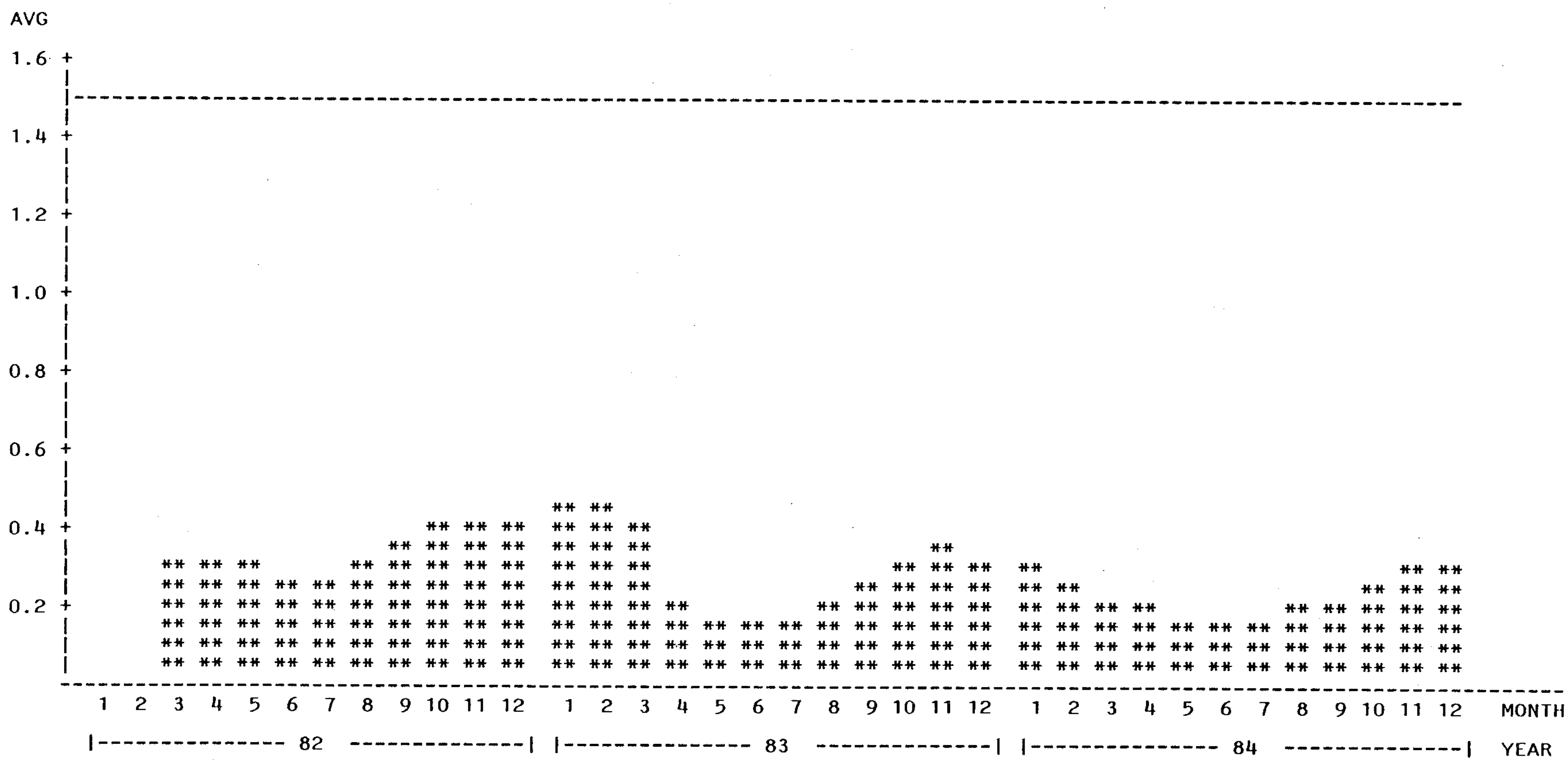


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=NEW HAVEN 016

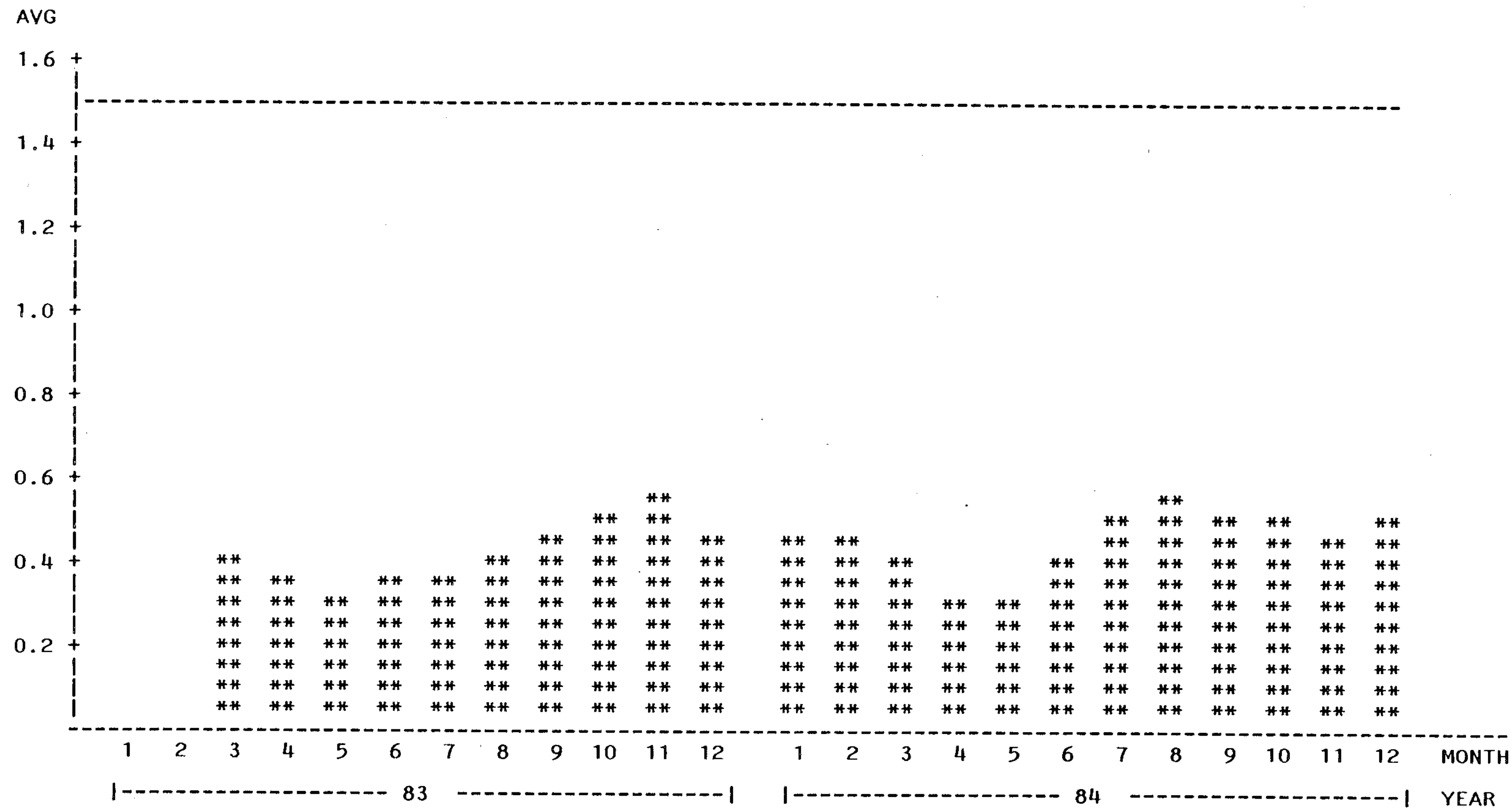


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=NEW HAVEN 123

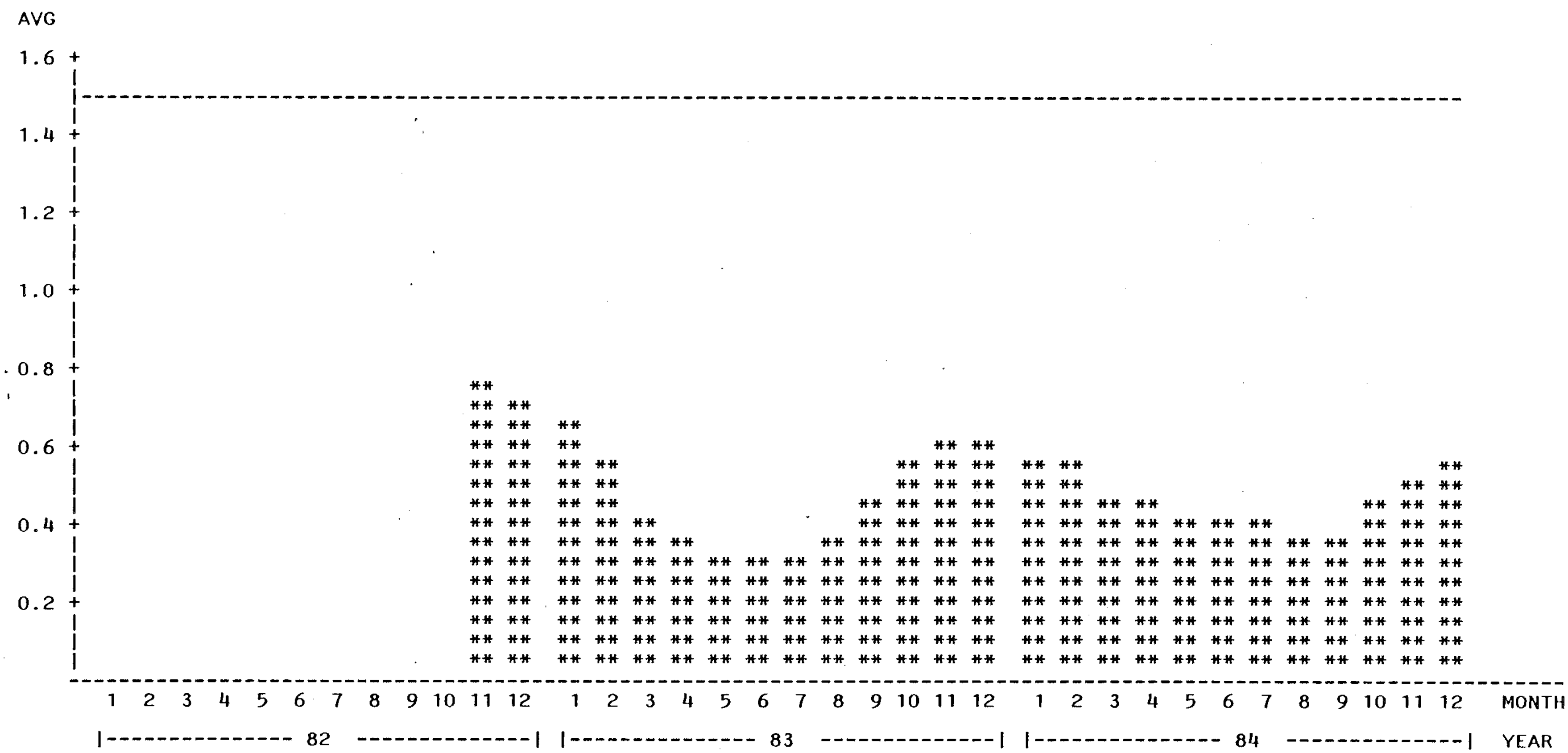


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=NORWALK 012

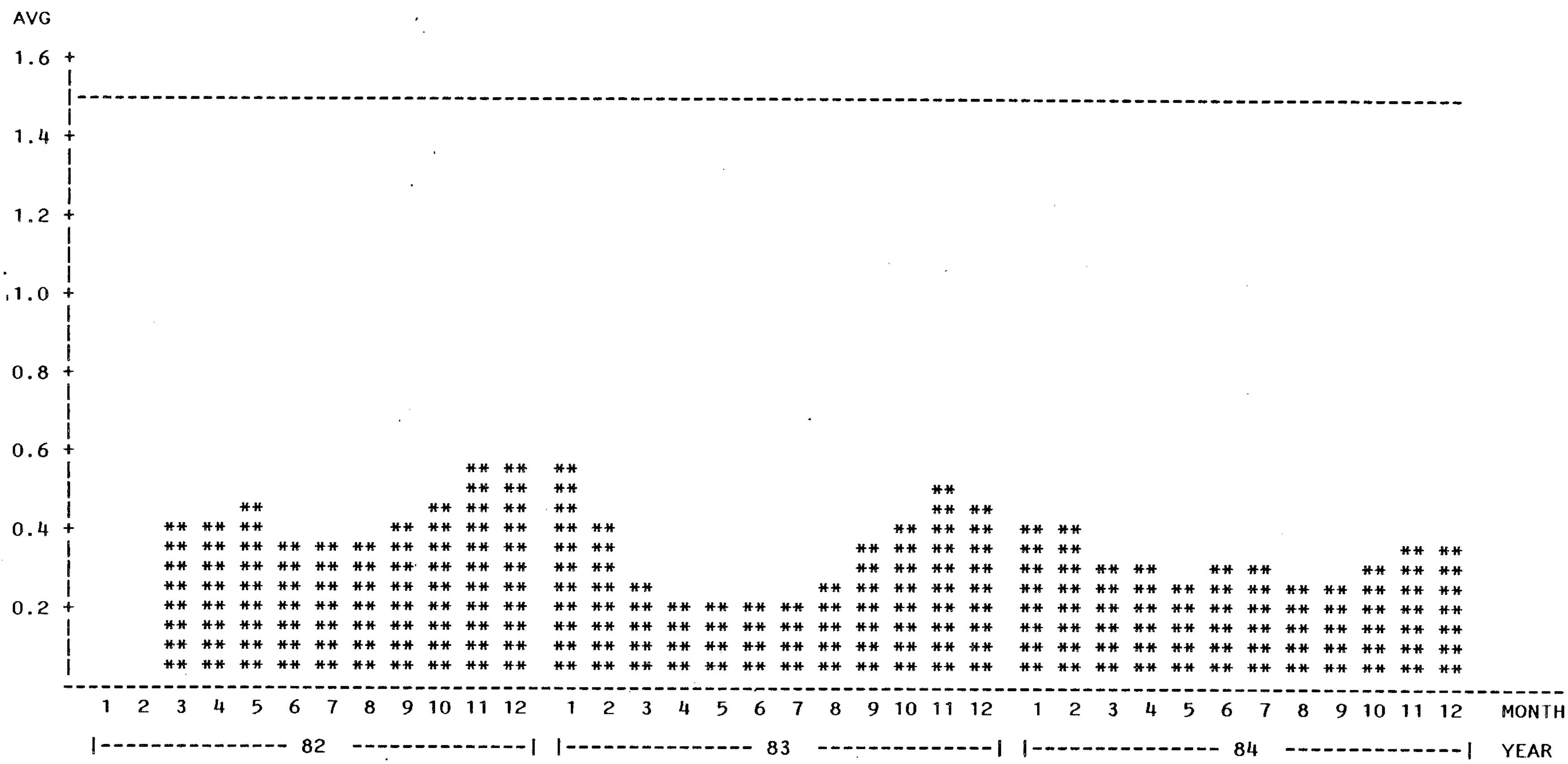


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=STAMFORD 001

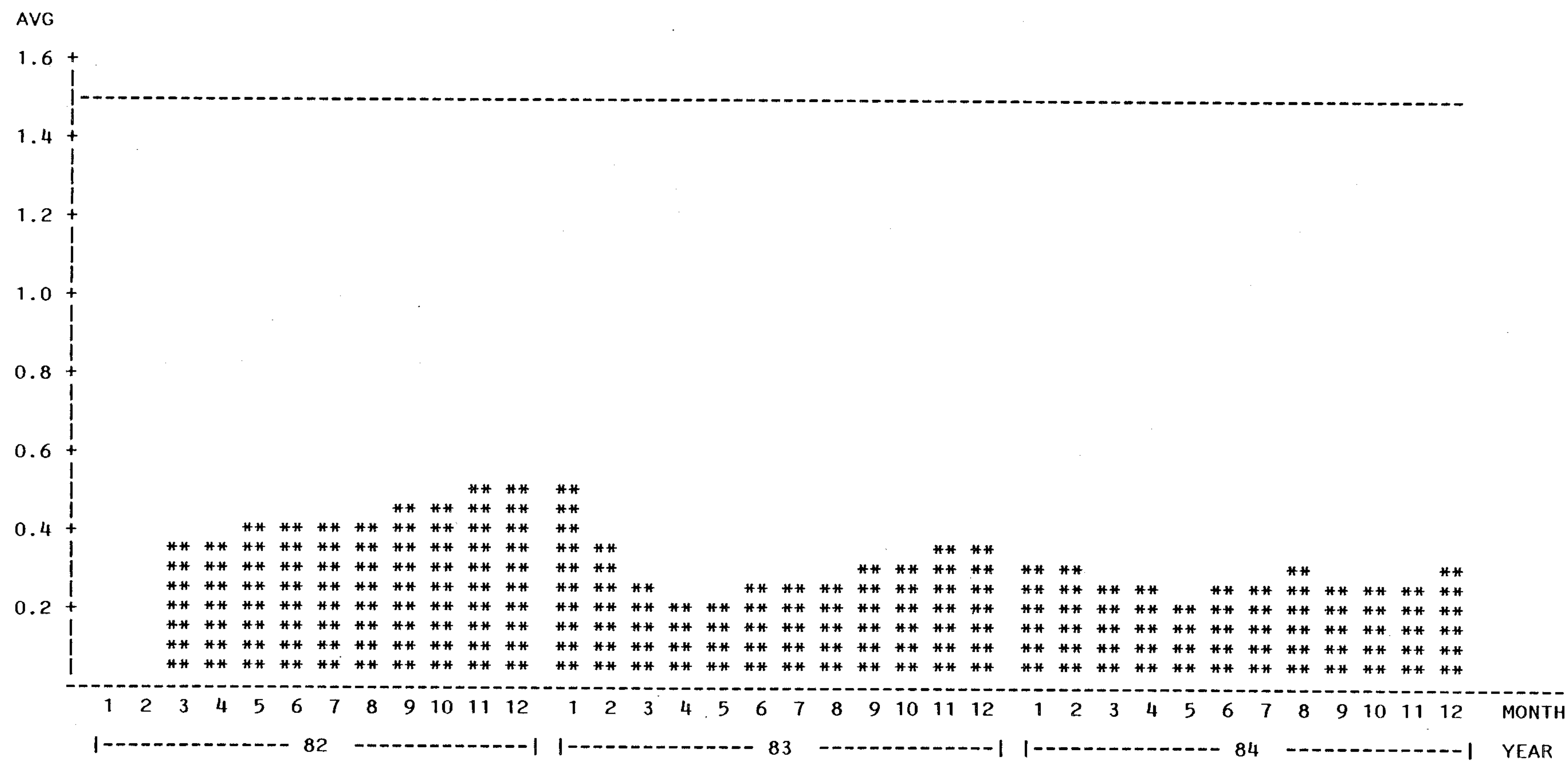


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=STAMFORD 022

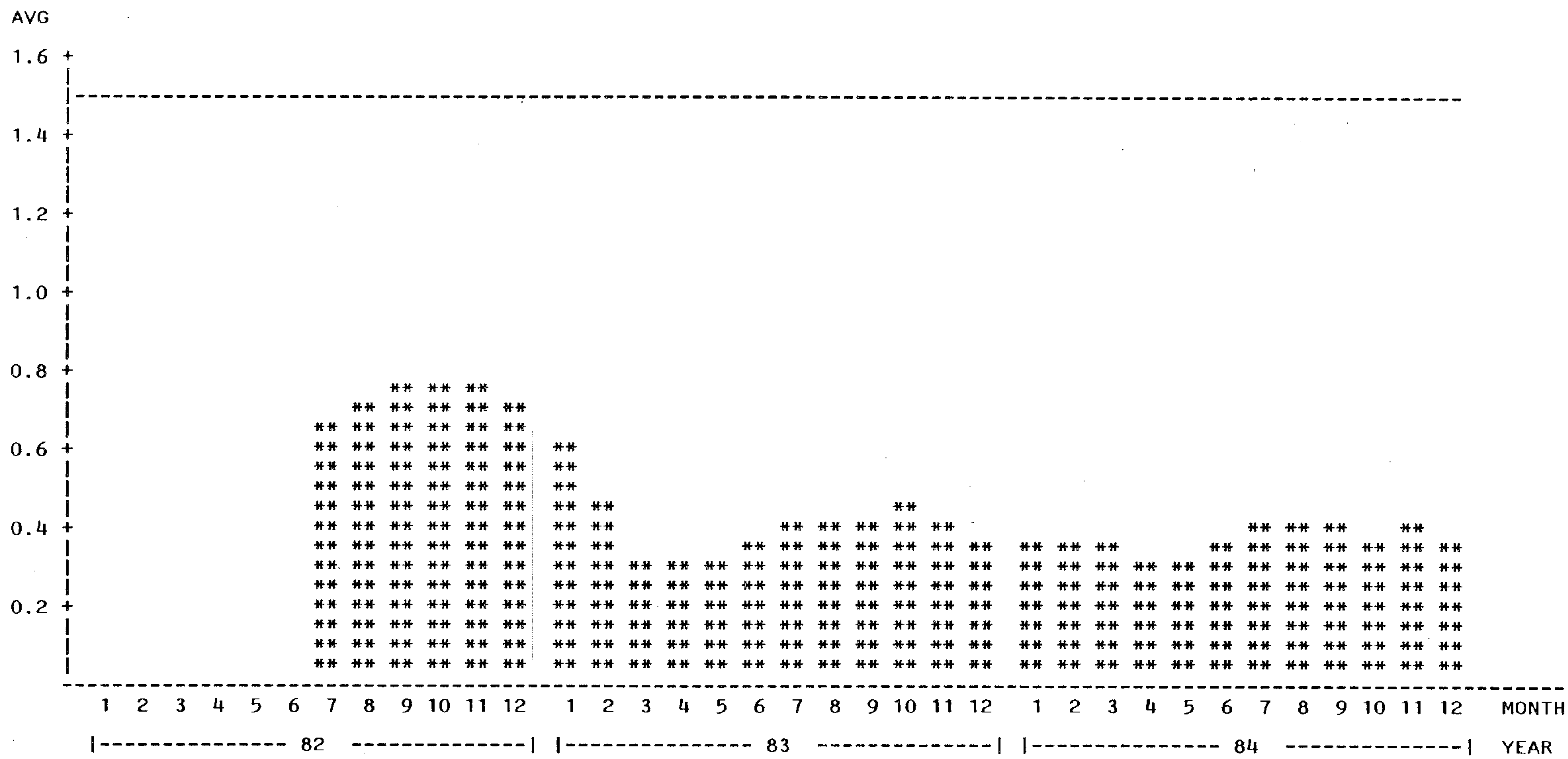


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=TORRINGTON 123

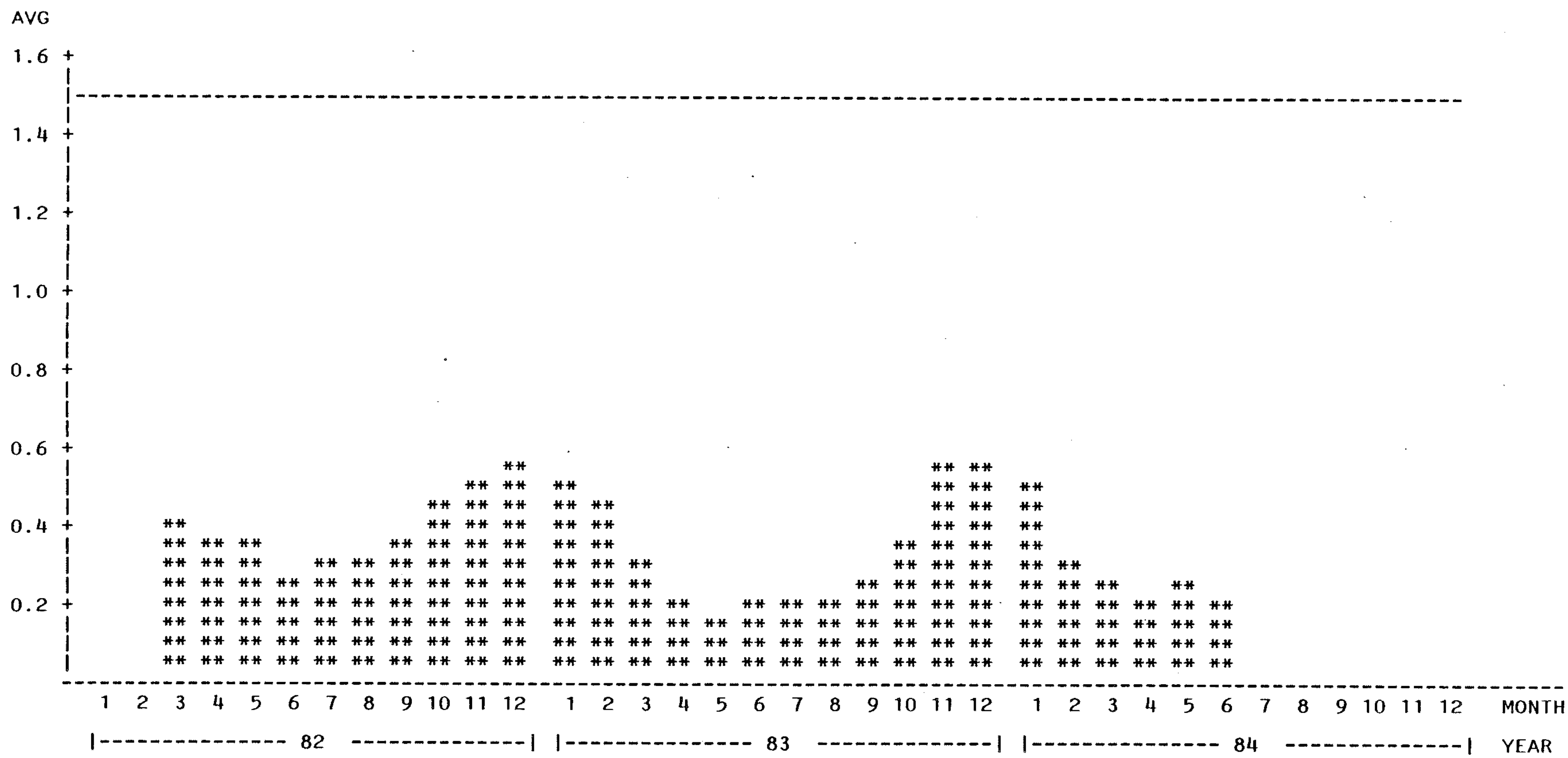


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=WALLINGFORD 001

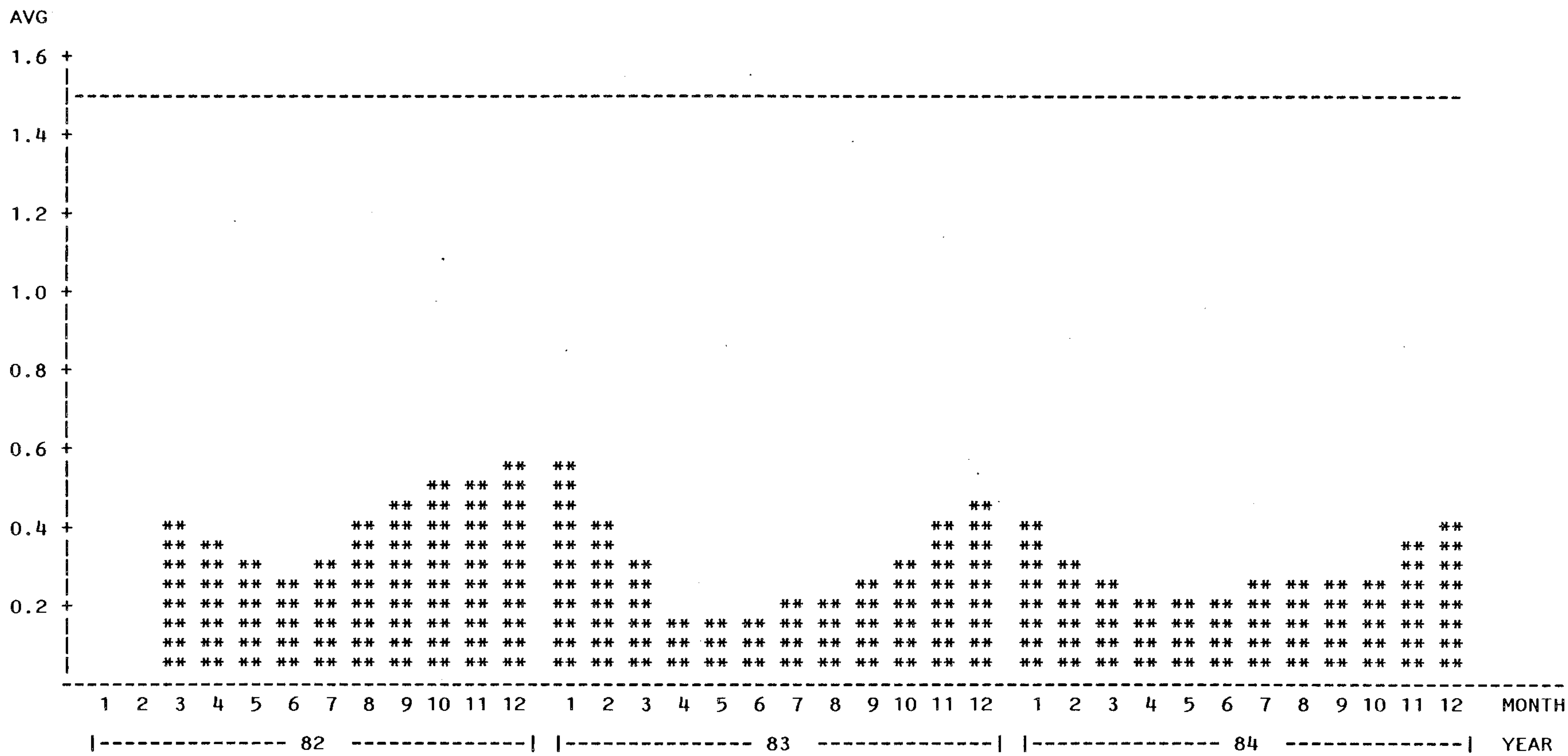


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=WATERBURY 007

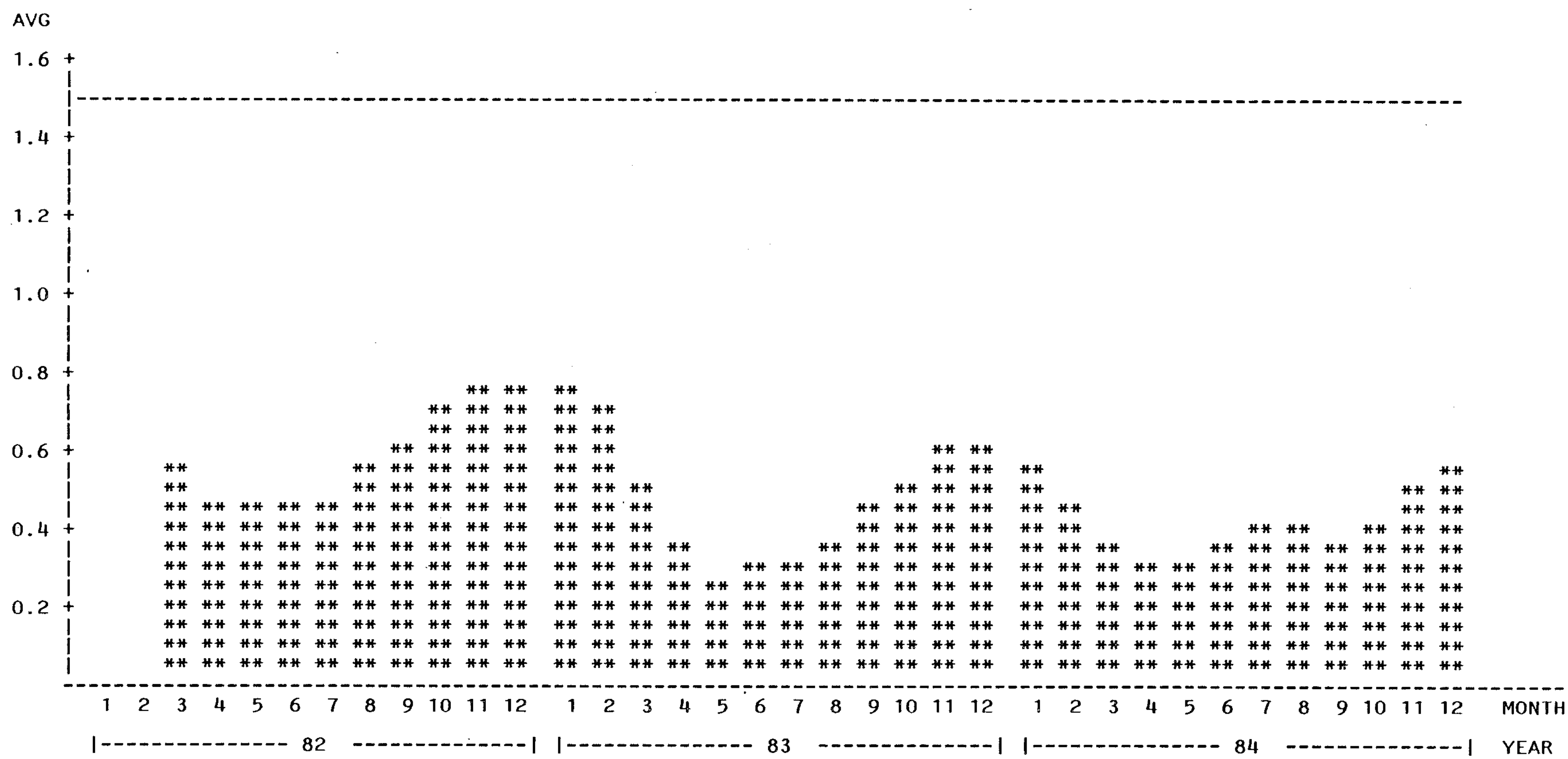


FIGURE 16, CONTINUED

3-MONTH RUNNING AVERAGES FOR LEAD

STATION=WATERBURY 123

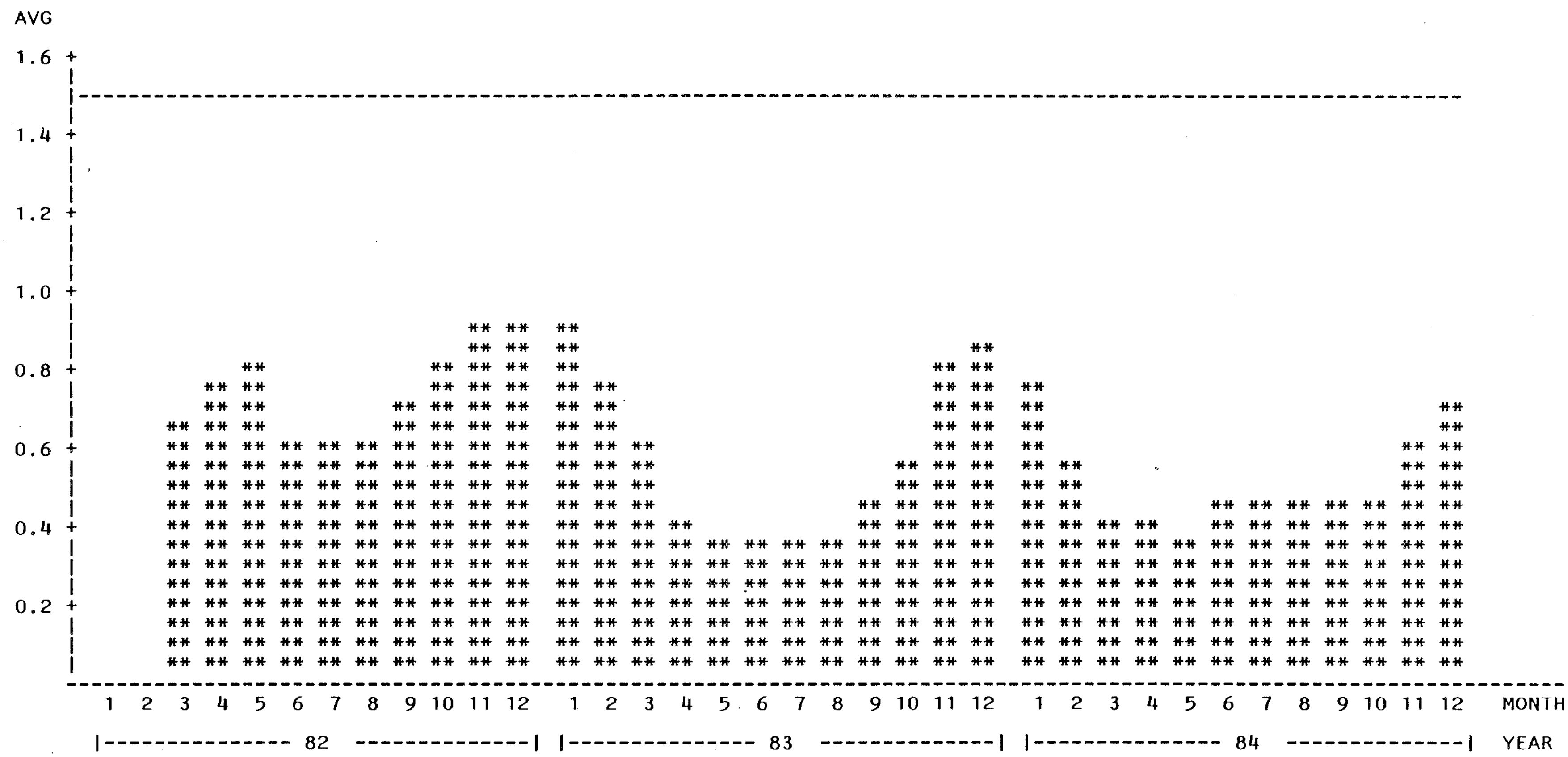


FIGURE C

ANNUAL AVERAGE LEAD CONCENTRATION

SITE: ANSONIA-003

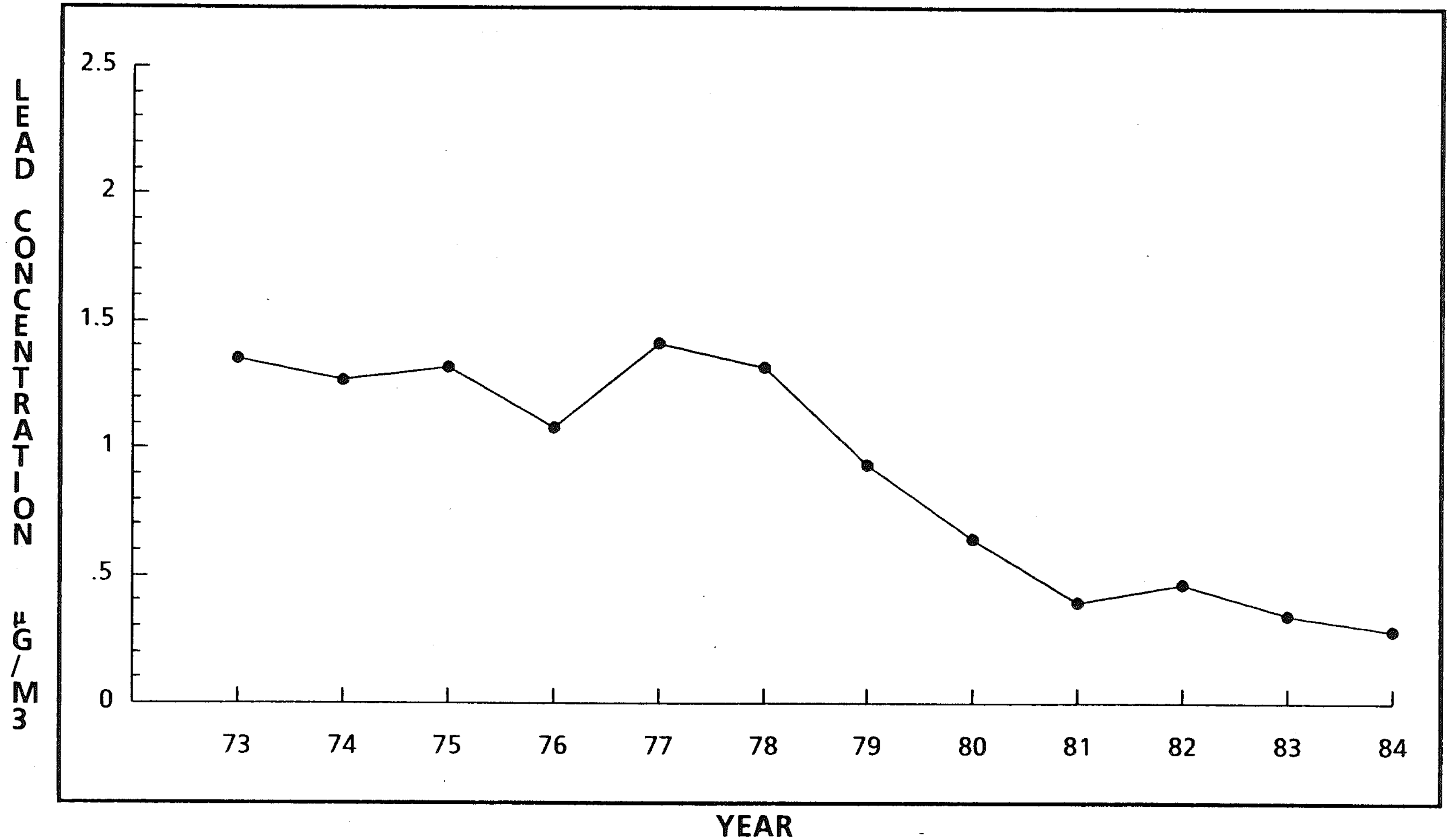


FIGURE C, CONTINUED

ANNUAL AVERAGE LEAD CONCENTRATION

SITE: BRIDGEPORT-123

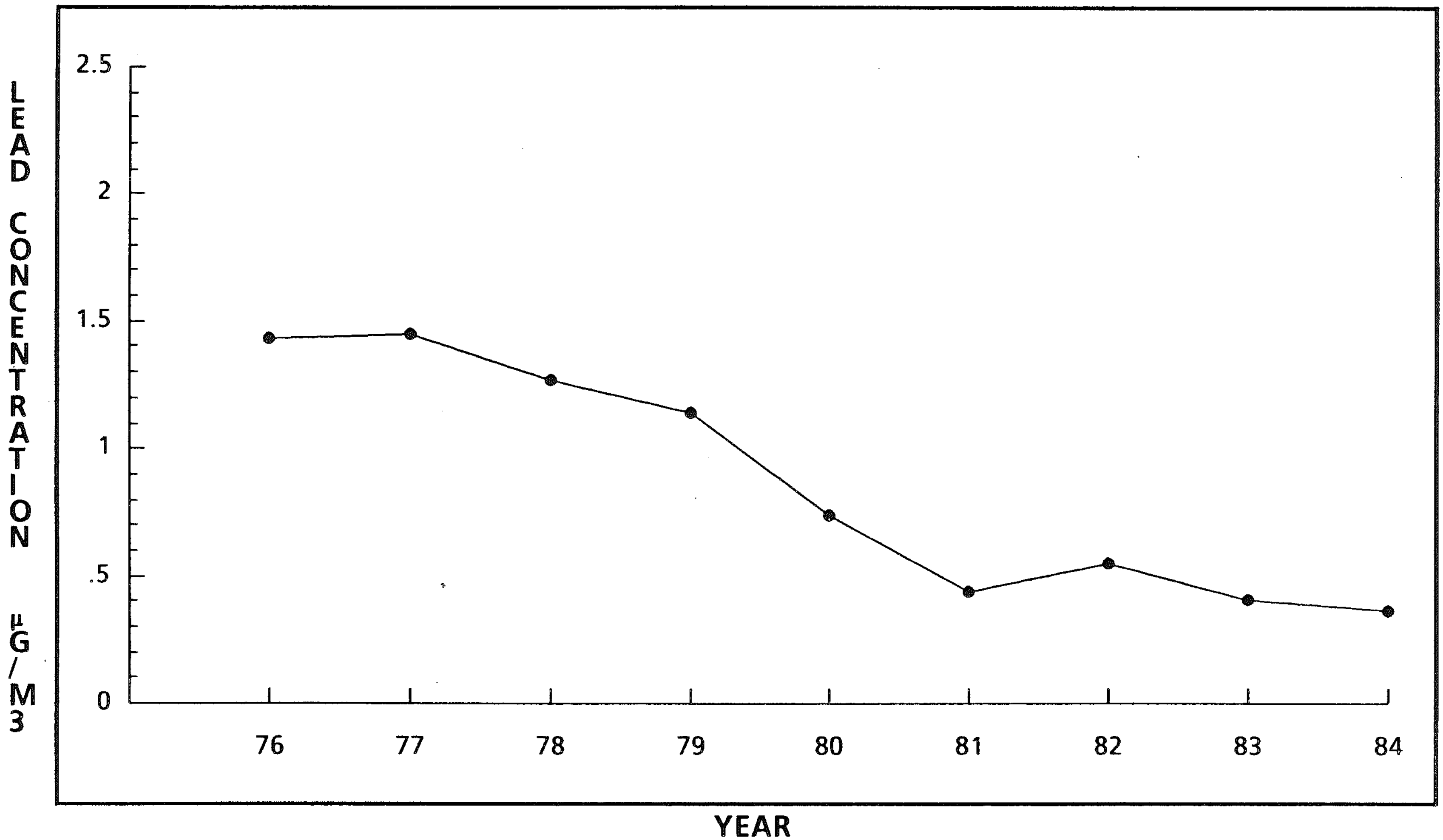


FIGURE C, CONTINUED

ANNUAL AVERAGE LEAD CONCENTRATION

SITE: BRISTOL-001

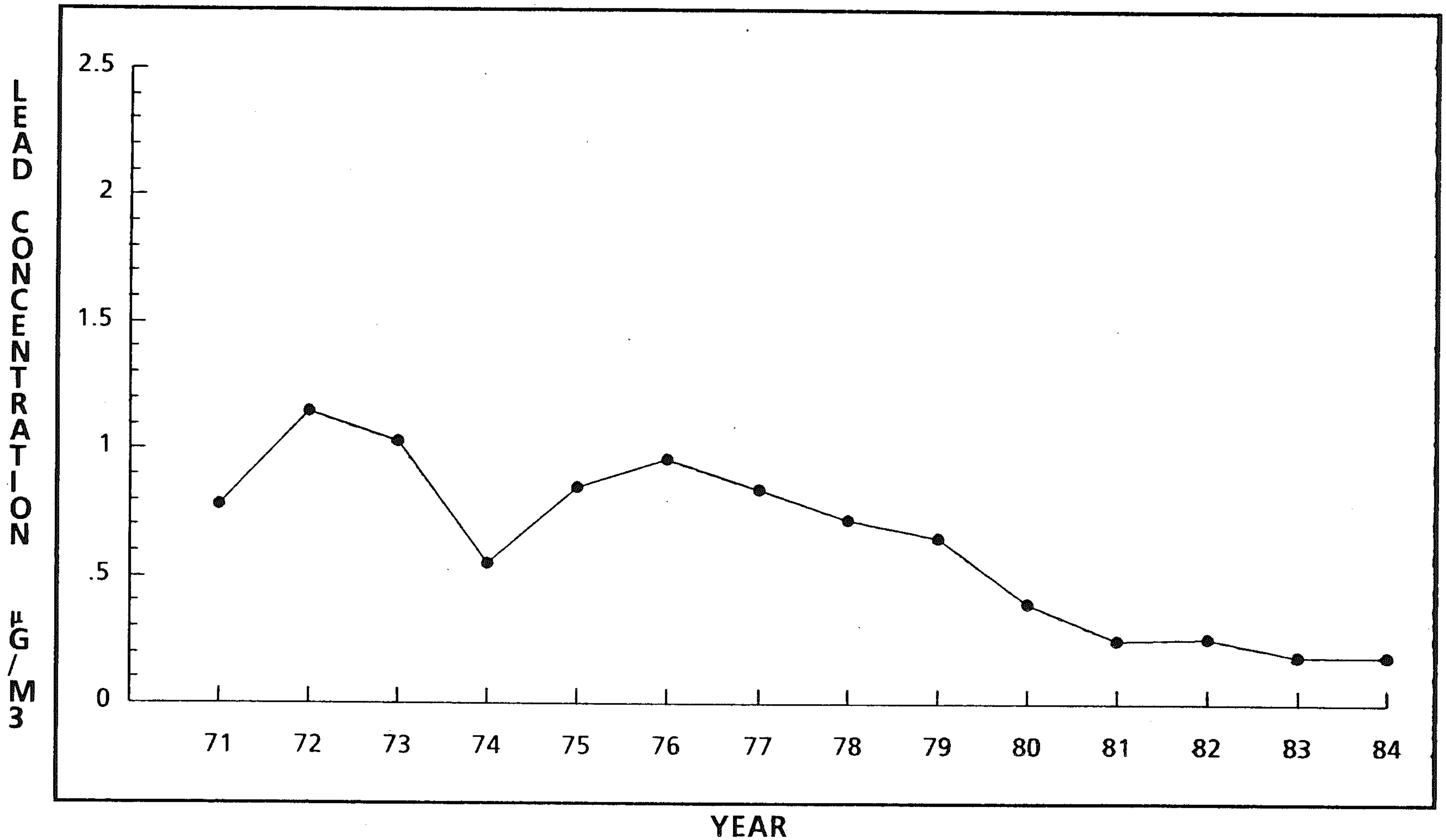


FIGURE C, CONTINUED

ANNUAL AVERAGE LEAD CONCENTRATION

SITE: MERIDEN-002

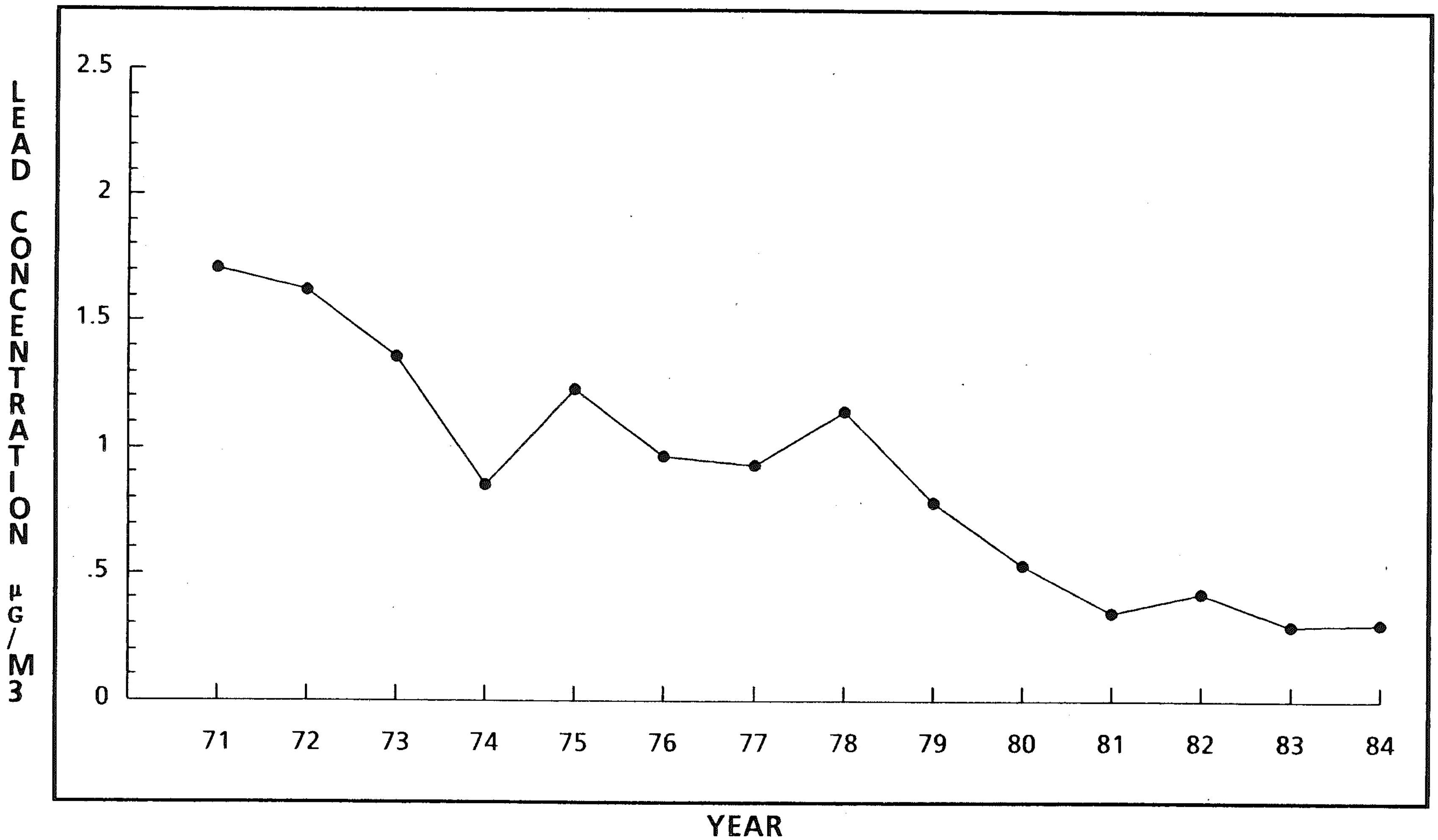


FIGURE C, CONTINUED

ANNUAL AVERAGE LEAD CONCENTRATION

SITE: MIDDLETOWN-003

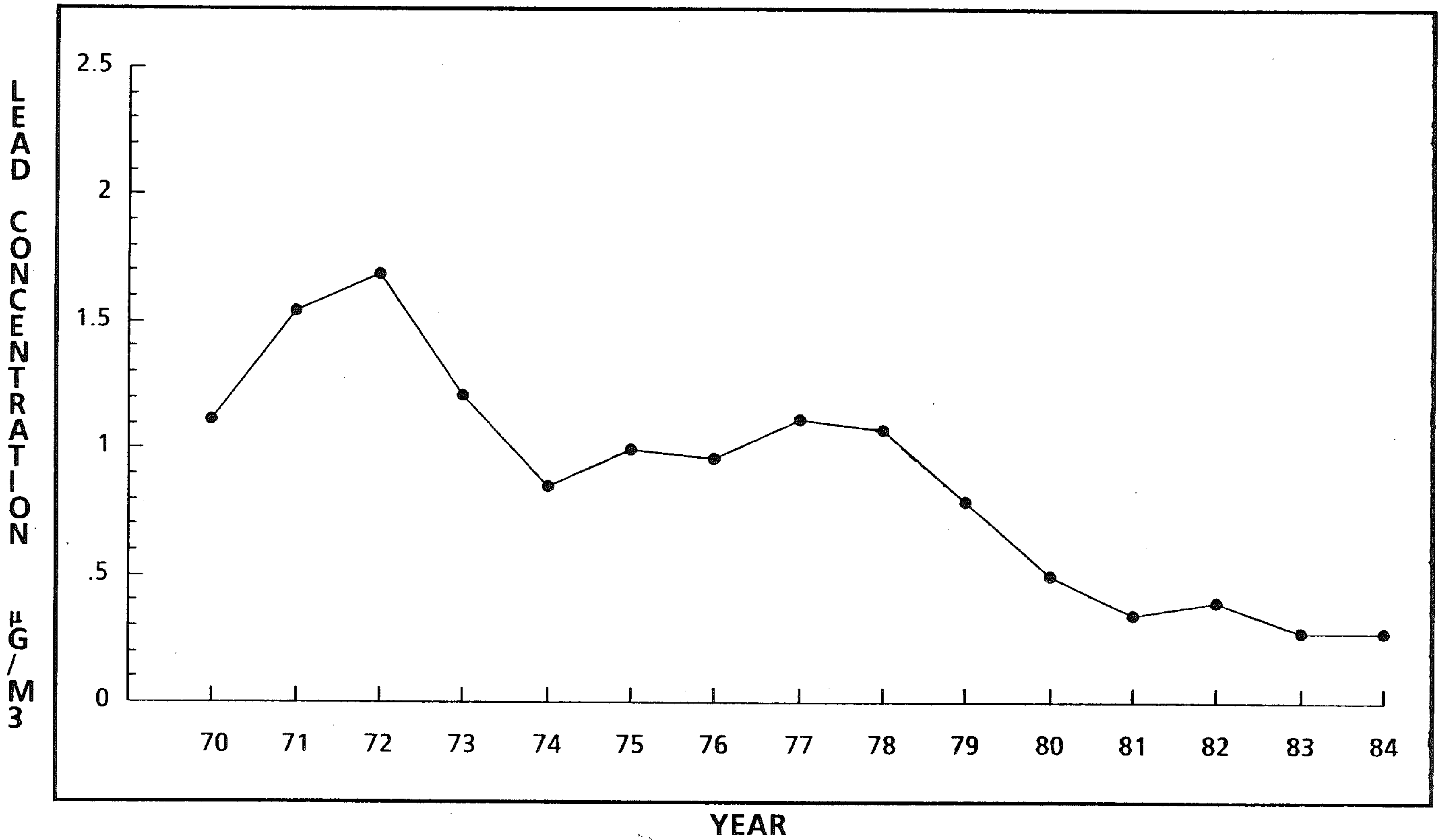


FIGURE C, CONTINUED

ANNUAL AVERAGE LEAD CONCENTRATION

SITE: NEW HAVEN-123

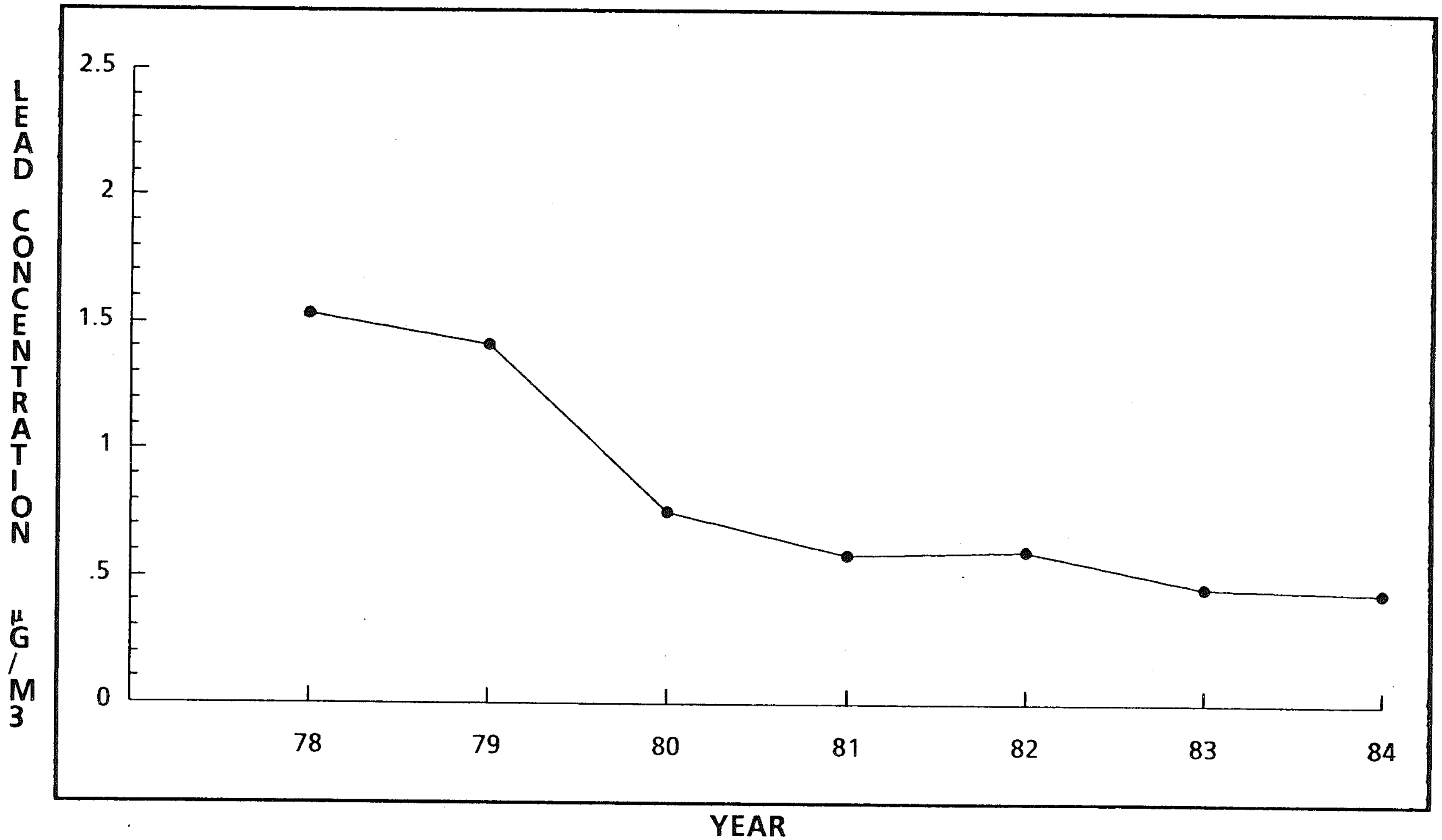


FIGURE C, CONTINUED

ANNUAL AVERAGE LEAD CONCENTRATION

SITE:TORRINGTON-123

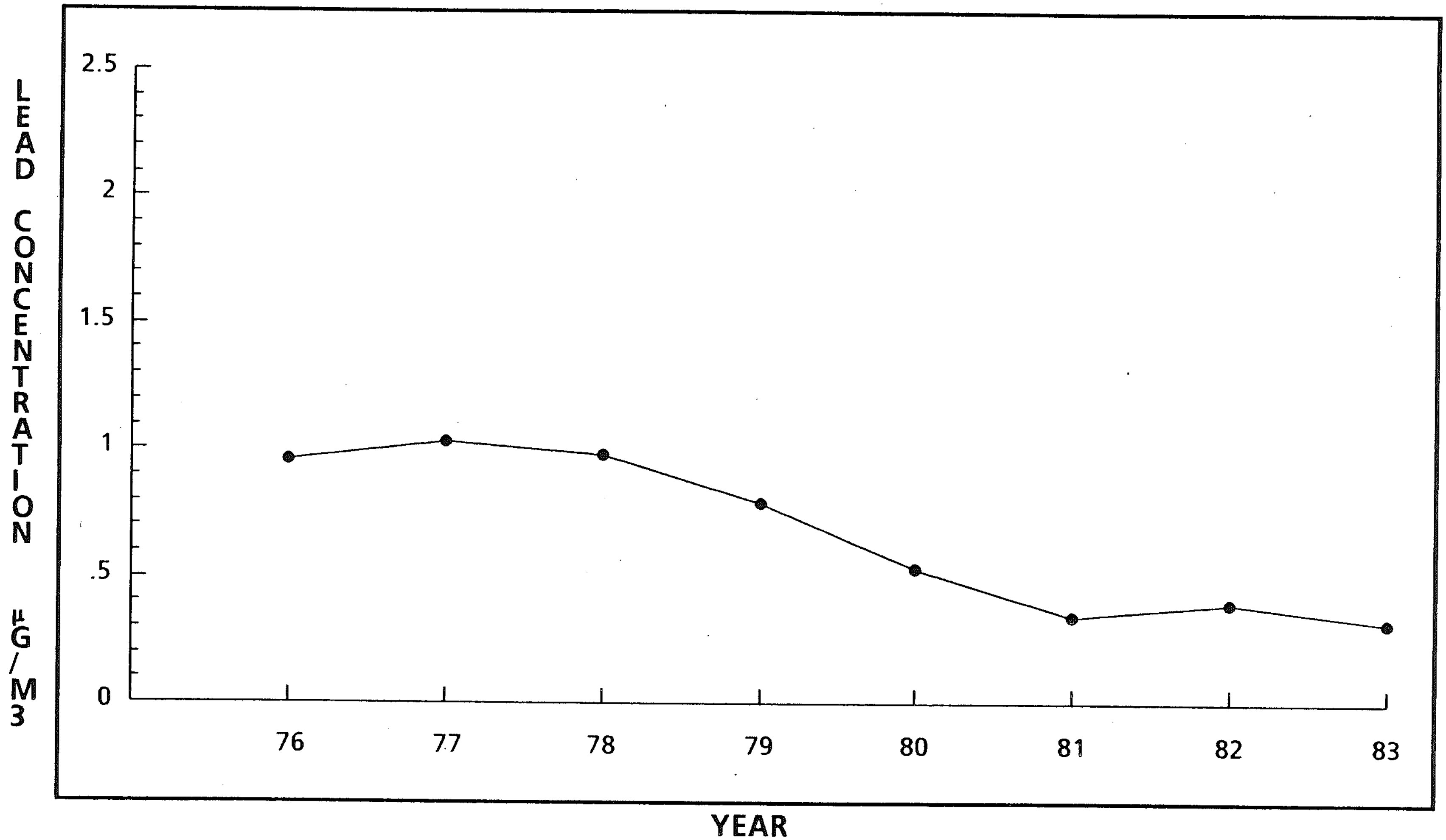


FIGURE C, CONTINUED

ANNUAL AVERAGE LEAD CONCENTRATION

SITE: WALLINGFORD-001

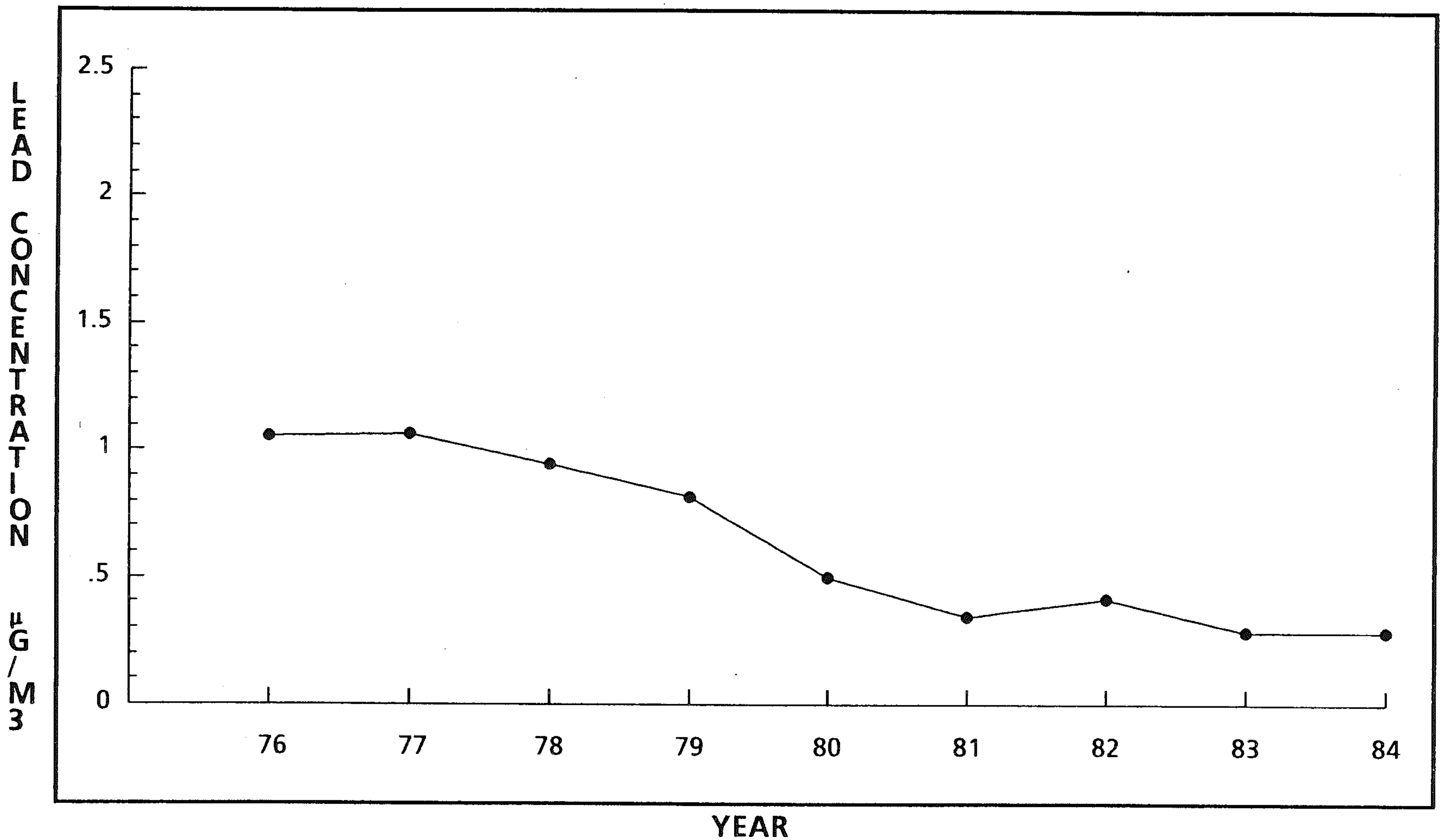


FIGURE C, CONTINUED

ANNUAL AVERAGE LEAD CONCENTRATION

SITE: WATERBURY-123

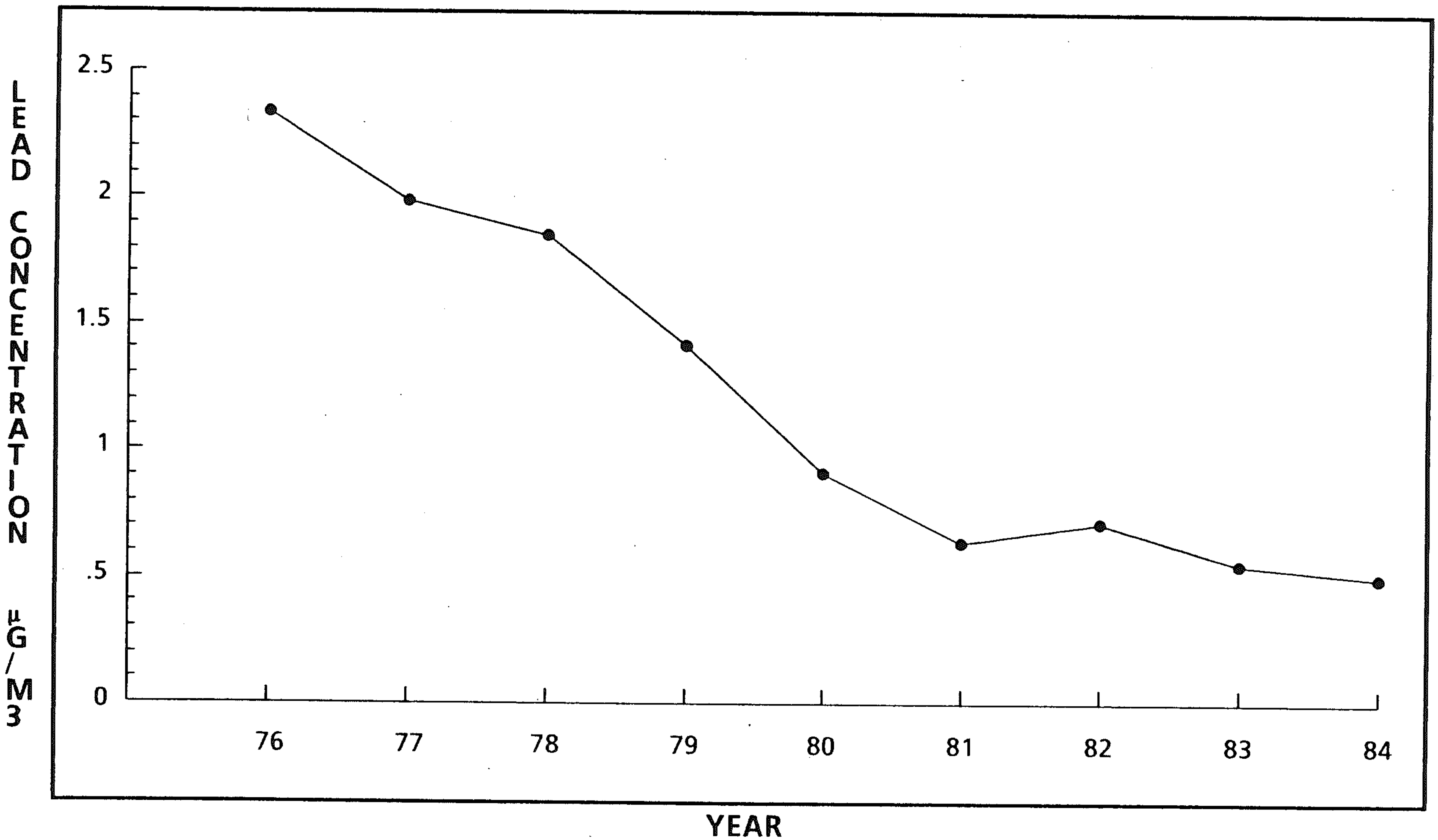


FIGURE D

3-YEAR RUNNING AVERAGE LEAD CONCENTRATION

SITE: ANSONIA-003

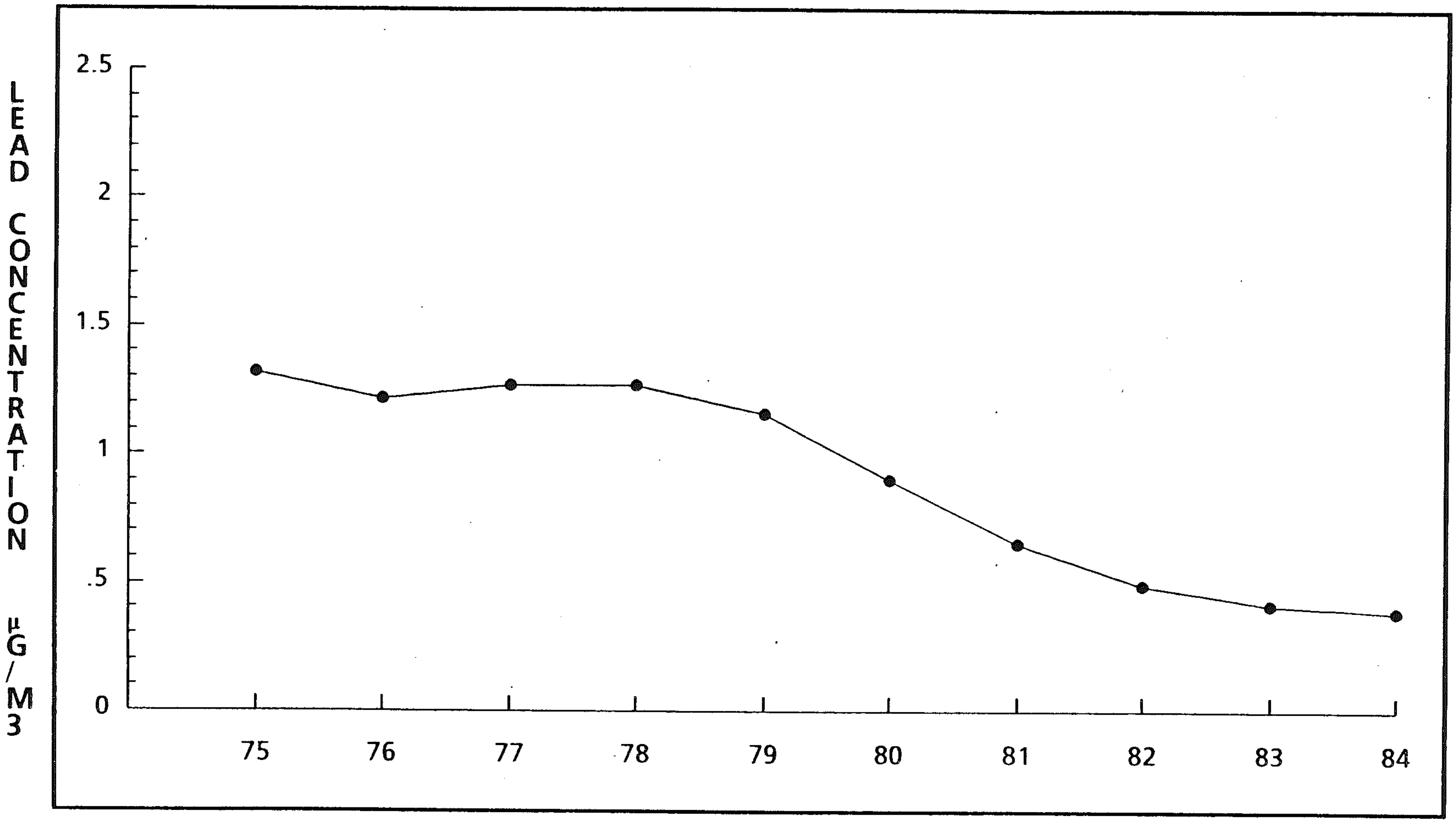


FIGURE D, CONTINUED

3-YEAR RUNNING AVERAGE LEAD CONCENTRATION

SITE: BRIDGEPORT-123

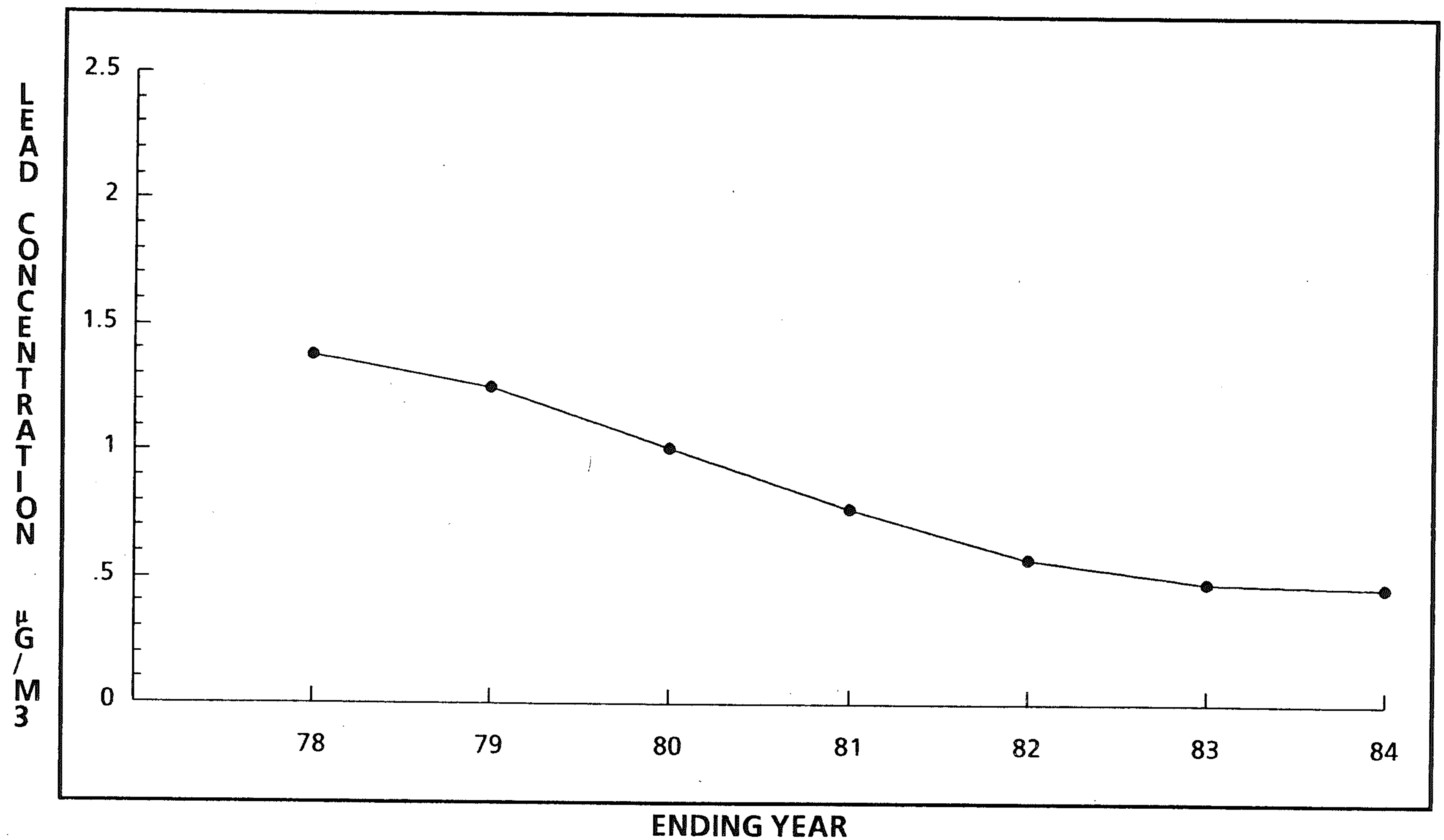


FIGURE D, CONTINUED

3-YEAR RUNNING AVERAGE LEAD CONCENTRATION

SITE: BRISTOL-001

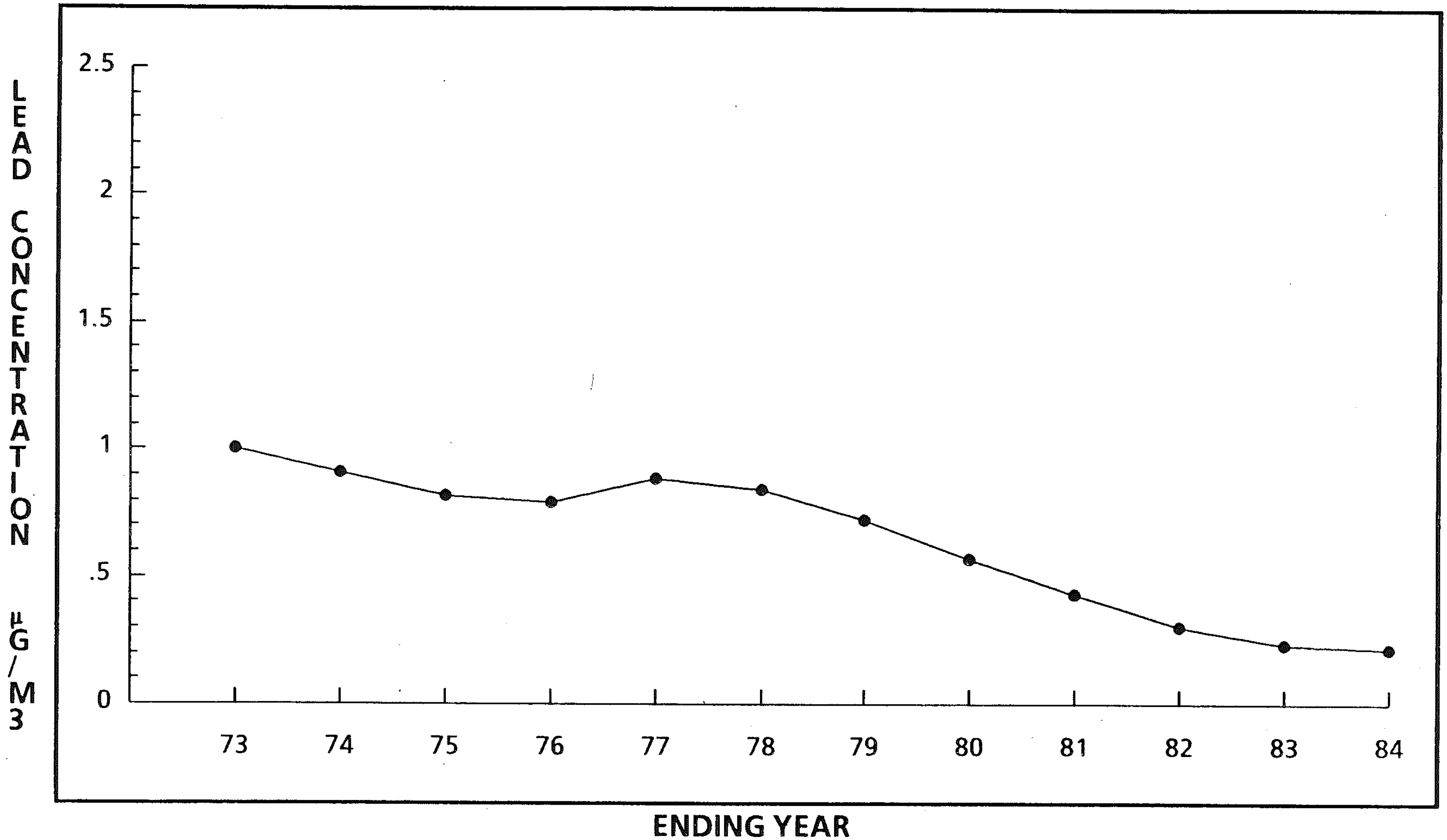


FIGURE D, CONTINUED

3-YEAR RUNNING AVERAGE LEAD CONCENTRATION

SITE: MERIDEN-002

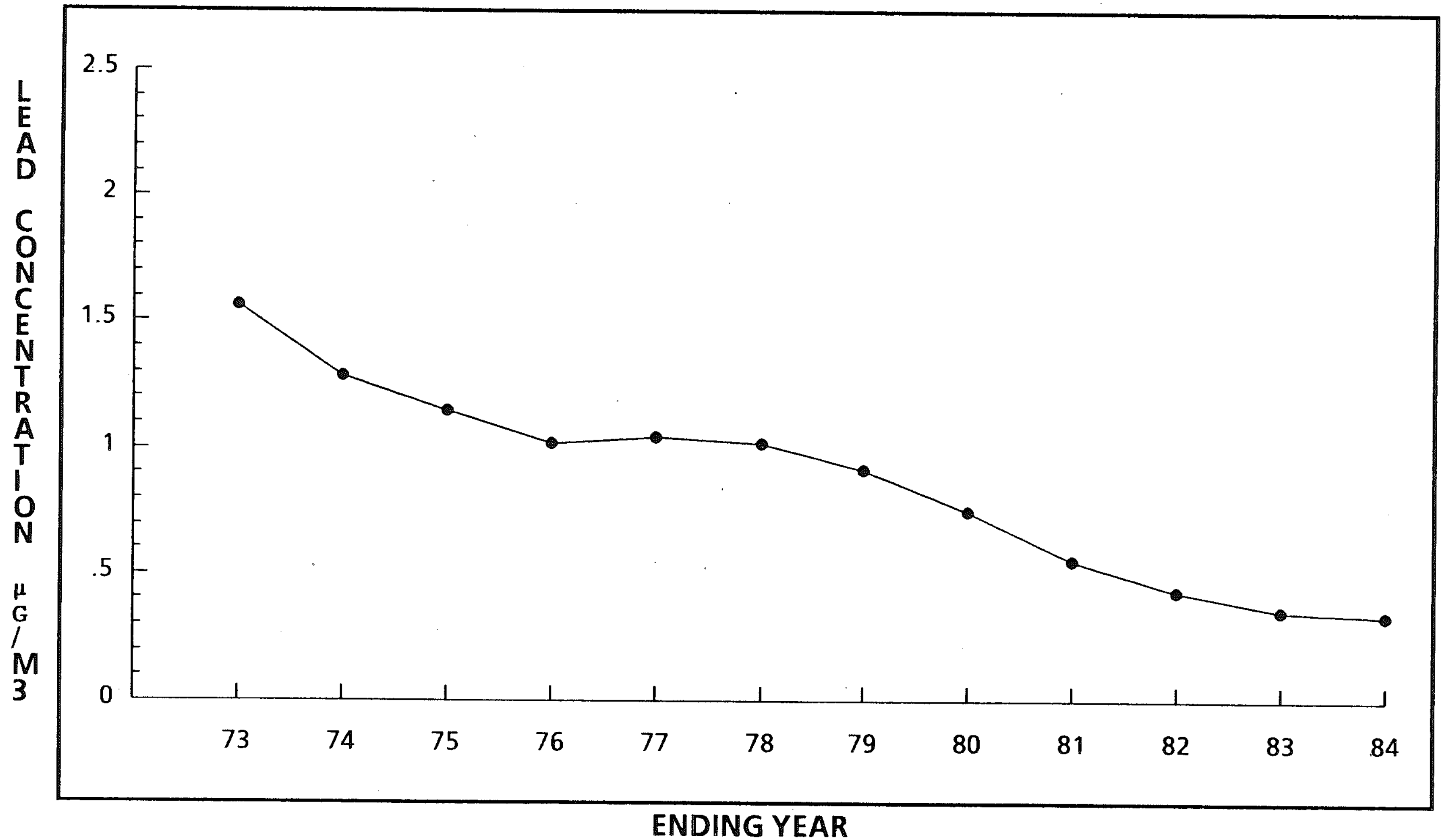


FIGURE D, CONTINUED

3-YEAR RUNNING AVERAGE LEAD CONCENTRATION

SITE: MIDDLETOWN-003

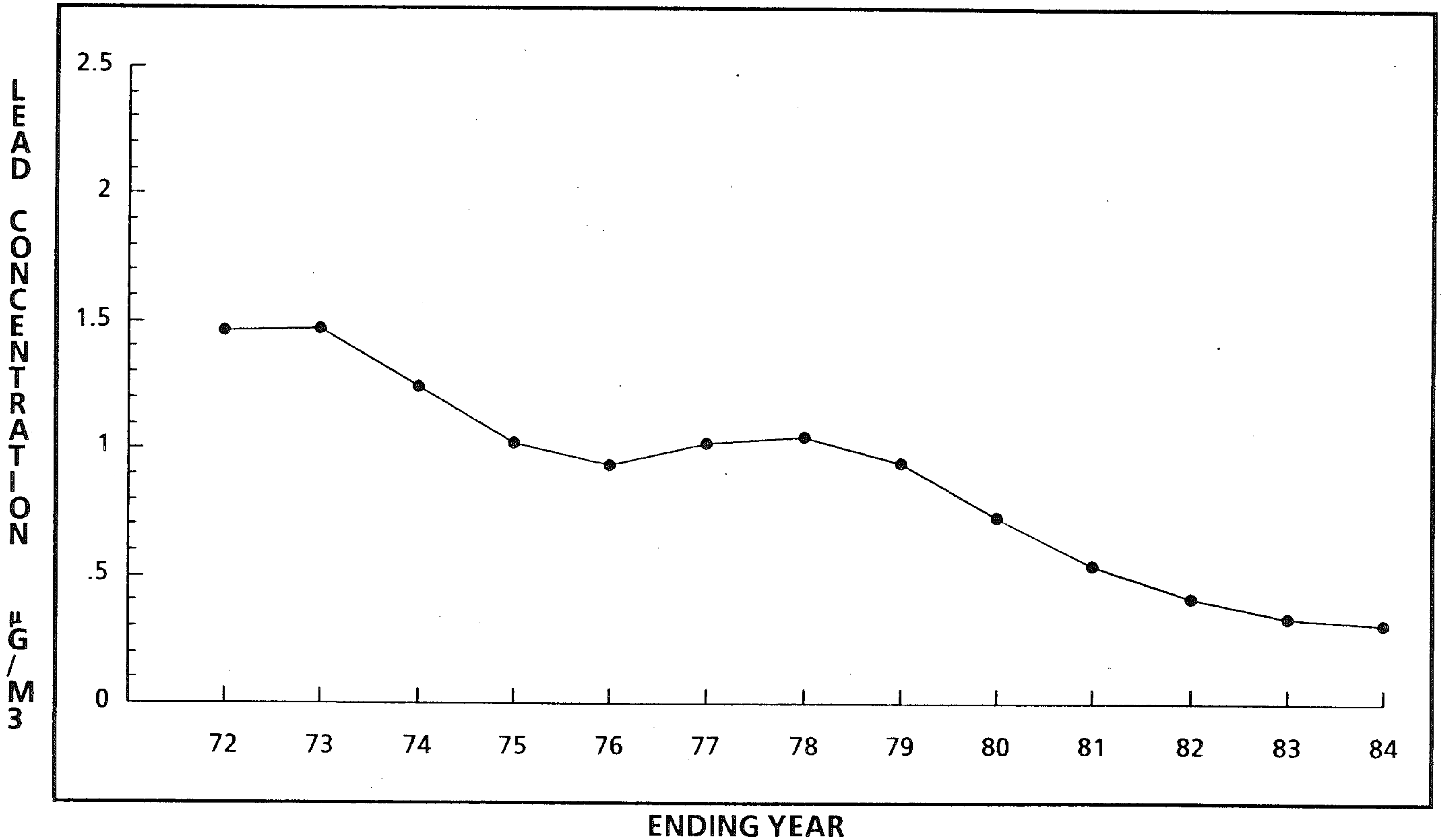


FIGURE D, CONTINUED

3-YEAR RUNNING AVERAGE LEAD CONCENTRATION

SITE: NEW HAVEN-123

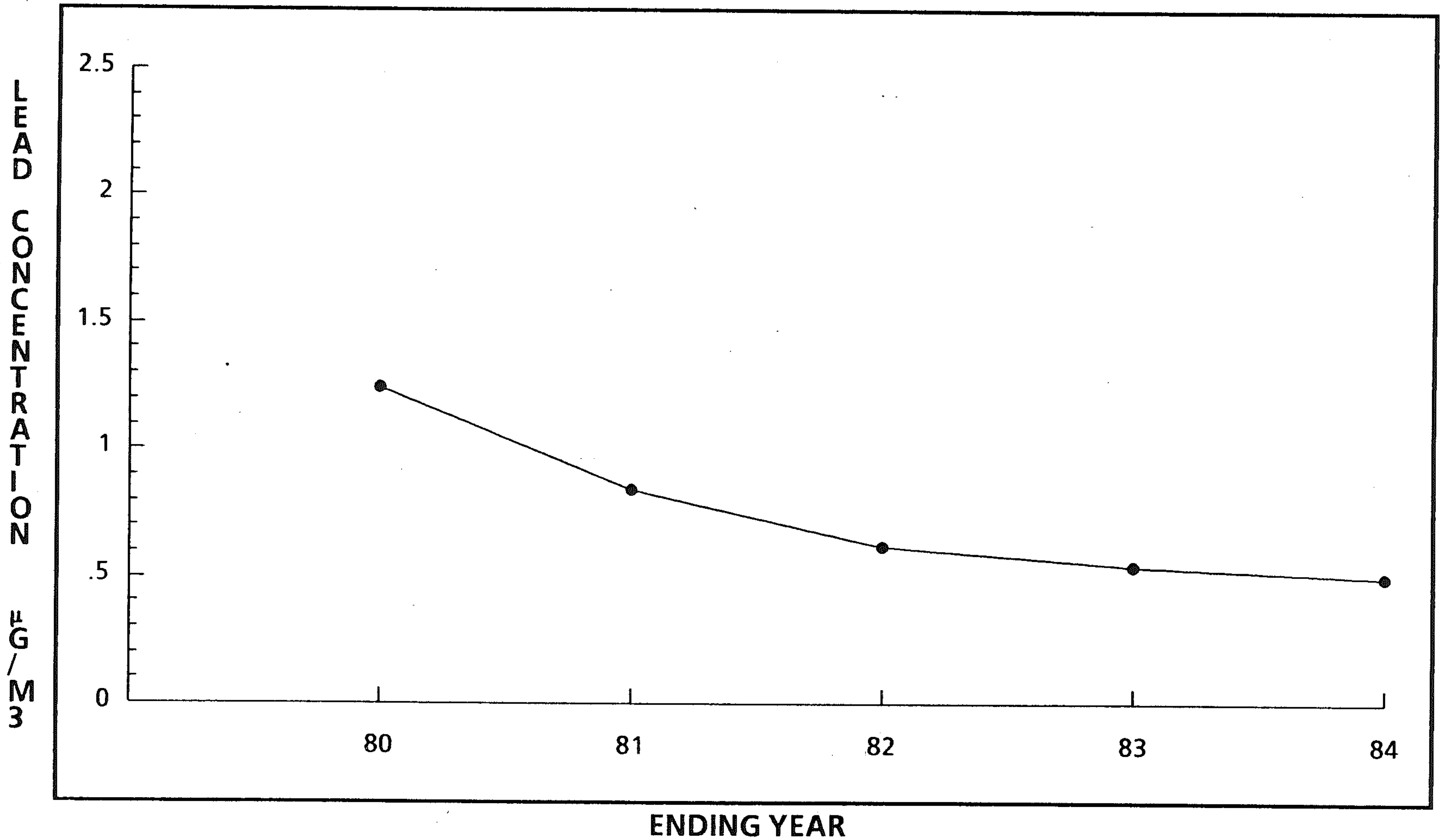


FIGURE D, CONTINUED

3-YEAR RUNNING AVERAGE LEAD CONCENTRATION

SITE: TORRINGTON-123

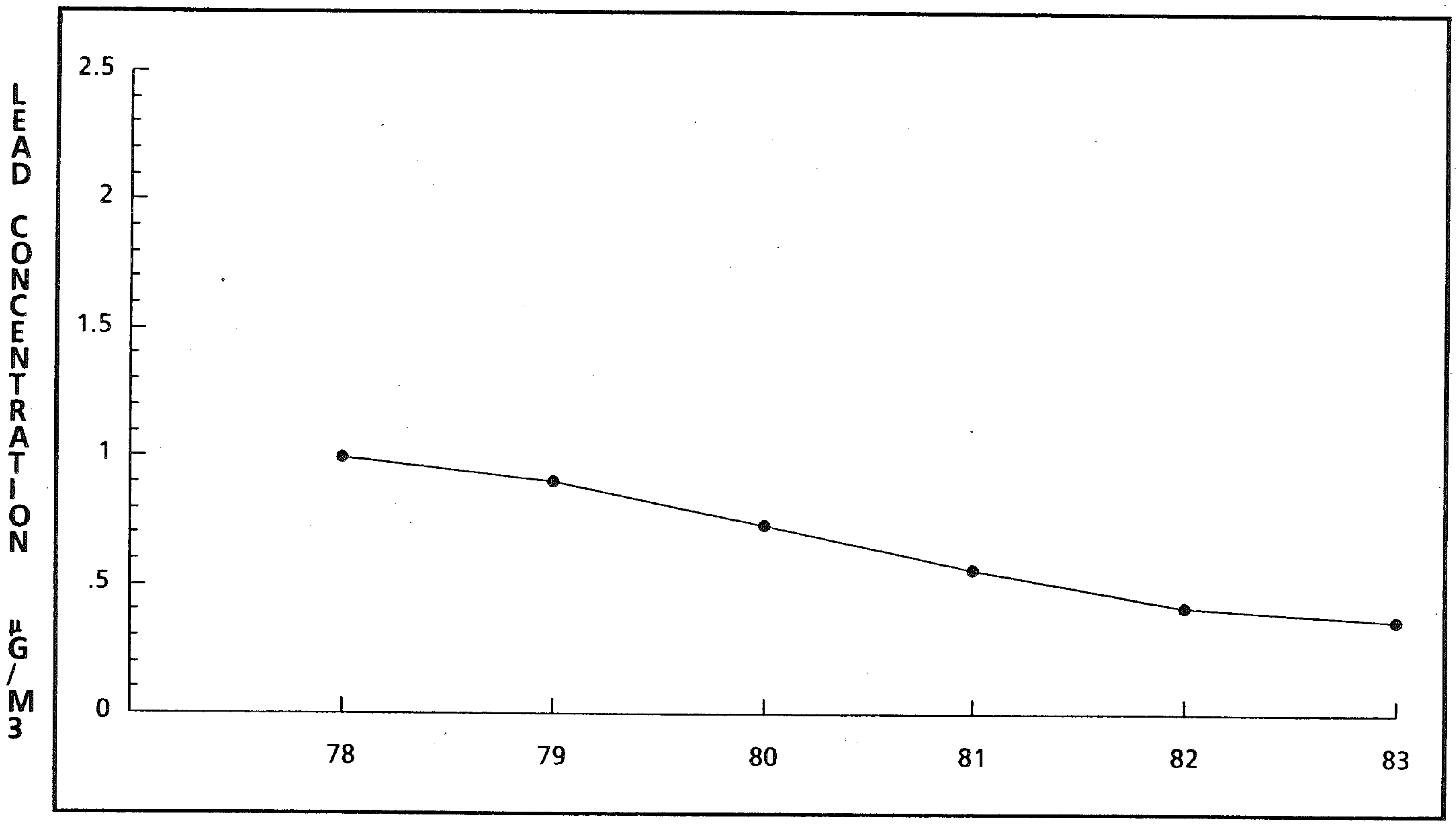


FIGURE D, CONTINUED

3-YEAR RUNNING AVERAGE LEAD CONCENTRATION

SITE: WALLINGFORD-001

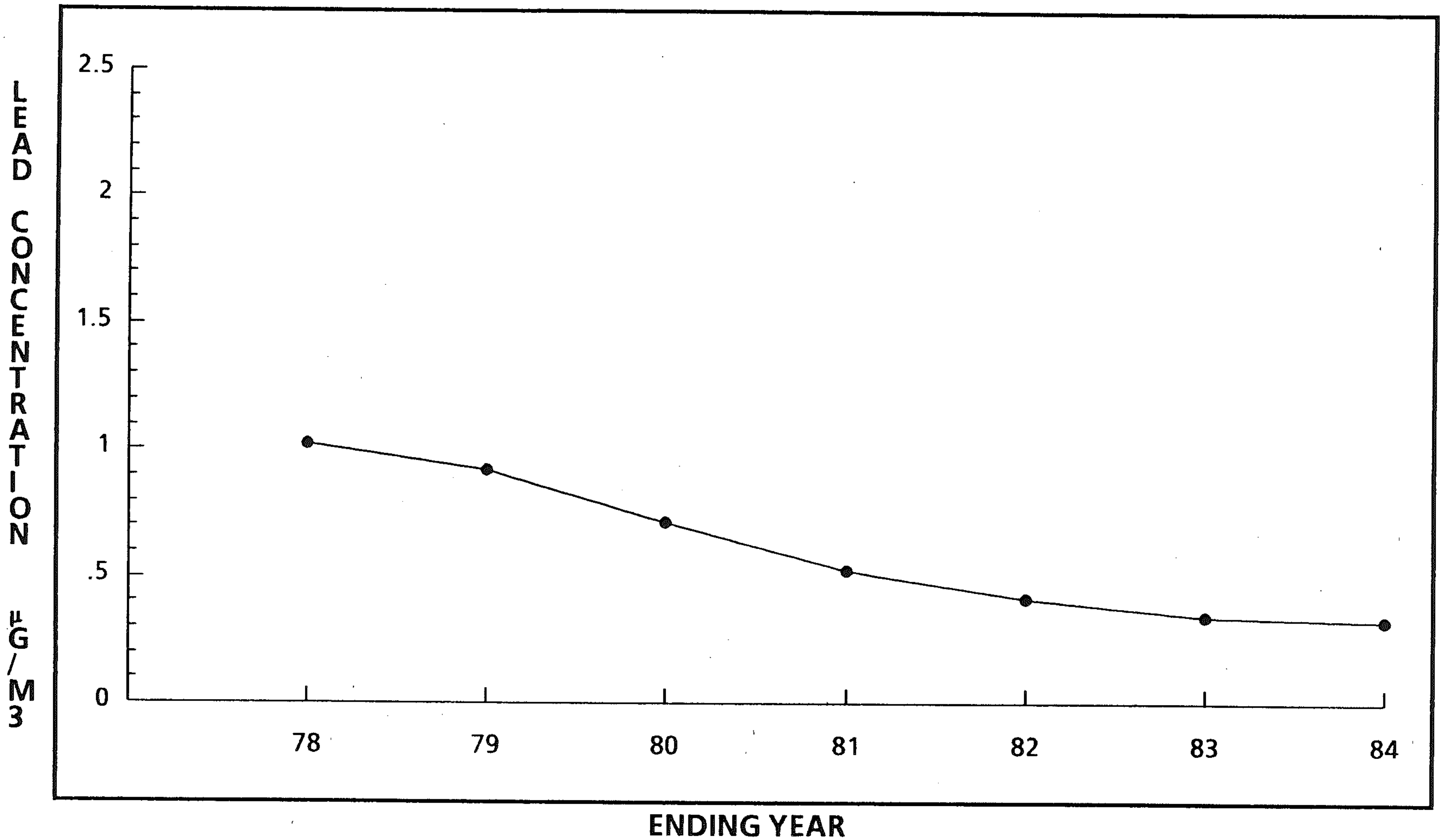
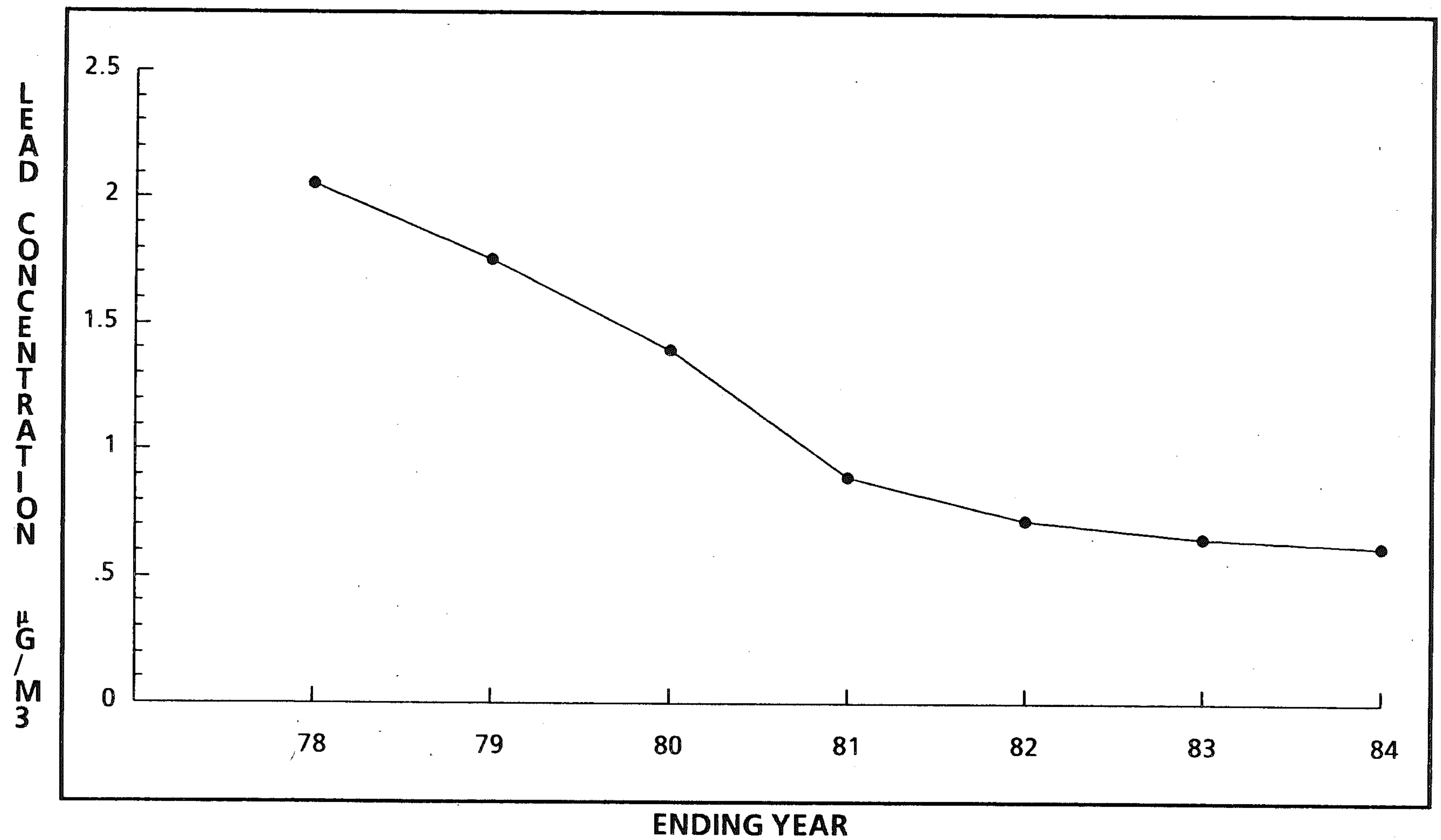


FIGURE D, CONTINUED

3-YEAR RUNNING AVERAGE LEAD CONCENTRATION

SITE: WATERBURY-123



VIII. ACID PRECIPITATION

Monitoring Program

Recently, there has been a growing public concern about the occurrence and effects of atmospheric deposition, most notably acid precipitation or "acid rain." It has become apparent that, in order to address this concern, basic data need to be collected on the chemical properties of precipitation. Recognizing this, the State of Connecticut, through the Department of Environmental Protection, has agreed to cooperate with the Water Resources Division of the United States Geological Survey (USGS) to establish the Connecticut Atmospheric Deposition Monitoring Program.

Program Objectives

The program is designed to collect and analyze precipitation on an event basis and has the following objectives:

(1) to determine selected chemical and physical properties of precipitation in Connecticut;

(2) to determine the spatial and temporal distribution of precipitation chemistry in the State;

(3) to determine the relationships between precipitation chemistry and meteorological conditions, such as storm track and air mass movement;

(4) to provide baseline information that can be used to determine trends and estimate loads; and

(5) to use techniques and methodologies consistent with those of the national monitoring networks in order to provide comparative information.

Data Collection Sites

Data collection sites have been established according to siting criteria used in the National Atmospheric Deposition Program (NADP). Use of these criteria ensures the validity of comparisons made between data which are collected through Connecticut's program and data from other atmospheric deposition programs. Other objectives considered during the siting process were the collection of samples representative of different geographic areas of the State, and the sampling of precipitation representative of long-range transport and not merely local sources. Using these criteria, precipitation sampling sites were established in the towns of Plainfield, Marlborough and Litchfield (see Figure 17).

Equipment

Each site is equipped with a Geo Filter automatic wet-dry sensing precipitation collector. This collector is the same type as those used by the NADP and the National Trends Network (NTN). The collector operates when precipitation wets an electronic sensor, completing an electrical circuit. This activates a motor that opens a lid over the sample container when the precipitation event begins and closes the lid when the precipitation ceases. The purpose of the lid is to retard the loss of samples through evaporation and to prevent contamination by dry fallout.

Each site is also equipped with an automatic rain gage which provides a record of the quantity of rain at 15-minute intervals.

In addition to the above equipment, a prototype precipitation quality monitor is being tested at the Plainfield site. Developed by the USGS Hydrologic Instrumentation Facility, the monitor consists of a wet-dry sensing precipitation collector fitted with a funnel in place of a collection container. Precipitation flows from the funnel through tubing to a series of sensors. The sensors continuously measure pH, temperature and specific conductance throughout a precipitation event and record the data at pre-selected intervals. Precipitation quantity is measured by a tipping-bucket type rain gage.

Data Collection

Samples of precipitation are gathered from the automatic collectors as soon as possible following the end of a precipitation event, in most cases within 24 hours. The samples are immediately tested for acidity through pH measurements. The samples are also tested for specific conductance, which is a measure of the ions in solution – the dissolved solids in solution -- which is a measure of the pollutant load. The results of this testing for the three precipitation sampling sites are tabulated from 1981 in Tables 28, 29 and 30. The results for 1984 are illustrated in Figures 18 through 26.

Samples from selected precipitation events are also sent to a USGS laboratory for further analyses to determine the concentrations of additional chemical constituents, including major anions, cations, nutrients and trace metals.

Through the Connecticut Atmospheric Deposition Monitoring Program, a network capable of providing uninterrupted baseline data on precipitation quality within the State has been developed. Data collected through the program is currently being published monthly by the USGS in its report, *Water Resources Conditions in Connecticut*. When using the data, one should note that it is specific only to the time and place of its collection.

Discussion of Data

Presently, data that has been collected in the initial stages of the study is being analyzed to determine, on a preliminary basis, the distribution and magnitude of atmospheric deposition in Connecticut. Because precipitation chemistry is a function of air quality and climate, both of which fluctuate over time and space, several more years of continuous data collection will be necessary to develop an adequate baseline to determine trends accurately and to more fully define the controlling processes. However, a preliminary evaluation of the data indicates that the precipitation occurring within Connecticut has been chemically affected by man-made contaminants. The data show that 24 percent of the precipitation events studied to date have had a pH of 4.0 or below. Further evaluation of the data will provide more information on the source of the contaminants and the effects upon the environment.

It is important to stress that it is presently difficult to forecast statewide trends in the chemical properties of precipitation, or to perform comparative analyses, because of a lack of a large long-term data base. Generally, a 20-year or greater period of record is an acceptable statistical data base. When performing comparative analyses, some hydrologic data bases use 60 years or more of record keeping. Therefore, it should be apparent that data collection under the Connecticut Atmospheric Deposition Monitoring Program must continue until a sufficient period of record has been obtained.

Further information is available from the Water Resources Division, United States Geological Survey, 450 Main Street, Hartford, Connecticut 06103 at (203) 722-2528, or from the Natural Resources Center, Department of Environmental Protection, 165 Capitol Avenue, Hartford, Connecticut 06106 at (203) 566-3540.

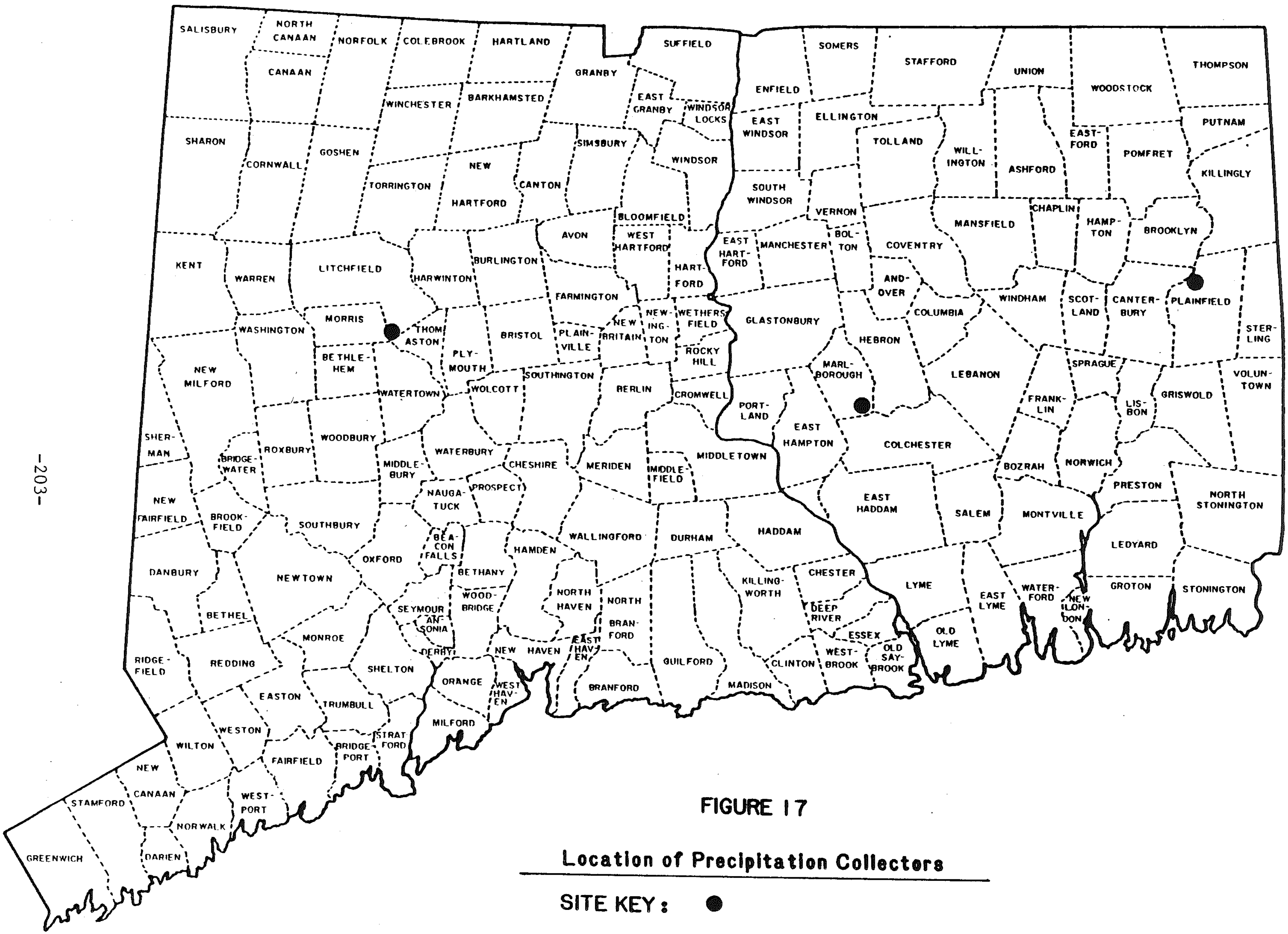


FIGURE 17

Location of Precipitation Collectors

SITE KEY: ●

TABLE 28

ATMOSPHERIC DEPOSITION DATA FOR THE PLAINFIELD SITE

Event Number	Period of Collection	Specific Conductance	pH	Inches of Precipitation
1	10/23/81 - 10/27/81	15	4.5	2.30
2	11/14/81 - 11/16/81	15	4.5	1.01
3	12/01/81 - 12/02/81	14	4.5	2.68
4	12/14/81	12	4.4	0.58
5	12/15/81 - 12/16/81	12	4.6	2.90
6	12/27/81 - 12/28/81	51	4.0	0.20
1	01/04/82 - 01/05/82	15	4.8	2.70
2	04/26/82 - 04/27/82	11	4.8	0.99
3	05/29/82 - 05/31/82	18	4.4	1.43
4	06/02/82	5	5.0	2.86
5	06/04/82 - 06/06/82	10	5.1	4.28
6	07/28/82 - 07/29/82	18	4.4	0.11
7	08/09/82	25	4.4	0.96
8	08/09/82 - 08/10/82	31	4.2	0.71
9	11/28/82 - 11/29/82	8	4.8	0.98
10	12/16/82	16	4.9	0.85
1	01/05/83 - 01/06/83	15	4.4	0.49
2	01/13/83	18	4.7	0.78
3	01/22/83 - 01/24/83	8	4.9	1.17
4	01/29/83 - 01/31/83	26	4.2	0.36
5	02/03/83	14	4.7	1.21
6	02/06/83 - 02/07/83	13	4.7	0.44
7	02/11/83 - 02/12/83	6	4.9	0.04
8	02/17/83	17	4.5	1.09
9	03/02/83	26	4.2	0.37
10	03/06/83 - 03/09/83	47	4.0	1.37
11	03/19/83 - 03/21/83	20	4.5	1.91
12	03/27/83 - 03/28/83	22	4.4	1.11
13	04/03/83	32	4.2	0.02
14	04/10/83	13	4.6	2.37
15	04/16/83 - 04/17/83	16	4.4	0.96
16	04/19/83 - 04/20/83	13	4.5	2.84
17	04/24/83	15	4.9	2.42
18	05/31/83	30	4.2	1.47
19	06/04/83	41	4.0	0.99
20	06/27/83 - 06/28/83	68	3.8	1.22
21	07/6/83	27	4.3	0.38
22	07/22/83	79	3.8	0.25
23	07/25/83	38	4.0	0.29
24	08/11/83 - 08/12/83	39	4.0	1.60
25	09/12/83	87	3.7	0.54

TABLE 28, Continued

Event Number	Period of Collection	Specific Conductance	pH	Inches of Precipitation
26	09/23/83	14	4.7	0.95
27	10/01/83 - 10/02/83	17	4.4	1.33
28	10/12/83 - 10/13/83	4	5.4	1.10
29	10/18/83	45	4.0	0.28
30	10/23/83 - 10/25/83	8	4.8	1.15
31	11/03/83 - 11/04/83	30	4.2	0.60
32	11/10/83	17	4.4	1.08
33	11/15/83 - 11/16/83	8	4.8	2.46
34	11/21/83	14	4.6	0.69
35	11/24/83 - 11/26/83	5	5.2	2.89
36	11/28/83 - 11/29/83	25	4.3	0.97
1	01/10/84 - 01/11/84	24	4.2	0.81*
2	01/18/84 - 01/19/84	52	4.1	0.30*
3	01/24/84	25	4.3	0.32
4	02/03/84 - 02/05/84	24	4.3	1.47
5	02/11/84	37	4.1	0.30
6	02/14/84 - 02/18/84	37	4.9	1.58
7	02/24/84 - 02/25/84	25	4.4	0.81
8	02/28/84 - 03/01/84	11	4.6	1.88
9	03/05/84	54	3.9	0.40
10	03/13/84 - 03/14/84	20	4.2	1.24
11	03/18/84 - 03/19/84	11	4.5	0.42
12	03/21/84	22	4.3	0.58
13	03/28/84 - 03/30/84	10	4.8	1.03
14	04/05/84	17	4.6	1.96
15	04/14/84 - 04/15/84	21	4.5	0.07
16	04/23/84 - 04/24/84	62	3.9	0.12
17	05/03/84 - 05/04/84	48	4.0	1.65
18	05/08/84	40	4.1	0.42
19	05/12/84 - 05/14/84	62	3.9	0.88
20	05/19/84 - 05/21/84	69	3.9	1.05
21	05/27/84 - 05/31/84	21	4.3	5.85
22	05/31/84 - 06/03/84	8	4.8	0.88
23	06/19/84	71	3.8	0.49
24	06/24/84	16	4.5	0.52
25	06/27/84 - 06/29/84	51	4.0	0.75
26	07/09/84	14	4.5	3.50
27	07/16/84	54	3.9	0.62
28	07/19/84	36	4.0	1.07
29	07/23/84	8	5.0	1.08
30	07/27/84	45	4.0	0.41
31	09/04/84	50	3.9	0.66
32	09/12/84	39	4.1	0.19
33	09/15/84	31	4.2	1.07
34	10/01/84 - 10/02/84	12	4.6	2.31
35	10/22/84 - 10/23/84	17	4.5	1.67

*Water equivalent of snowfall

TABLE 28, Continued

Event Number	Period of Collection	Specific Conductance	pH	Inches of Precipitation
36	10/23/84 - 10/24/84	25	4.4	0.15
37	10/26/84 - 10/29/84	38	4.0	1.22
38	11/05/84	6	5.0	0.55
39	11/11/84	8	4.8	1.79
40	11/15/84	55	4.0	0.18
41	11/29/84	17	4.7	0.42
42	12/03/84	21	4.4	0.65
43	12/05/84 - 12/06/84	10	4.7	1.19*
44	12/19/84	40	4.1	0.33
45	12/21/84 - 12/22/84	47	4.0	0.91*

* Water equivalent of snowfall

TABLE 29

ATMOSPHERIC DEPOSITION DATA FOR THE MORRIS DAM SITE

Event Number	Period of Collection	Specific Conductance	pH	Inches of Precipitation
1	12/16/82	22	4.5	1.18
1	01/05/83 - 01/06/83	18	4.4	0.64
2	01/10/83 - 01/11/83	6	4.9	2.39
3	01/23/83	13	4.5	1.45
4	02/02/83 - 02/03/83	19	4.4	1.89
5	02/06/83 - 02/07/83	50	4.0	0.45*
6	02/11/83 - 02/12/83	9	4.9	1.30*
7	02/17/83	46	4.0	0.21
8	03/02/83	22	4.3	0.27
9	03/07/83 - 03/09/83	37	4.1	1.22
10	03/19/83 - 03/21/83	14	4.5	1.29
11	03/27/83 - 03/28/83	18	4.4	1.29
12	04/03/83	11	4.7	1.07
13	04/10/83	9	4.6	2.70
14	04/16/83 - 04/17/83	10	4.5	2.61
15	04/19/83 - 04/20/83	23	4.3	1.27
16	04/24/83	16	4.5	1.35
17	05/15/83 - 05/16/83	35	4.1	0.87
18	05/29/83 - 05/30/83	39	4.1	0.81
19	06/04/83	49	3.9	1.39
20	06/28/83	58	3.9	1.71
21	07/05/83	67	3.9	1.54
22	07/25/83	46	4.1	0.75
23	08/11/83 - 08/12/83	49	3.9	1.60
24	09/12/83	65	3.8	0.24
25	09/23/83	20	4.5	0.94
26	10/01/83 - 10/02/83	9	4.6	1.18
27	10/12/83 - 10/13/83	6	4.9	3.34
28	10/18/83	30	4.1	0.33
29	10/23/83 - 10/25/83	9	4.8	2.32
30	11/03/83 - 11/04/83	80	3.8	0.11
31	11/10/83	40	4.2	0.94
32	11/15/83 - 11/16/83	10	4.6	1.64
33	11/21/83	14	4.6	0.57
34	11/24/83 - 11/25/83	21	4.5	1.45
35	11/28/83 - 11/29/83	24	4.3	0.71
36	12/06/83	32	4.2	1.04
37	12/12/83 - 12/14/83	26	4.5	3.41
1	01/10/84 - 01/11/84	12	4.5	0.47*
2	01/18/84 - 01/19/84	45	4.0	0.21*

* Water equivalent of snowfall

TABLE 29. Continued

Event Number	Period of Collection	Specific Conductance	pH	Inches of Precipitation
3	01/24/84	34	4.2	0.45
4	01/30/84 - 01/31/84	22	4.3	0.38*
5	02/03/84 - 02/05/84	41	4.0	0.69
6	02/11/84	43	4.0	0.48
7	02/14/84 - 02/16/84	23	4.7	1.53
8	02/24/84 - 02/25/84	80	3.8	0.86
9	02/28/84 - 03/01/84	10	4.6	1.34
10	03/05/84 - 03/06/84	25	4.2	0.53
11	03/18/84 - 03/19/84	30	4.1	0.52
12	03/21/84	24	4.3	0.65
13	03/28/84 - 03/30/84	10	4.8	1.61*
14	04/05/84	25	4.4	2.79
15	04/13/84 - 04/16/84	32	4.2	1.25
16	04/23/84 - 04/24/84	17	4.6	0.55
17	05/03/84 - 05/04/84	28	4.2	1.24
18	05/08/84	34	4.2	0.99
19	05/12/84 - 05/14/84	55	3.9	0.77
20	05/19/84 - 05/21/84	78	3.8	0.21
21	05/25/84	19	4.4	0.88
22	05/27/84 - 05/31/84	13	4.5	6.11
23	05/31/84 - 06/03/84	5	5.0	0.74
24	06/24/84 - 06/25/84	20	4.3	0.87
25	06/27/84 - 07/01/84	39	4.0	0.60
26	07/09/84	24	4.2	0.23
27	07/16/84	62	3.9	0.71
28	07/19/84	52	4.0	0.53
29	07/27/84	18	4.4	0.70
30	09/04/84	50	3.9	0.80
31	09/12/84	20	4.4	0.22
32	10/01/84 - 10/02/84	8	4.8	0.51
33	10/22/84 - 10/23/84	20	4.4	0.91
34	10/23/84 - 10/24/84	55	4.4	0.07
35	10/26/84 - 10/29/84	61	3.8	0.63
36	11/05/84	6	5.0	0.96
37	11/29/84	15	4.6	0.54
38	12/03/84	33	4.4	0.54
39	12/05/84 - 12/06/84	10	5.0	0.46
40	12/19/84	39	4.1	0.32
41	12/21/84 - 12/22/84	46	3.9	0.33

* Water equivalent of snowfall

TABLE 30

ATMOSPHERIC DEPOSITION DATA FOR THE MARLBOROUGH SITE

Event Number	Period of Collection	Specific Conductance	pH	Inches of Precipitation
1	05/29/83 - 05/31/83	36	4.1	1.39
2	06/04/83	42	4.1	0.99
3	06/27/83 - 06/28/83	75	3.8	2.63
4	07/05/83 - 07/06/83	89	3.7	0.27
5	07/21/83	46	4.0	0.39
6	07/24/83	40	4.0	0.91
7	08/11/83 - 08/12/83	27	4.2	1.75
8	09/23/83	11	4.7	1.18
9	10/01/83 - 10/02/83	5	4.8	2.22
10	10/12/83 - 10/13/83	10	4.8	1.22
11	10/18/83	32	4.2	0.19
12	10/23/83 - 10/24/83	4	5.3	1.97
13	11/03/83 - 11/04/83	38	4.0	0.75
14	11/10/83	20	4.4	1.27
15	11/15/83 - 11/16/83	6	4.9	1.73
16	11/21/83	12	4.7	0.49
17	11/24/83 - 11/25/83	7	4.9	2.43
18	11/28/83 - 11/29/83	21	4.4	1.04
19	12/06/83	30	4.3	0.68
20	12/12/83 - 12/14/83	40	4.6	1.89
1	01/10/84 - 01/11/84	7	4.7	0.77*
2	01/18/84 - 01/19/84	38	4.1	0.62*
3	01/24/84	23	4.4	0.18
4	01/30/84 - 01/31/84	36	4.1	0.64*
5	02/03/84 - 02/05/84	28	4.2	0.83
6	02/11/84	50	3.9	0.20
7	02/14/84 - 02/16/84	22	4.9	0.83
8	02/24/84 - 02/25/84	16	4.5	1.20
9	02/28/84 - 03/01/84	7	4.8	1.57
10	03/04/84 - 03/06/84	26	4.2	0.28
11	03/13/84 - 03/14/84	10	4.5	3.14*
12	03/18/84 - 03/19/84	48	3.9	0.27
13	03/21/84	15	4.4	0.47
14	03/28/84 - 03/30/84	6	5.0	0.44*
15	04/05/84	25	4.4	2.47
16	04/13/84 - 04/16/84	20	4.4	2.12
17	04/23/84 - 04/24/84	15	4.6	0.52
18	05/03/84 - 05/04/84	34	4.1	1.37
19	05/08/84	35	4.1	0.48
20	05/12/84 - 05/14/84	44	4.0	0.57
21	05/19/84 - 05/21/84	60	3.9	0.41
22	05/25/84	18	4.4	0.50
23	05/27/84 - 05/31/84	16	4.5	6.35

*Water Equivalent of Snowfall

TABLE 30, Continued

Event Number	Period of Collection	Specific Conductance	pH	Inches of Precipitation
24	05/31/84 - 06/02/84	7	4.8	1.46
25	06/19/84	57	3.9	0.12
26	06/25/84	11	4.9	1.73
27	06/28/84 - 06/29/84	63	3.9	0.21
28	07/07/84	13	4.5	4.18
29	07/16/84	88	3.8	0.15
30	07/18/84 - 07/19/84	26	4.3	1.09
31	07/21/84 - 07/22/84	4	5.1	1.35
32	07/27/84	32	4.2	0.57
33	09/04/84	39	4.1	3.91
34	09/15/84	30	4.3	1.04
35	10/01/84 - 10/02/84	7	4.8	1.96
36	10/22/84 - 10/23/84	18	4.4	2.41
37	10/23/84 - 10/24/84	33	4.3	0.13
38	10/26/84 - 10/29/84	39	4.0	1.32
39	11/05/84	8	4.9	0.52
40	11/11/84	6	5.0	1.93
41	11/15/84	64	3.9	0.10
42	12/03/84	22	4.5	0.56
43	12/05/84 - 12/06/84	6	4.9	1.19*
44	12/19/84	42	4.0	0.30
45	12/21/84 - 12/22/84	59	3.8	0.94*

*Water Equivalent of Snowfall

FIGURE 18

INCHES OF PRECIPITATION

PLAINFIELD SITE, 1984

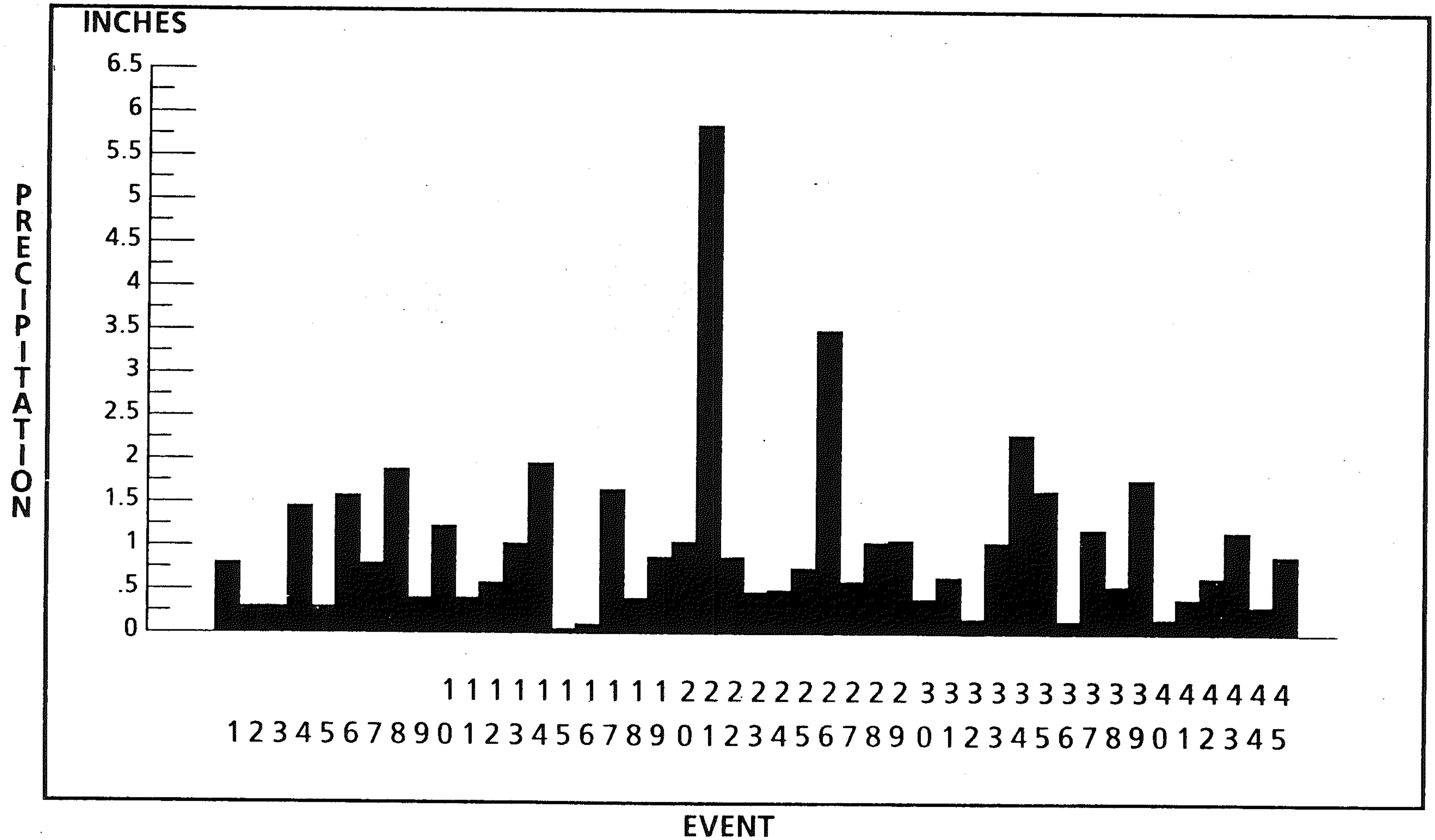
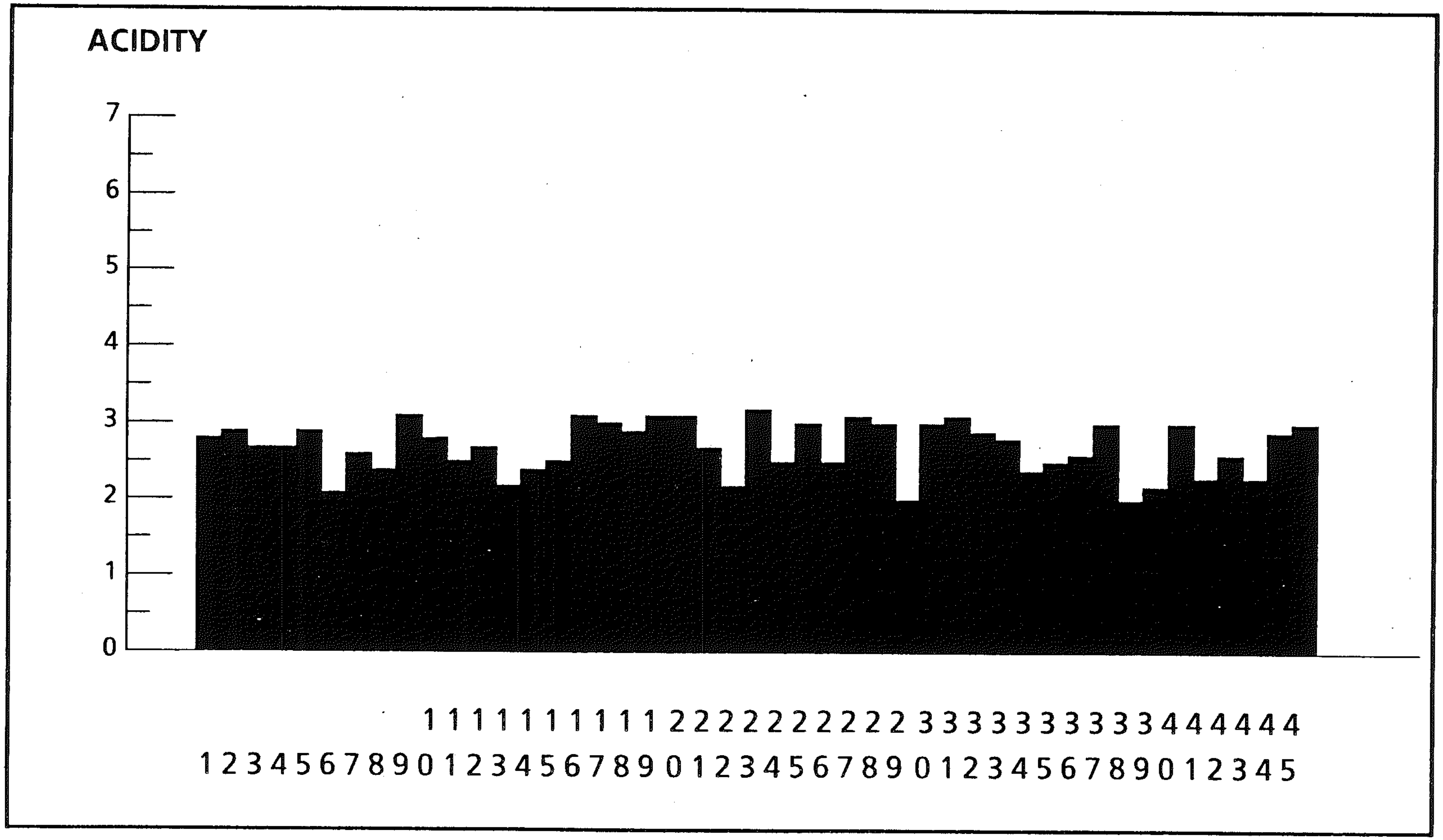


FIGURE 19

ACIDITY OF PRECIPITATION
PLAINFIELD SITE, 1984



EVENT

ACIDITY = 7 - pH

FIGURE 20

SPECIFIC CONDUCTANCE OF PRECIPITATION
PLAINFIELD SITE, 1984

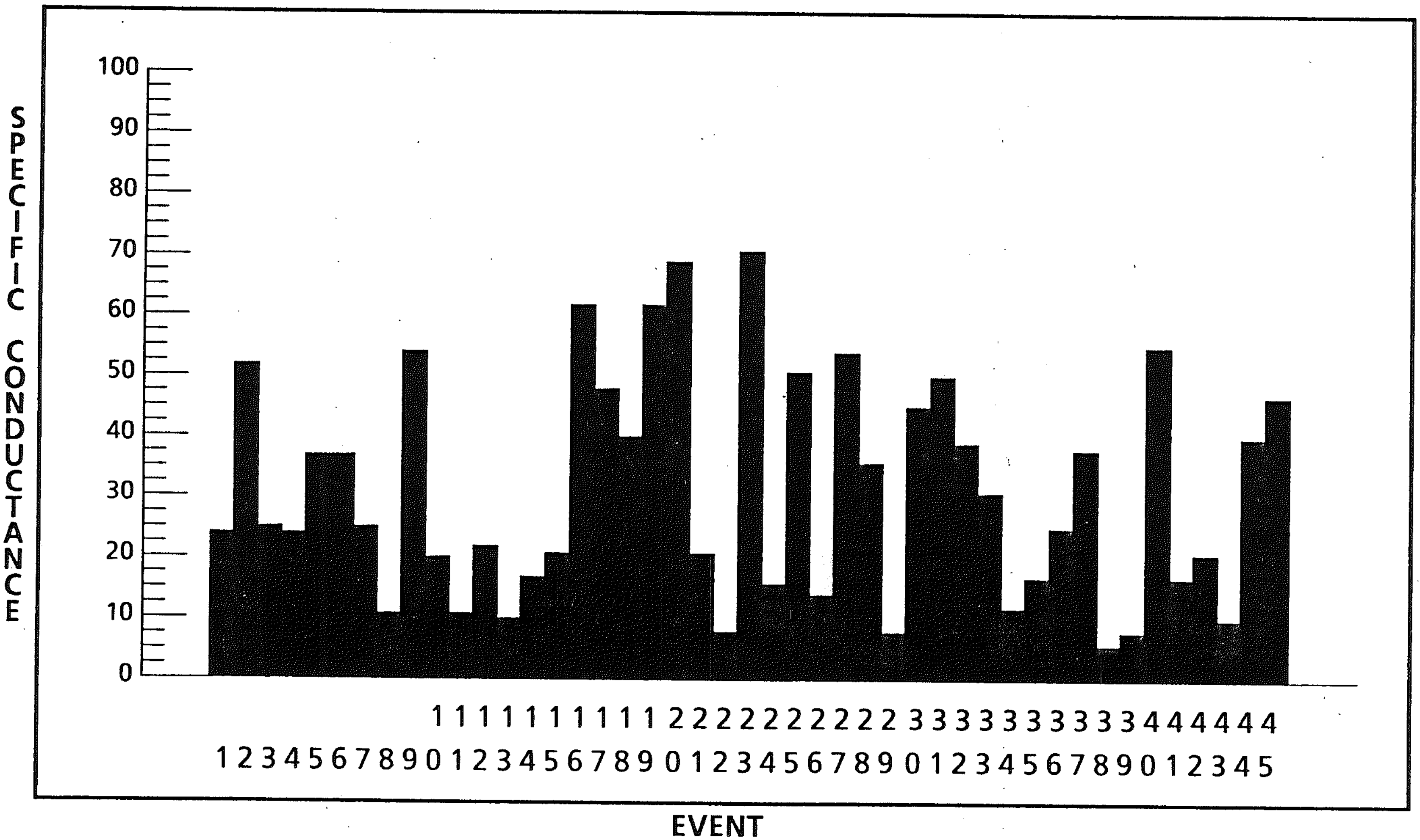


FIGURE 21

INCHES OF PRECIPITATION

MORRIS DAM SITE, 1984

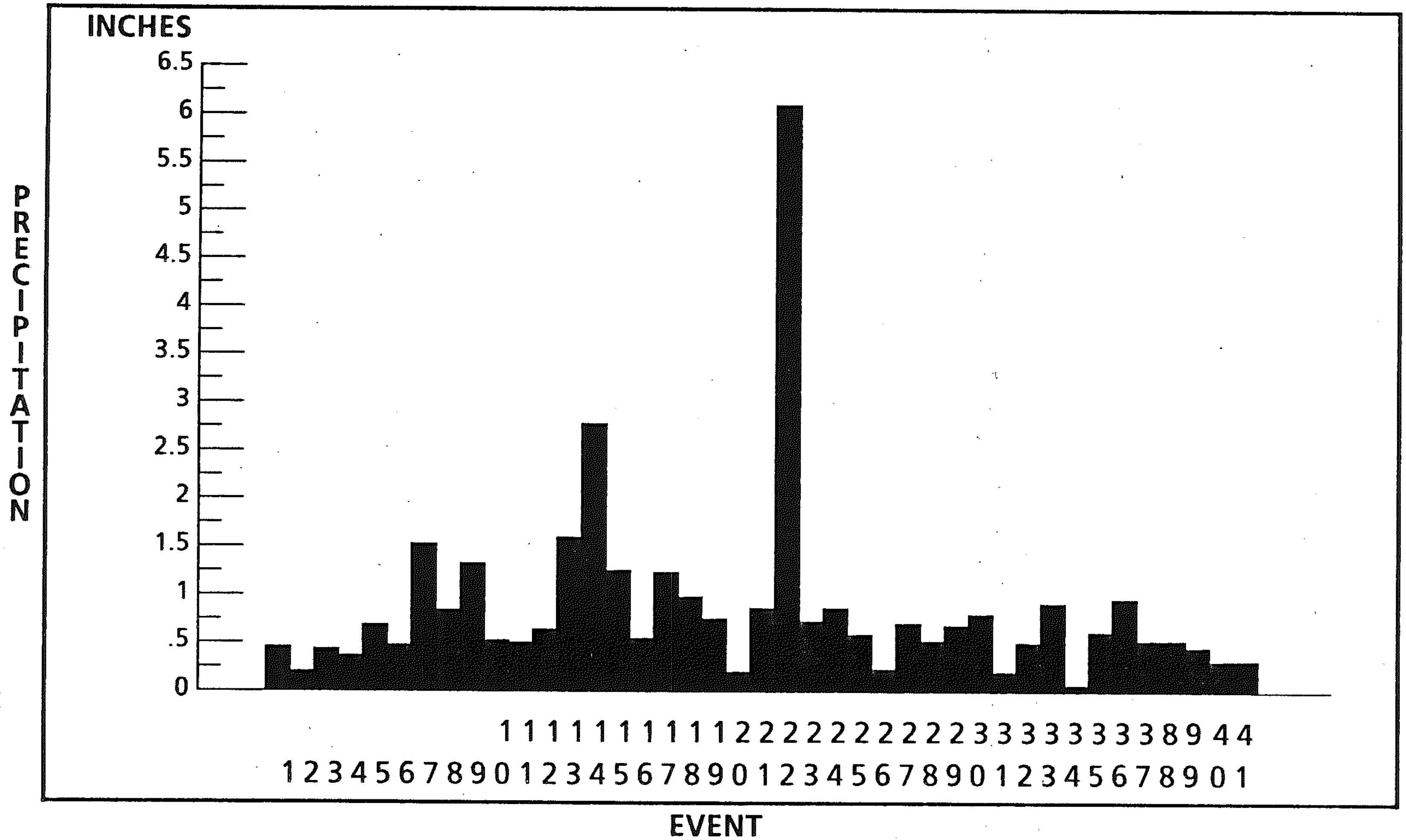
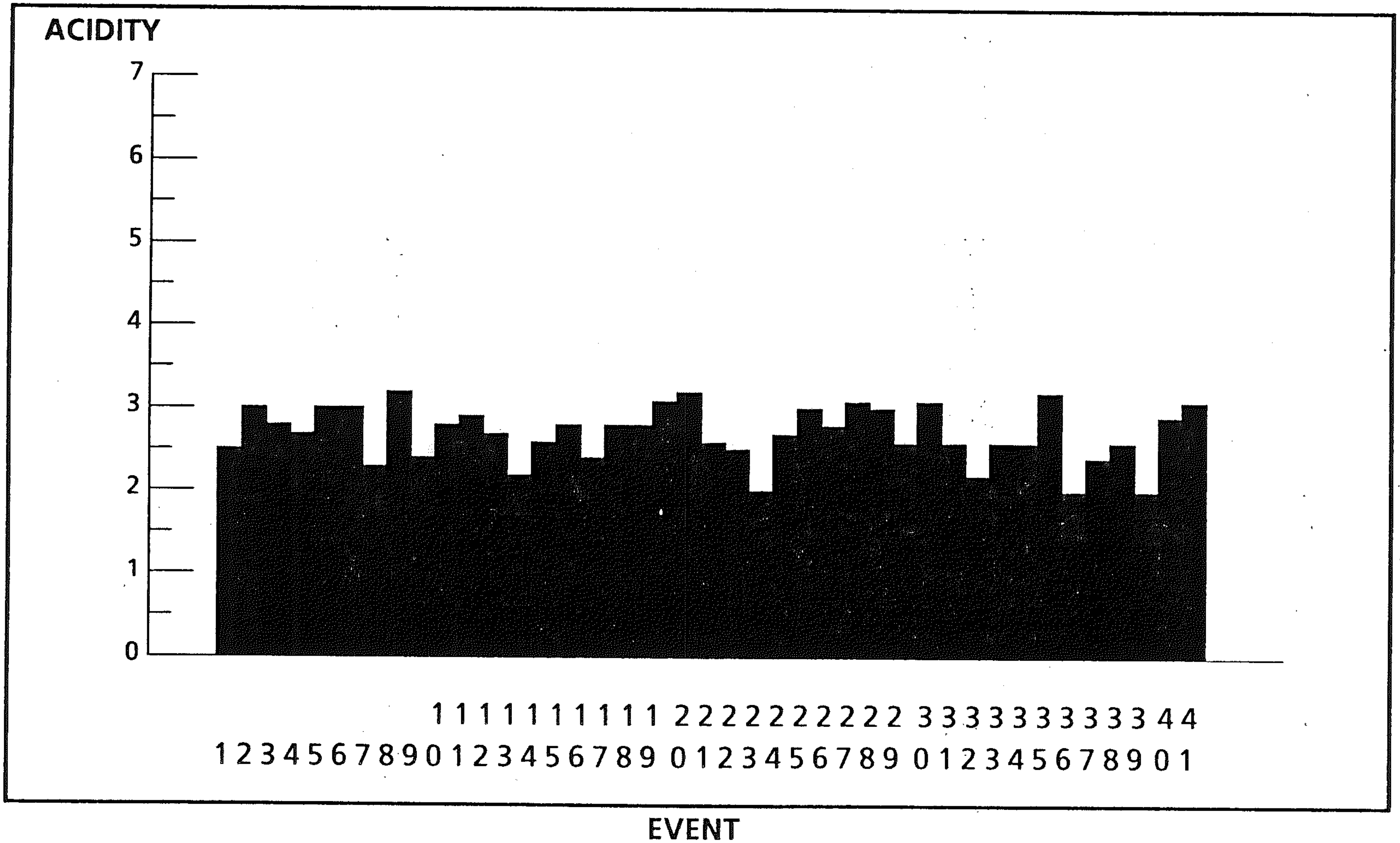


FIGURE 22

ACIDITY OF PRECIPITATION

MORRIS DAM SITE, 1984



ACIDITY = 7 - pH

FIGURE 23

SPECIFIC CONDUCTANCE OF PRECIPITATION

MORRIS DAM SITE, 1984

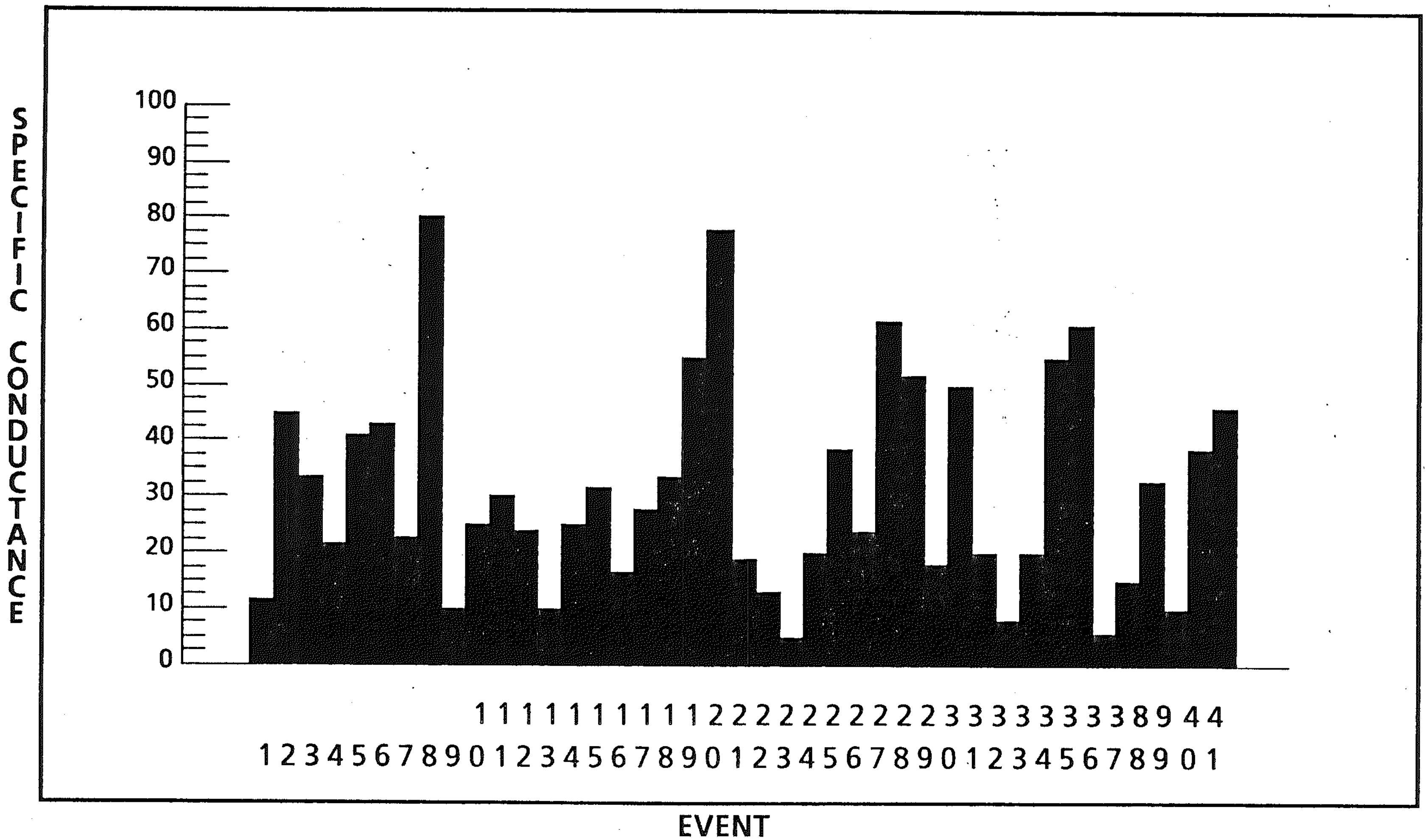


FIGURE 24

INCHES OF PRECIPITATION
MARLBOROUGH SITE, 1984

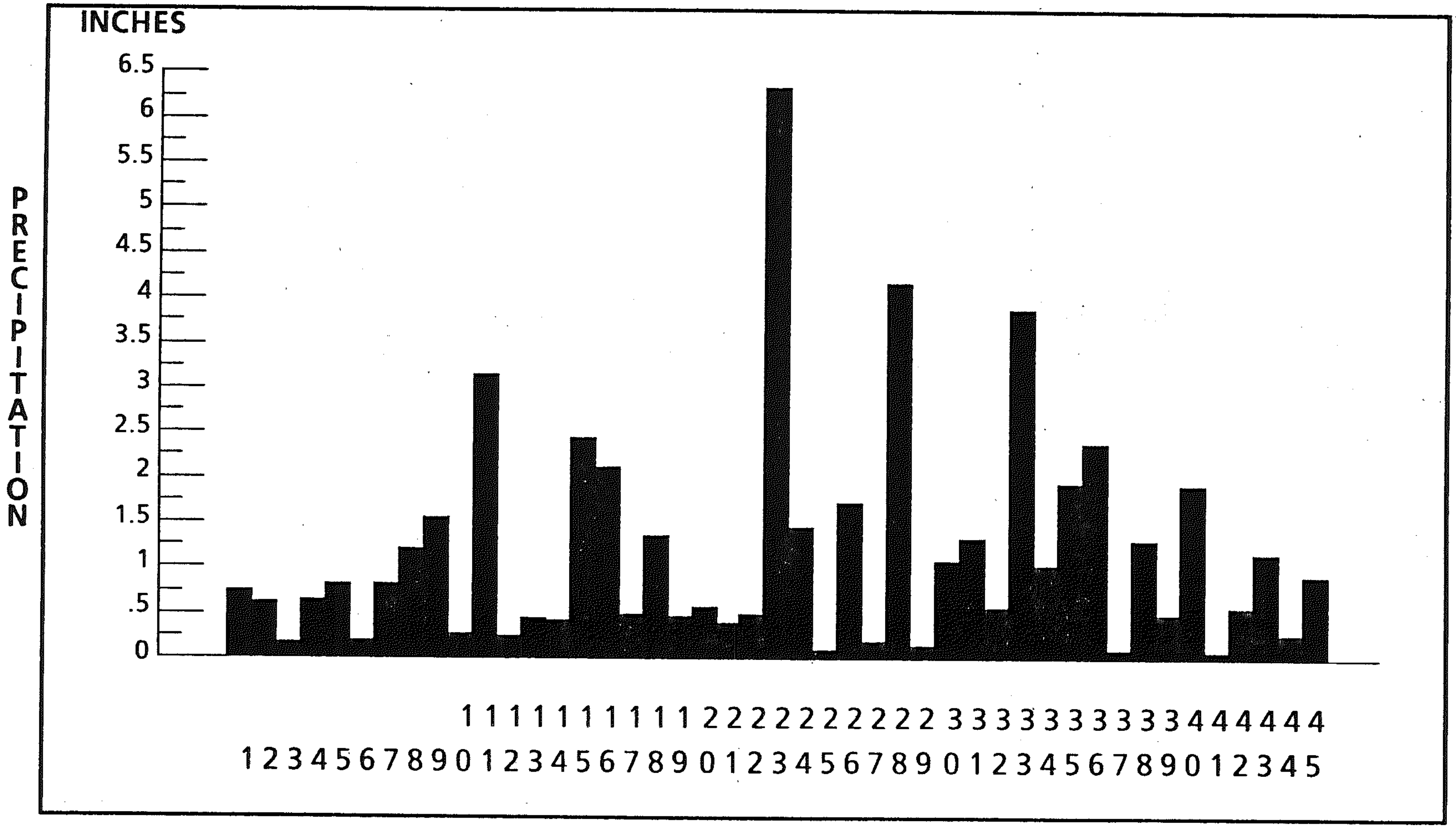
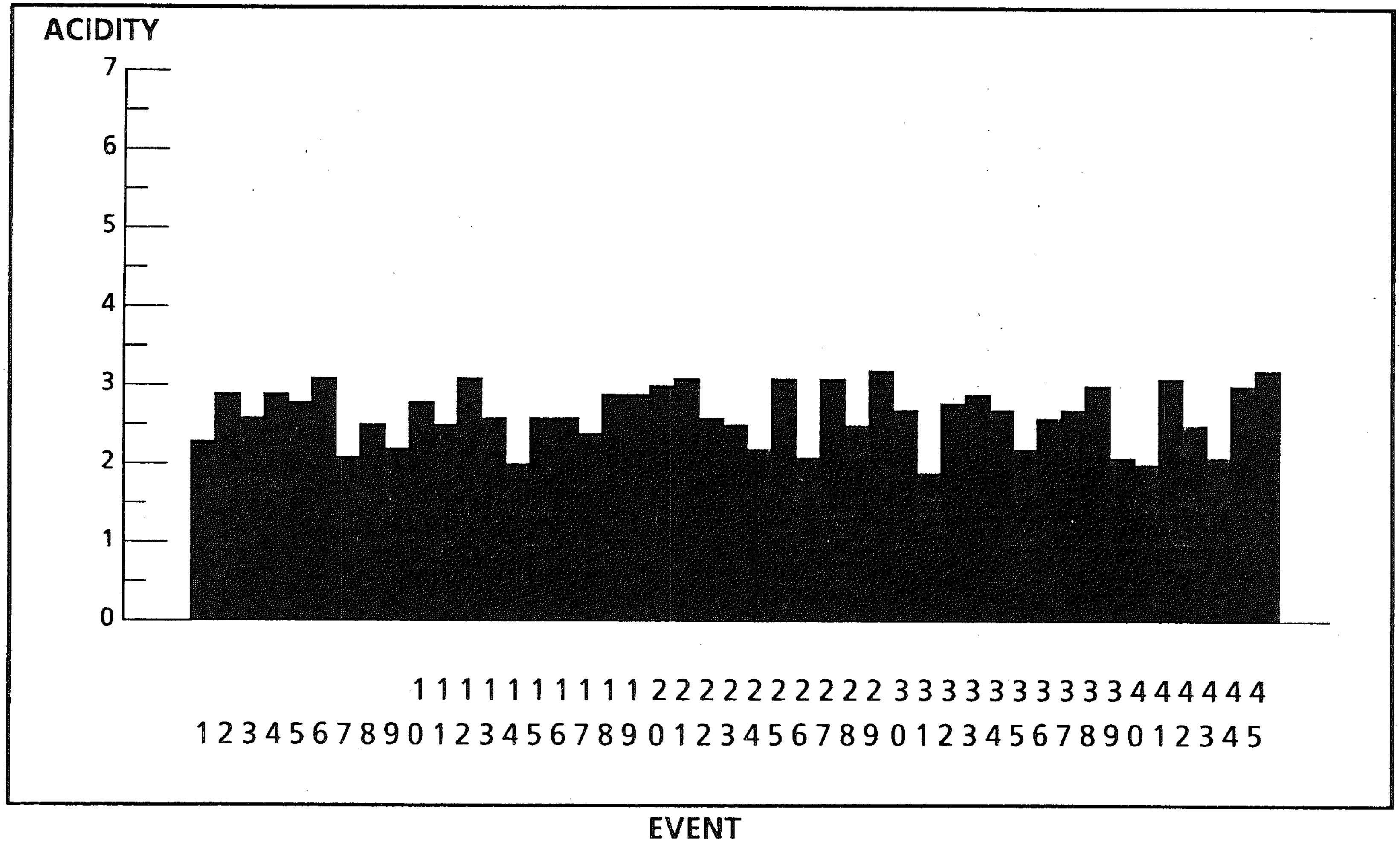


FIGURE 25

ACIDITY OF PRECIPITATION

MARLBOROUGH SITE, 1984

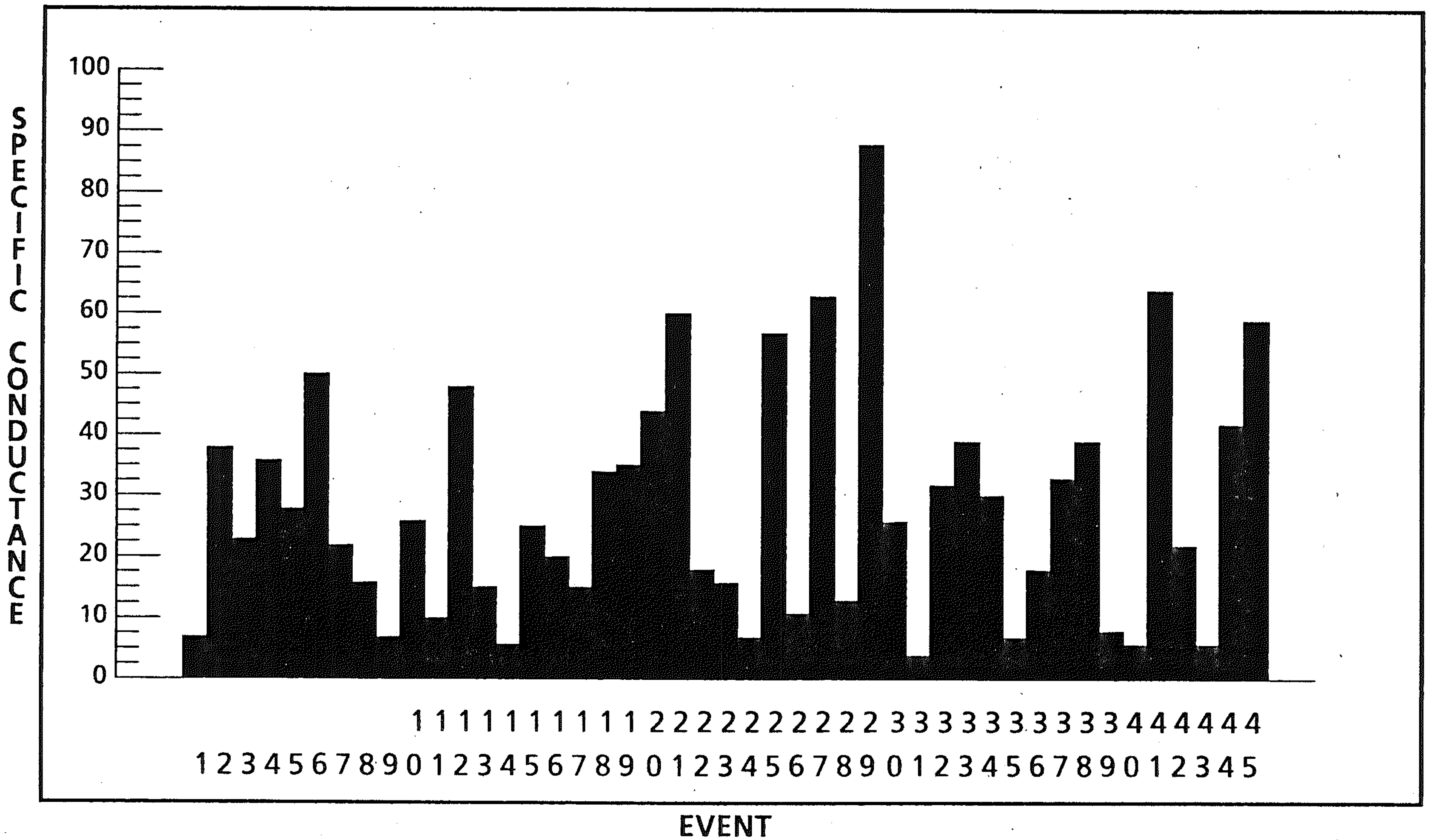


ACIDITY = 7 - pH

FIGURE 26

SPECIFIC CONDUCTANCE OF PRECIPITATION

MARLBOROUGH SITE, 1984



IX. CLIMATOLOGICAL DATA

Weather is often the most significant factor influencing short-term changes in air quality. It also has an affect on long-term trends. Climatological information from the National Weather Service station at Bradley International Airport in Windsor Locks is shown in Table 31 for the years 1983 and 1984. Table 32 contains information from the National Weather Service station located at Sikorsky Memorial Airport near Bridgeport. All data are compared to "mean" or "normal" values. Wind speeds* and temperatures are shown as monthly and yearly averages. Precipitation data includes both the number of days with more than 0.01 inches of precipitation and the total water equivalent. Also shown are degree days** (heating requirement) and the number of days with temperatures exceeding 90°F.

Wind roses for Bradley Airport and Newark Airport have been developed from 1984 National Weather Service surface observations and are shown in Figures 28 and 30, respectively. Wind roses from these stations for 1983 are shown in Figures 27 and 29, respectively.

* The mean wind speed for a month or year is calculated for all the hourly wind speeds, regardless of the wind directions.

** The degree day value for each day is arrived at by subtracting the average temperature of the day from 65°F . This number (65) is used as a base value because it is assumed that there is no heating requirement when the outside temperature is 65°F.

TABLE 31

1983 AND 1984 CLIMATOLOGICAL DATA
BRADLEY INTERNATIONAL AIRPORT
WINDSOR LOCKS

	AVERAGE TEMPERATURES °F			NUMBER OF DAYS DURING WHICH MAX. TEMP. EXCEEDED 90°F			DEGREE DAYS			PRECIPITATION IN INCHES WATER EQUIVALENT			NUMBER OF DAYS WITH MORE THAN .01 INCHES OF PRECIPITATION			AVERAGE WIND SPEED (MPH)		
	1983	1984	Mean[a]	1983	1984	Mean[b]	1983	1984	Normal[c]	1983	1984	Mean[a]	1983	1984	Mean[a]	1983	1984	Mean[c]
Jan.	27.1	21.8	26.6	0	0	0	1170	1332	1234	4.68	1.80	3.54	10	13	11	7.1	6.0	9.1
Feb.	29.1	34.3	27.7	0	0	0	1002	884	1047	3.83	4.72	3.26	7	14	10	7.9	7.5	9.4
March	39.2	31.4	37.0	0	0	0	793	1035	874	6.86	3.93	3.76	17	14	12	9.3	9.2	10.0
April	48.9	48.0	48.1	0	0	*	483	503	486	9.90	4.24	3.80	13	12	11	8.0	7.9	10.2
May	56.8	56.0	59.0	0	0	1	261	286	197	4.82	11.55	3.63	19	15	12	7.8	7.8	8.9
June	69.9	69.8	68.0	8	6	4	24	32	20	2.61	2.16	3.54	7	10	11	6.1	7.2	8.1
July	74.9	71.8	73.2	13	2	8	0	3	0	1.07	4.22	3.51	5	10	10	6.9	6.7	7.5
Aug.	72.7	73.2	71.0	8	4	5	7	3	8	2.55	1.32	3.78	12	7	10	6.2	5.5	7.2
Sept.	66.5	59.8	63.5	9	0	2	106	186	102	2.10	1.20	3.61	6	7	9	5.8	6.0	7.3
Oct.	52.5	55.2	53.1	0	0	*	404	298	391	5.52	2.76	3.17	11	7	8	6.6	6.2	7.7
Nov.	42.7	41.5	42.0	0	0	0	662	698	702	6.09	2.45	3.75	11	7	11	7.2	7.3	8.4
Dec.	28.1	35.7	30.4	0	0	0	1135	896	1113	5.97	2.46	3.77	11	14	12	7.6	6.7	8.6
YEAR	50.7	49.9	50.0	38	12	20	6047	6156	6174	56.00	42.85	43.13	129	130	127	7.2	7.0	8.5

* Less than 0.5
a 1955-1984
b 1960-1984
c 1951-1980

Extracted From: Local Climatological Data Charts
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Data Service

TABLE 32

1983 AND 1984 CLIMATOLOGICAL DATA
SIKORSKY INTERNATIONAL AIRPORT
STRATFORD

	AVERAGE TEMPERATURES °F			NUMBER OF DAYS DURING WHICH MAX. TEMP. EXCEEDED 90°F			DEGREE DAYS			PRECIPITATION IN INCHES WATER EQUIVALENT			NUMBER OF DAYS WITH MORE THAN .01 INCHES OF PRECIPITATION			AVERAGE WIND SPEED (MPH)		
	1983	1984	Mean[a]	1983	1984	Mean[b]	1983	1984	Normal[c]	1983	1984	Mean[a]	1983	1984	Mean[d]	1983	1984	Mean[e]
Jan.	31.4	26.6	28.3	0	0	0	1034	1188	1101	3.72	1.52	3.62	7	13	11	---	---	13.2
Feb.	32.3	36.5	30.4	0	0	0	914	819	963	2.40	4.72	3.32	8	12	10	---	---	13.6
March	40.5	34.1	37.8	0	0	0	754	952	831	9.21	3.49	3.98	15	12	11	---	---	13.5
April	48.1	47.9	48.0	0	0	0	501	508	492	10.72	4.37	3.93	11	7	11	---	---	13.0
May	55.8	57.8	58.4	0	0	*	280	227	220	4.77	8.14	3.73	15	14	11	---	---	11.6
June	67.7	71.0	67.8	2	5	1	29	18	20	3.72	3.53	3.37	5	10	9	---	---	10.5
July	74.3	73.1	73.3	3	2	3	0	0	0	1.66	6.54	3.67	6	11	8	---	---	10.0
Aug.	73.1	74.8	71.9	2	2	2	8	0	0	2.57	1.23	3.97	8	8	9	---	---	10.1
Sept.	67.3	63.3	65.1	4	0	*	73	104	49	2.20	2.24	3.52	4	7	9	---	---	11.2
Oct.	55.1	57.7	54.7	0	0	0	320	219	285	4.63	2.79	3.37	10	8	7	---	---	11.9
Nov.	46.5	45.0	44.2	0	0	0	550	593	585	6.58	1.83	3.76	12	10	10	---	---	12.7
Dec.	33.1	40.2	33.2	0	0	0	981	761	955	4.74	2.56	3.71	12	13	11	---	---	13.0
YEAR	52.1	52.3	51.1	11	9	6	5444	5389	5501	56.92	42.96	43.94	113	125	117	---	---	12.0

* Less than 0.5
a 1955-1984
b 1966-1984
c 1951-1980
d 1949-1984
e ~~1962-1984~~ 1958-1980

Extracted From: Local Climatological Data Charts
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Data Service

FIGURE 27

ANNUAL WIND ROSE 1983
BRADLEY INTERNATIONAL AIRPORT
WINDSOR LOCKS, CONNECTICUT

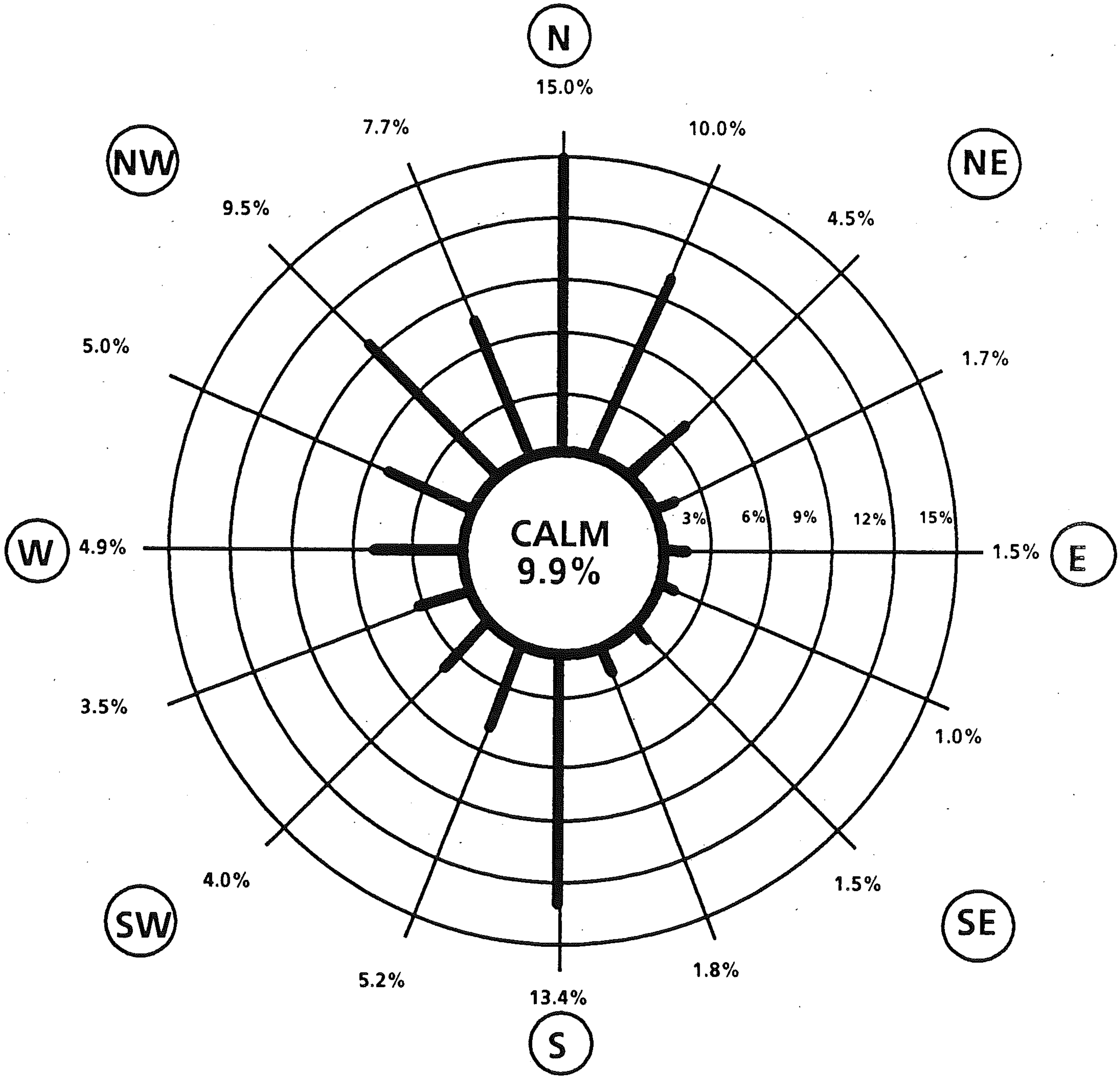


FIGURE 28

ANNUAL WIND ROSE 1984
BRADLEY INTERNATIONAL AIRPORT
WINDSOR LOCKS, CONNECTICUT

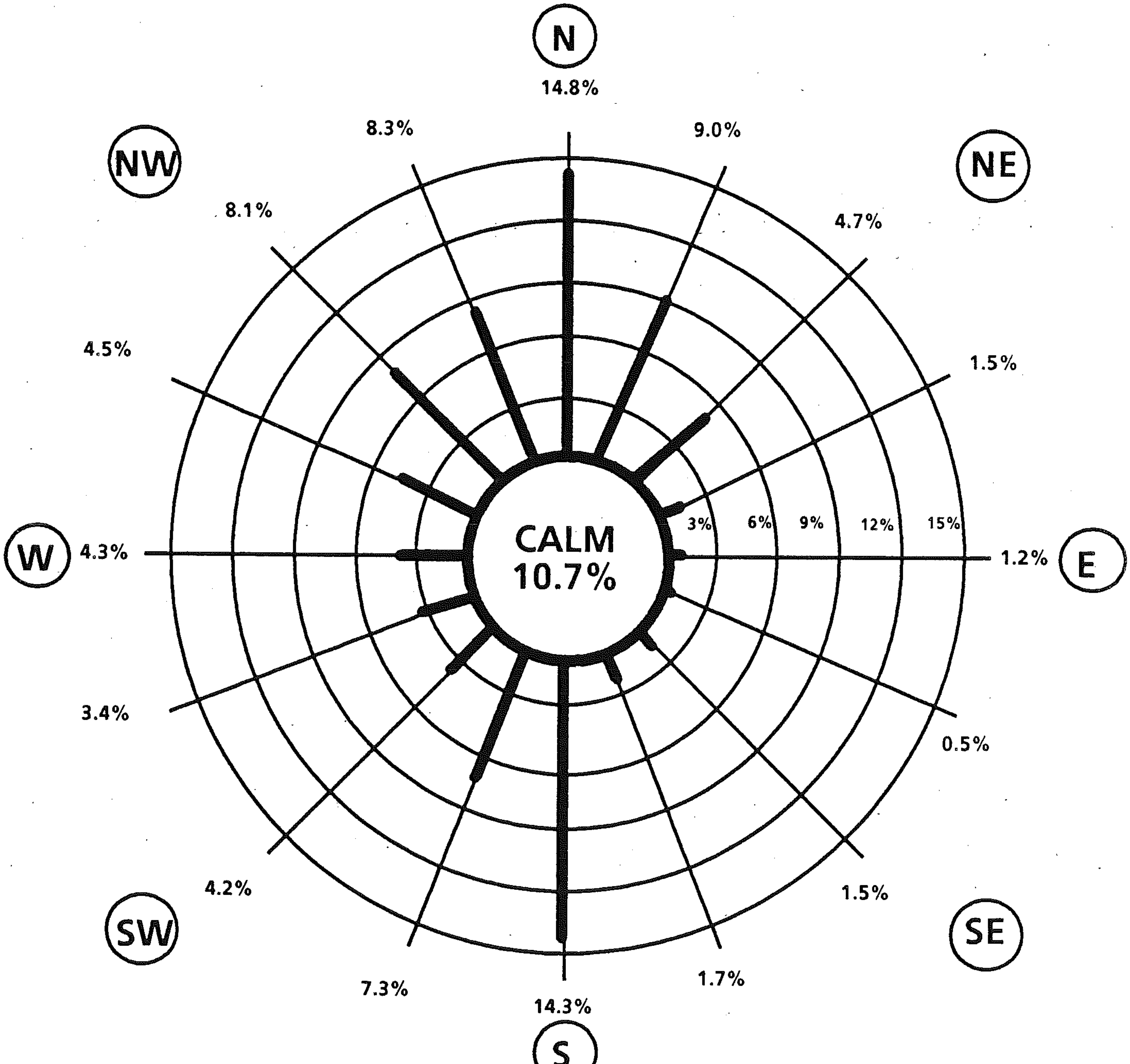


FIGURE 29

ANNUAL WIND ROSE 1983
NEWARK INTERNATIONAL AIRPORT
NEWARK, NEW JERSEY

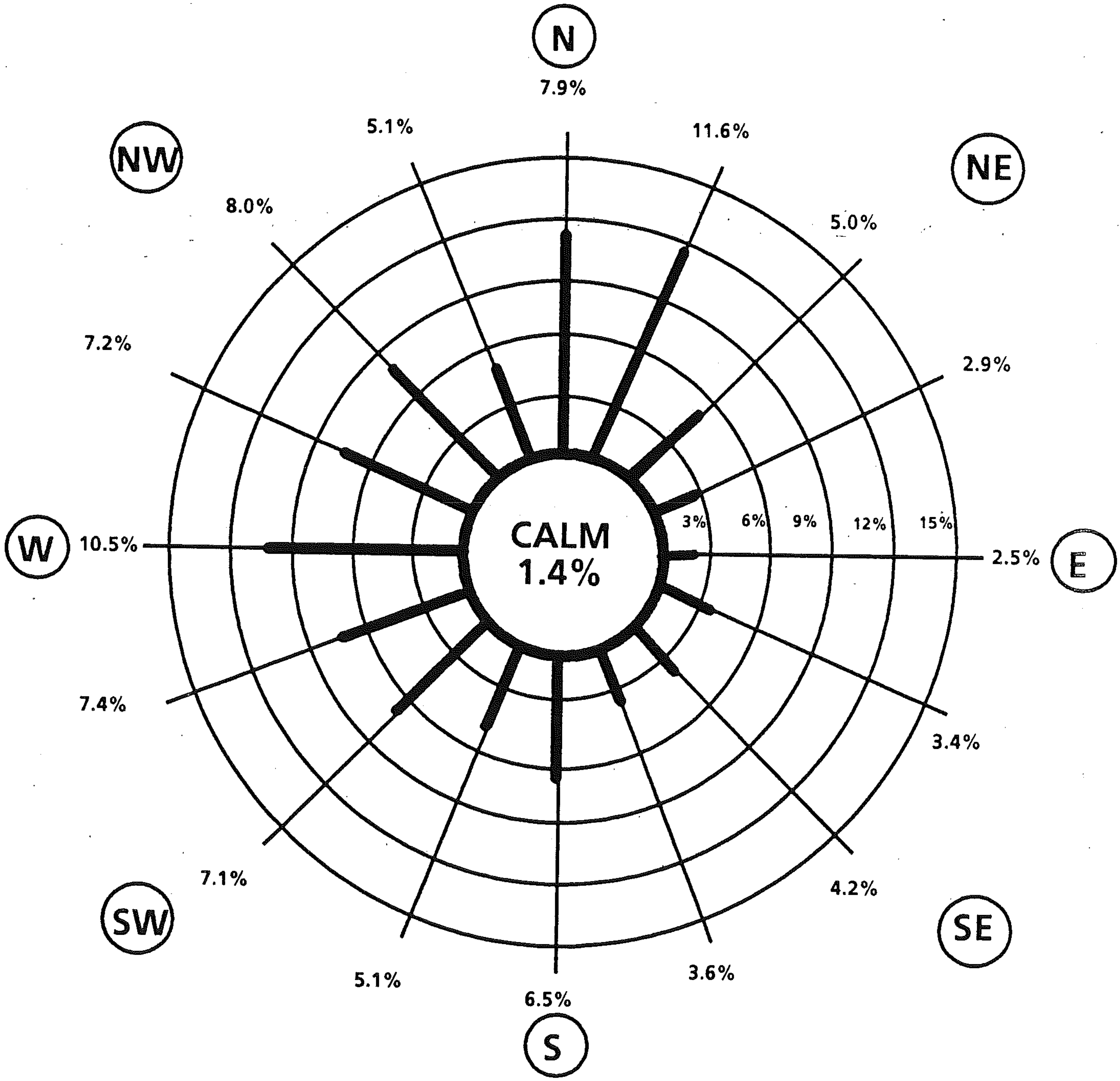
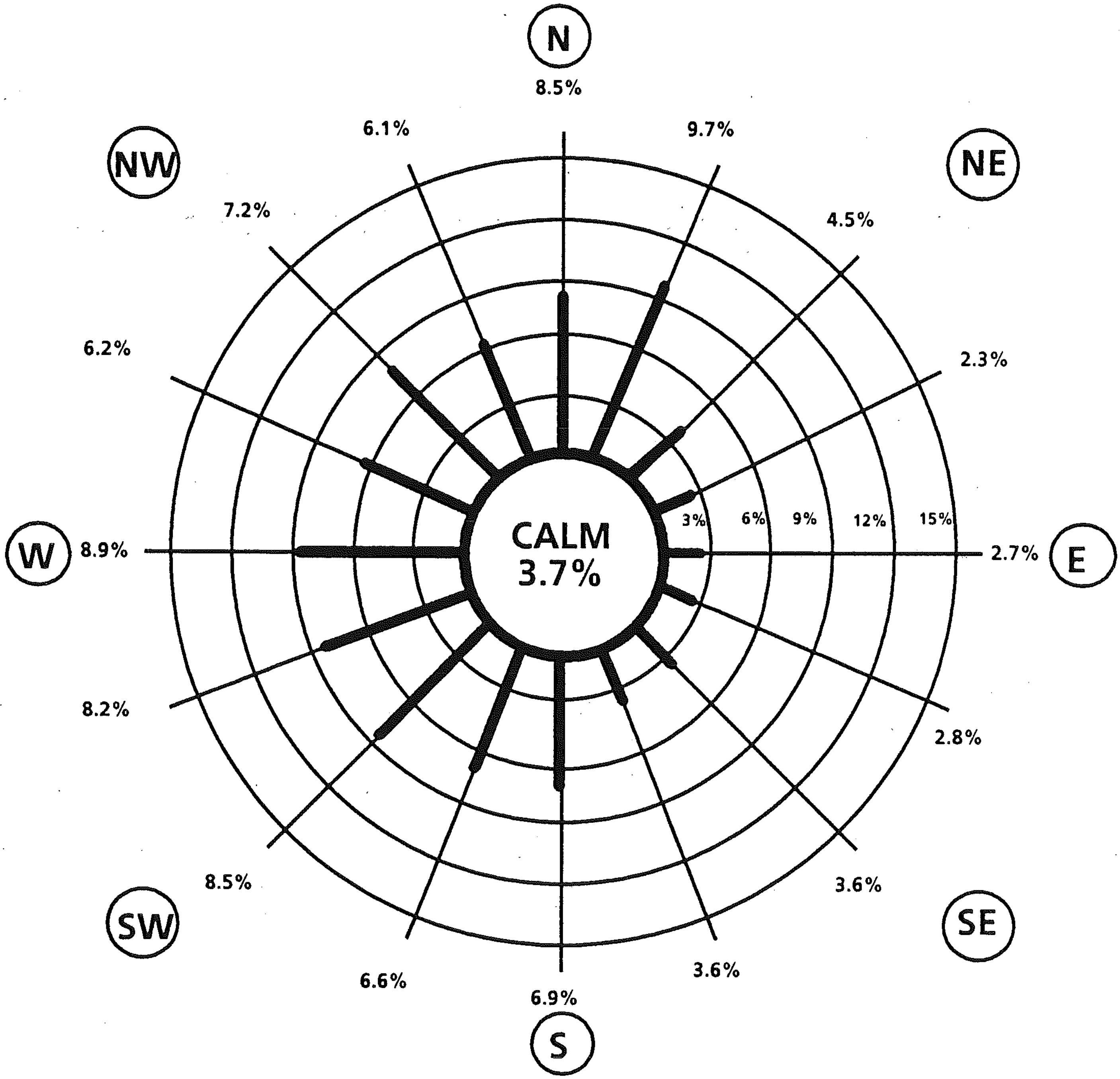


FIGURE 30

ANNUAL WIND ROSE 1984
NEWARK INTERNATIONAL AIRPORT
NEWARK, NEW JERSEY



X. ATTAINMENT AND NON-ATTAINMENT OF NAAQS IN CONNECTICUT'S AQCR'S

The attainment status designations for Connecticut's four Air Quality Control Regions (AQCR's, see Figure 31) with regard to the National Ambient Air Quality Standards (NAAQS) have been determined for 1984 for the following pollutants: total suspended particulates (TSP); sulfur dioxide (SO_2) ; ozone (O_3) ; nitrogen dioxide (NO_2) ; carbon monoxide (CO) ; and lead (Pb). Table 33 shows the attainment status of each AQCR by pollutant. The AQCR's are classified as attainment, non-attainment or unclassifiable. These classifications conform to federal EPA guidelines and were applied in each case only after federal approval was granted. Where both a short-term and a long-term standard exist (e.g., the secondary TSP standard), the federal EPA classifies an AQCR as attainment when both standards are attained. This notwithstanding, Table 33 contains the AQCR classifications with respect to all relevant short-term and long-term standards.

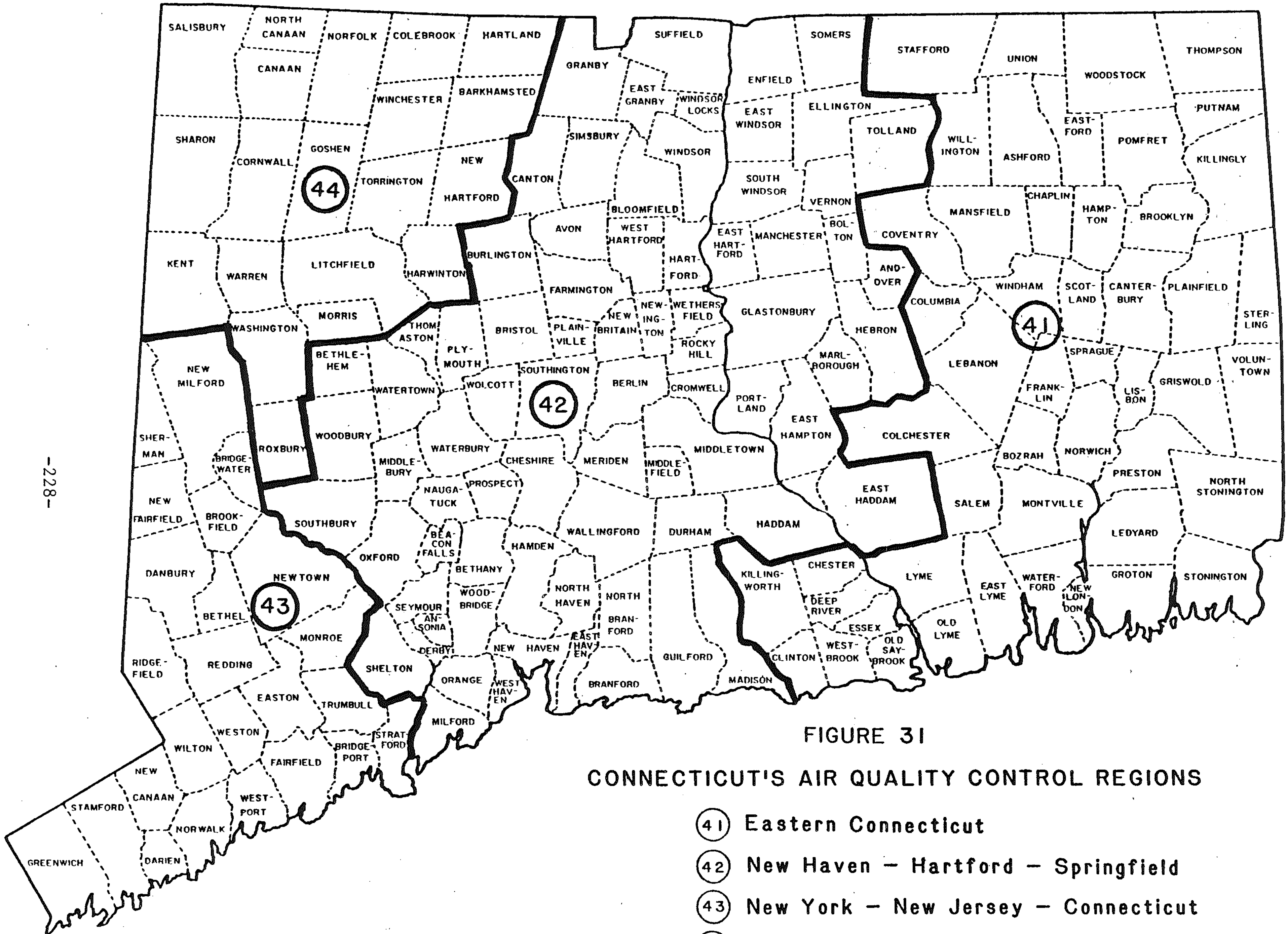


FIGURE 31

CONNECTICUT'S AIR QUALITY CONTROL REGIONS

(41) Eastern Connecticut

(42) New Haven – Hartford – Springfield

(43) New York – New Jersey – Connecticut

(44) Northwestern Connecticut

TABLE 33

CONNECTICUT'S COMPLIANCE WITH THE NAAQS (BY AQCR) FOR 1984

Pollutant	Primary or Secondary	NAAQS	AQCR 41	AQCR 42	AQCR 43	AQCR 44
TSP	Primary	Annual	A	A	A	A
		24-Hour	A	A	A	A
	Secondary	Annual	A	A	A	A
		24-Hour	X	X	X	X
SO_2	Primary	Annual	A	A	A	A
		24-Hour	A	A	A	A
	Secondary	3-Hour	A	A	A	A
Ozone	Both	1-Hour	X	X	X	X
NO_2	Both	Annual	A	A	A	A
CO	Both	1-Hour	A	A	A	A
		8-Hour	U	X	X	U
Lead	Both	3-Month	A	A	A	A

X = Non-Attainment
U = Unclassifiable
A = Attainment

XI. CONNECTICUT SLAMS AND NAMS NETWORK

On May 10, 1979, the U.S. Environmental Protection Agency made public its final rulemaking for ambient air monitoring and data reporting requirements in the "Federal Register" (Vol. 44, No. 92). These regulations are meant to ensure the acceptability of air measurement data, the comparability of data from all monitoring stations, the cost-effectiveness of monitoring networks, and timely data submission for assessment purposes. The regulations address a number of key areas including quality assurance, monitoring methodologies, network design and probe siting. Detailed requirements and specific criteria are provided which form the framework for ambient air quality monitoring. These regulations apply to all parties conducting ambient air quality monitoring for the purpose of supporting or complying with environmental regulations. In particular, state/local control agencies and industrial/private concerns involved in air monitoring are directly influenced by specific requirements, compliance dates and recommended guidelines.

Quality Assurance

The regulations specify the minimum quality assurance requirements for State and Local Air Monitoring Stations (SLAMS) networks, National Air Monitoring Stations (NAMS) networks, and Prevention of Significant Deterioration (PSD) air monitoring. Two distinct and equally important functions make up the quality assurance program: assessment of the quality of monitoring data by estimating their precision and accuracy, and control of the quality of the data by implementation of quality control policies, procedures, and corrective actions. (See Part E of Section I, Quality Assurance).

The data assessment requirements entail the determination of precision and accuracy for both continuous and manual methods. A one-point precision check must be carried out at least once every other week on each automated analyzer used to measure SO_2, NO_2, CO and O_3. Standards from which the precision check test data are derived must meet specifications detailed in the regulations. For manual methods, precision checks are to be accomplished by operating co-located duplicate samplers. In 1984, Connecticut maintained three co-located TSP monitors (Bridgeport 009, Hartford 003, and Waterbury 005) and two co-located lead samplers (New Haven 123 and Waterbury 123).

Accuracy determinations are accomplished by performing analyzer audits via special audit gases for automated analyzers, via reference flow devices for hi-vols, and via spiked strip analyses for lead. For SLAMS analyzers, accuracy audits must be performed on each analyzer at least once per calendar year. Each PSD analyzer must be audited at least once each calendar quarter.

All precision and accuracy data are derived through calculation methods specified by the regulations, with the results reported quarterly on Data Assessment Report Forms. The NAMS network is actually part of the SLAMS network; so the SLAMS accuracy determinations also apply to the NAMS network. The distinguishing characteristics of NAMS are: 1) only continuous instruments are used to monitor gaseous pollutants; 2) the regulations specify a minimum number and locations for them; and 3) the data, in addition to being included in the annual report, are reported quarterly to EPA.

In order to control the quality of data, the monitoring program must have operational procedures for each of the following activities:

1. Installation of equipment,
2. Selection of methods, analyzers, or samplers,
3. Zero/span checks and analyzer adjustments,
4. Calibration,
5. Control limits for zero/span and other control checks, and respective corrective actions when such limits are exceeded,

6. Control checks and their frequency,
7. Preventive and remedial maintenance,
8. Calibration and zero/span checks for multi-range analyzers,
9. Recording and validating data, and
10. Documentation of quality control information.

Monitoring Methodologies

Except as otherwise stated within the regulations, the monitoring method used must be "reference" or "equivalent," as designated by the EPA. Table 34 lists methods used in Connecticut's network in 1984 which were on the EPA-approved list as of 9/18/80. Additional updates to these approved methods are provided through the "Federal Register."

Network Design

The regulations also describe monitoring objectives and general criteria to be applied in establishing the SLAMS networks and for choosing general locations for new monitors. Criteria are also presented for determining the location and number of monitors. These criteria serve as the framework for all State Implementation Plan (SIP) monitoring networks that were to be complete and in operation by January 1, 1984.

The SLAMS network must be designed to meet four basic monitoring objectives: (1) to determine the highest pollutant concentration in the area; (2) to determine representative concentrations in areas of high population density; (3) to determine the ambient impact of significant sources or source categories; and (4) to determine general background concentration levels. Proper siting of a monitor requires precise specification of the monitoring objectives, which usually includes a desired spatial scale of representativeness. The spatial scales of representativeness are specified in the regulations for each pollutant and monitoring objective. The 1984 SLAMS and NAMS networks in Connecticut are presented and described in Table 35.

Probe Siting

Location and exposure of monitoring probes have been an area of confusion for a number of years because of conflicting guidelines and a lack of guidance or recommended criteria. The probe siting criteria promulgated in the regulations are specific. They are also sufficiently inclusive to define the requirements for ensuring the uniform collection of compatible and comparable air quality data.

These criteria are detailed by pollutant and include vertical and horizontal probe placement, spacing from obstructions and trees, spacing from roadways, probe material and sample residence time, as well as various other considerations. A summary of the probe siting criteria is presented in Table 36. The siting criteria generally apply to all spatial scales except where noted. The most notable exception is spacing from roadways which is dependent on traffic volume.

For the reactive gases SO_2, NO_2, and O_3, the regulations specify borosilicate glass, FEP teflon or their equivalent as the only acceptable probe materials. Additionally, in order to minimize the effects of particulate deposition on probe walls, sampling probes for reactive gases must have residence times of less than 20 seconds.

TABLE 34

U.S. EPA APPROVED MONITORING METHODS USED IN CONNECTICUT IN 1984

	Manual Methods	Automated Methods	
Pollutant	Reference	Reference	Equivalent
TSP	High Volume Method		
SO_2			Thermo Electron 43 (0.5)
CO		Bendix 8501-5CA (50)	
O_3		Bendix 8002 (0.5)	
NO_2		Thermo Electron 14 B/E (0.5)	
Lead	High Volume Method		

( ) = approved range in ppm

TABLE 35

1984 SLAMS AND NAMS SITES

SULFUR DIOXIDE

Town	Urban Area	Site	SLAMS or NAMS	Sampling & Analytic Method	Operating Schedule	Monitoring Objective	Spatial Scale and Representativeness
Bridgeport	Bridgeport	012	S	Pulsed Fluorescence	Contin.	High Conc.	Neighborhood
Bridgeport	Bridgeport	123	N	Pulsed Fluorescence	Contin.	High Conc.	Neighborhood
Danbury	Danbury	123	S	Pulsed Fluorescence	Contin.	Population	Neighborhood
E. Hartford	Hartford	005	S	Pulsed Fluorescence	Contin.	Population	Neighborhood
East Haven	New Haven	003	S	Pulsed Fluorescence	Contin.	Population	Neighborhood
Enfield	Springfield/ E. Windsor	005	S	Pulsed Fluorescence	Contin.	Background	Regional
Greenwich	Stamford	017	S	Pulsed Fluorescence	Contin.	Background	Urban
Groton	New London/ Norwich	007	S	Pulsed Fluorescence	Contin.	Population	Neighborhood
Hartford	Hartford	123	S	Pulsed Fluorescence	Contin.	High Conc.	Neighborhood
Milford	Bridgeport	002	S	Pulsed Fluorescence	Contin.	Source	Middle
New Britain	New Britain	011	S	Pulsed Fluorescence	Contin.	High Conc.	Neighborhood
New Haven	New Haven	017	S	Pulsed Fluorescence	Contin.	High Conc.	Neighborhood
New Haven	New Haven	123	N	Pulsed Fluorescence	Contin.	High Conc.	Neighborhood
Norwalk	Norwalk	013	S	Pulsed Fluorescence	Contin.	Population	Neighborhood
Preston	New London/ Norwich	002	S	Pulsed Fluorescence	Contin.	Background	Regional
Stamford	Stamford	025	S	Pulsed Fluorescence	Contin.	Population	Neighborhood
Stamford	Stamford	123	S	Pulsed Fluorescence	Contin.	High Conc.	Neighborhood
Waterbury	Waterbury	007	S	Pulsed Fluorescence	Contin.	High Conc.	Neighborhood
Waterbury	Waterbury	123	S	Pulsed Fluorescence	Contin.	Population	Neighborhood

NITROGEN OXIDES

Town	Urban Area	Site	SLAMS or NAMS	Sampling & Analytic Method	Operating Schedule	Monitoring Objective	Spatial Scale and Representativeness
Bridgeport	Bridgeport	123	S	Chemiluminescent	Contin.	High Conc.	Neighborhood
E. Hartford	Hartford	003	S	Chemiluminescent	Contin.	High Conc.	Neighborhhod
New Haven	New Haven	123	S	Chemiluminescent	Contin.	High Conc.	Neighborhood

OZONE

Town	Urban Area	Site	SLAMS or NAMS	Sampling & Analytic Method	Operating Schedule	Monitoring Objective	Spatial Scale and Representativeness
Bridgeport	Bridgeport	123	N	Chemiluminescent	Contin.	Population	Neighborhood
Danbury	Danbury	123	S	Chemiluminescent	Contin.	Population	Urban
E. Hartford	Hartford	003	N	Chemiluminescent	Contin.	Population	Neighborhood
Greenwich	Stamford	017	S	Chemiluminescent	Contin.	Background	Regional
Groton	New London/ Norwich	005	S	Chemiluminescent	Contin.	High Conc.	Urban
Middletown	Hartford	007	N	Chemiluminescent	Contin.	High Conc.	Urban
New Haven	New Haven	123	N	Chemiluminescent	Contin.	Population	Neighborhood
Stafford	NONE	001	N	Chemiluminescent	Contin.	High Conc.	Urban
Stratford	Bridgeport	007	N	Chemiluminescent	Contin.	High Conc.	Urban

TABLE 35, Continued

TOTAL SUSPENDED PARTICULATES

Town	Urban Area	Site	SLAMS or NAMS	Samp. Meth.	Analytic Method	Operating Schedule	Monitoring Objective	Spatial Scale and Representativeness
Ansonia	Bridgeport	003	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Bridgeport	Bridgeport	001	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Bridgeport	Bridgeport	009	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Bridgeport	Bridgeport	123	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
Bristol	Bristol	001	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Burlington	NONE	001	S	Hi-Vol	Gravimetric	6-day	Background	Regional
Danbury	Danbury	002	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
Danbury	Danbury	123	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
East Hartford	Hartford	004	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Greenwich	Stamford	008	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Groton	New London/ Norwich	006	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Hartford	Hartford	003	N	Hi-Vol	Gravimetric	6-day	High Conc. High Conc. '85	Neighborhood
Hartford	Hartford	013	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Hartford	Hartford	014	N	Hi-Vol	Gravimetric	6-day	High Conc. Pop. '85	Neighborhood
Manchester	Hartford	001	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Meriden	Meriden	002	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
Middletown	Hartford	003	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Milford	Bridgeport	002	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Morris	NONE	001	S	Hi-Vol	Gravimetric	6-day	Background	Regional
Naugatuck	Waterbury	001	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
New Britain	New Britain	007	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
New Britain	New Britain	008	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
New Britain	New Britain	009	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
New Haven	New Haven	002	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
New Haven	New Haven	013	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Norwalk	Norwalk	001	S	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
Norwalk	Norwalk	005	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
Norwalk	Norwalk	012	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Norwich	New London/ Norwich	001	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Norwich	New London/ Norwich	002	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Stamford	Stamford	001	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
Stamford	Stamford	007	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
Stamford	Stamford	021	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Stratford	Bridgeport	005	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Torrington	NONE	001	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Voluntown	NONE	001	S	Hi-Vol	Gravimetric	6-day	Background	Regional
Wallingford	New Haven	001	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Waterbury	Waterbury	005	N	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Waterbury	Waterbury	006	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood
Waterbury	Waterbury	007	N	Hi-Vol	Gravimetric	6-day	High Conc.	Neighborhood
Willimantic	NONE	002	S	Hi-Vol	Gravimetric	6-day	Population	Neighborhood

TABLE 35, Continued

LEAD

Town	Urban Area	Site	SLAMS or NAMS	Samp. Meth.	Analytic Method	Operating Schedule	Monitoring Objective	Spatial Scale and Representativeness
Ansonia	Bridgeport	003	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Bridgeport	Bridgeport	009	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Bridgeport	Bridgeport	010	S	Lo-Vol	Atomic Abs.	1-month	High Conc.	Middle
Bridgeport	Bridgeport	123	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Bristol	Bristol	001	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Danbury	Danbury	002	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Hartford	Hartford	014	N	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Hartford	Hartford	015	S	Lo-Vol	Atomic Abs.	1-month	High Conc.	Micro
Hartford	Hartford	016	N	Lo-Vol	Atomic Abs.	1-month	High Conc.	Micro
Meriden	Meriden	002	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Middletown	Hartford	003	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
New Britain	New Britain	007	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
New Haven	New Haven	016	S	Lo-Vol	Atomic Abs.	1-month	High Conc.	Micro
New Haven	New Haven	123	S	Hi-Vol	Atomic Abs.	6-day	High Conc.	Middle
Norwalk	Norwalk	012	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Stamford	Stamford	001	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Stamford	Stamford	022	S	Lo-Vol	Atomic Abs.	1-month	High Conc.	Neighborhood
Torrington	Torrington	123	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Wallingford	New Haven	001	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Waterbury	Waterbury	007	S	Hi-Vol	Atomic Abs.	6-day	Population	Neighborhood
Waterbury	Waterbury	123	S	Hi-Vol	Atomic Abs.	6-day	High Conc.	Middle

CARBON MONOXIDE

Town	Urban Area	Site	SLAMS or NAMS	Samp. Meth.	Analytic Method	Operating Schedule	Monitoring Objective	Spatial Scale and Representativeness
Bridgeport	Bridgeport	004	S	NDIR		Contin.	High Conc.	Micro
Hartford	Hartford	017	S	NDIR		Contin.	High Conc.	Micro
New Britain	New Britain	002	S	NDIR		Contin.	High Conc.	Micro
New Haven	New Haven	007	S	NDIR		Contin.	High Conc.	Micro
Stamford	Stamford	020	S	NDIR		Contin.	High Conc.	Micro

TABLE 36

SUMMARY OF PROBE SITING CRITERIA

Pollutant	Scale	Distance from Supporting Structure, Meters: Vertical	Distance from Supporting Structure, Meters: Horizontal[a]	Height Above Ground, Meters	Other Spacing Criteria
TSP	All		>2	2 - 15	1. Should be >20 meters from trees. 2. Distance from sampler to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler.[b] 3. Must have unrestricted airflow 270 degrees around the sampler. 4. No furnace or incineration flues should be nearby.[c] 5. Must have minimum spacing from roads. This varies with height of monitor and spatial scale.
SO_2	All	3 - 15	>1	>1	1. Should be >20 meters from trees. 2. Distance from inlet probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the inlet probe.[b] 3. Must have unrestricted airflow 270 degrees around the inlet probe, or 180 degrees if probe is on the side of a building. 4. No furnace or incineration flues should be nearby.[c]
CO	Micro	3 ± 1/2	>1	>1	1. Must be >10 meters from intersection and should be at a midblock location. 2. Must be 2-10 meters from edge of nearest traffic lane. 3. Must have unrestricted airflow 180 degrees around the inlet probe.
	Middle Neighborhood	3 - 15	>1	>1	1. Must have unrestricted airflow 270 degrees around the inlet probe, or 180 degrees if probe is on the side of a building. 2. Spacing from roads varies with traffic.[d]

TABLE 36, Continued

Pollutant	Scale	Distance from Supporting Structure, Meters: Vertical	Distance from Supporting Structure, Meters: Horizontal[a]	Height Above Ground, Meters	Other Spacing Criteria
O_3	All	>1	>1	3 - 15	1. Should be >20 meters from trees. 2. Distance from inlet probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the inlet probe. 3. Must have unrestricted airflow 270 degrees around the inlet probe, or 180 degrees if probe is on the side of a building. 4. Spacing from roads varies with traffic.[d]
NO_2	All	3 - 15	>1	>1	1. Should be >20 meters from trees. 2. Distance from inlet probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the inlet probe.[b] 3. Must have unrestricted airflow 270 degrees around the inlet probe, or 180 degrees if probe is on the side of a building. 4. Spacing from roads varies with traffic.[d]

[a] When probe is located on rooftop, this separation distance is in reference to walls, parapets, or penthouses located on the roof.
[b] Sites not meeting this criterion would be classified as middle scale.
[c] Distance is dependent on height of furnace or incineration flue, type of fuel or waste burned, and quality of fuel (sulfur and ash content). This is to avoid undue influences from minor pollutant sources.
[d] Distance is dependent upon traffic ADT, pollutant and spatial scale.

XII. EMISSIONS INVENTORY

Connecticut's computerized emissions inventory contains two separate components – a *point* source file of 12,000 stationary sources and an *area* source file of small sources. Area sources, such as home furnaces and transportation activities, are too small to be treated individually. The Compilation of Air Pollutant Emission Factors, designated as EPA publication no. AP-42, was used to compute estimated emissions for both point and area sources. Emission factors for motor vehicles were calculated at an annual average temperature of 50°F using EPA MOBILE3.

Table 37 summarizes the actual annual in-state emissions of each of the five (5) major air pollutants in Connecticut – TSP, SO_2, CO, VOC, and NO_2 – by county, for 1984. The table reveals two things. First, the most populous counties have the largest pollutant totals; second, excluding SO_2, which is largely generated by utilities, area sources (mobile sources in particular) account for the bulk of the total emissions.

County names and geographic locations are displayed in Figure 32, which also serves as a reference for the charts that follow.

Figures 33 through 47 give various visual displays of the level of emissions for each of the major air pollutants. Figures 33, 36, 39, 42, and 45 are pie charts that show the percent of each air pollutant for Connecticut's eight (8) counties. Figures 34, 37, 40, 43, 46 are pictorial displays of emissions by county, where the darker areas indicate higher emission levels. Figures 35, 38, 41, 44, 47 are three dimensional graphs of each county's contribution to statewide emissions.

TABLE 37

1984 CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
EMISSIONS INVENTORY BY COUNTY*

		TONS PER YEAR				
		TSP	SO2	CO	VOC	NOX
Fairfield	Area	8,932.5	4,418.2	159,224.3	34,916.7	28,915.1
	Point	1,773.9	27,848.0	3,922.3	5,222.4	9,069.8
		10,706.4	32,266.2	163,146.6	40,139.1	37,984.9
Hartford	Area	9,776.1	4,472.5	165,896.7	36,226.0	29,700.8
	Point	812.8	3,594.6	656.8	3,881.0	2,999.0
		10,588.9	8,067.1	166,553.5	40,107.0	32,699.8
Litchfield	Area	2,735.8	901.5	35,178.8	9,421.3	5,739.1
	Point	185.4	632.7	58.8	853.3	241.3
		2,921.2	1,534.2	35,237.6	10,274.6	5,980.4
Middlesex	Area	2,442.7	898.6	33,827.3	8,398.3	5,924.0
	Point	773.6	7,874.3	550.5	872.0	6,069.1
		3,216.3	8,772.9	34,377.8	9,270.3	11,993.1
New Haven	Area	8,676.5	4,080.1	131,648.3	30,880.9	25,015.0
	Point	1,124.5	25,567.7	931.5	5,927.5	8,058.6
		9,801.0	29,647.8	132,579.8	36,808.4	33,073.6
New London	Area	4,115.3	1,552.8	59,699.3	14,667.1	10,412.6
	Point	1,149.9	13,883.5	475.0	1,647.7	4,237.2
		5,265.2	15,436.3	60,174.3	16,314.8	14,649.8
Tolland	Area	2,241.8	698.9	31,093.8	7,702.0	5,599.4
	Point	116.5	978.3	49.2	135.0	337.8
		2,358.3	1,677.2	31,143.0	7,837.0	5,937.2
Windham	Area	2,006.1	557.6	24,687.2	6,411.3	3,958.0
	Point	238.6	460.1	789.2	1,656.7	313.3
		2,244.7	1,017.7	25,476.4	8,068.0	4,271.3
TOTAL	AREA	40,926.8	17,580.1	641,255.8	148,623.7	115,264.1
	POINT	6,165.1	80,839.2	7,433.2	20,195.7	31,326.0
		47,091.9	98,419.3	648,689.0	168,819.4	146,590.1

* This inventory is based on actual operating data for 1984, such as actual fuel use and actual material throughputs. NOX emissions are expressed as NO2.

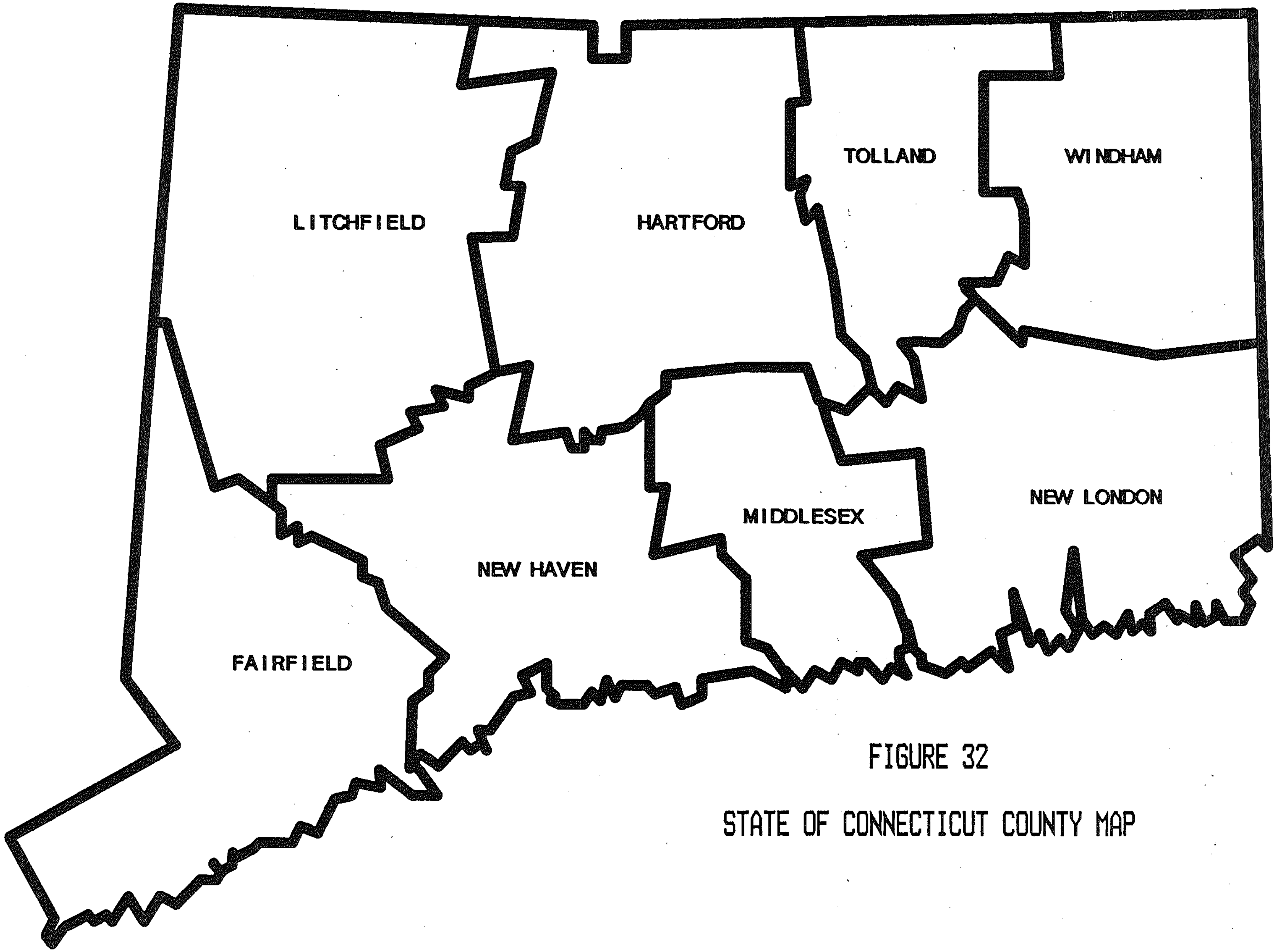


FIGURE 32

STATE OF CONNECTICUT COUNTY MAP

FIGURE 33

1984 CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
EMISSIONS INVENTORY BY COUNTY
TOTAL SUSPENDED PARTICULATES

TOTAL TONS PER YEAR - 47,092

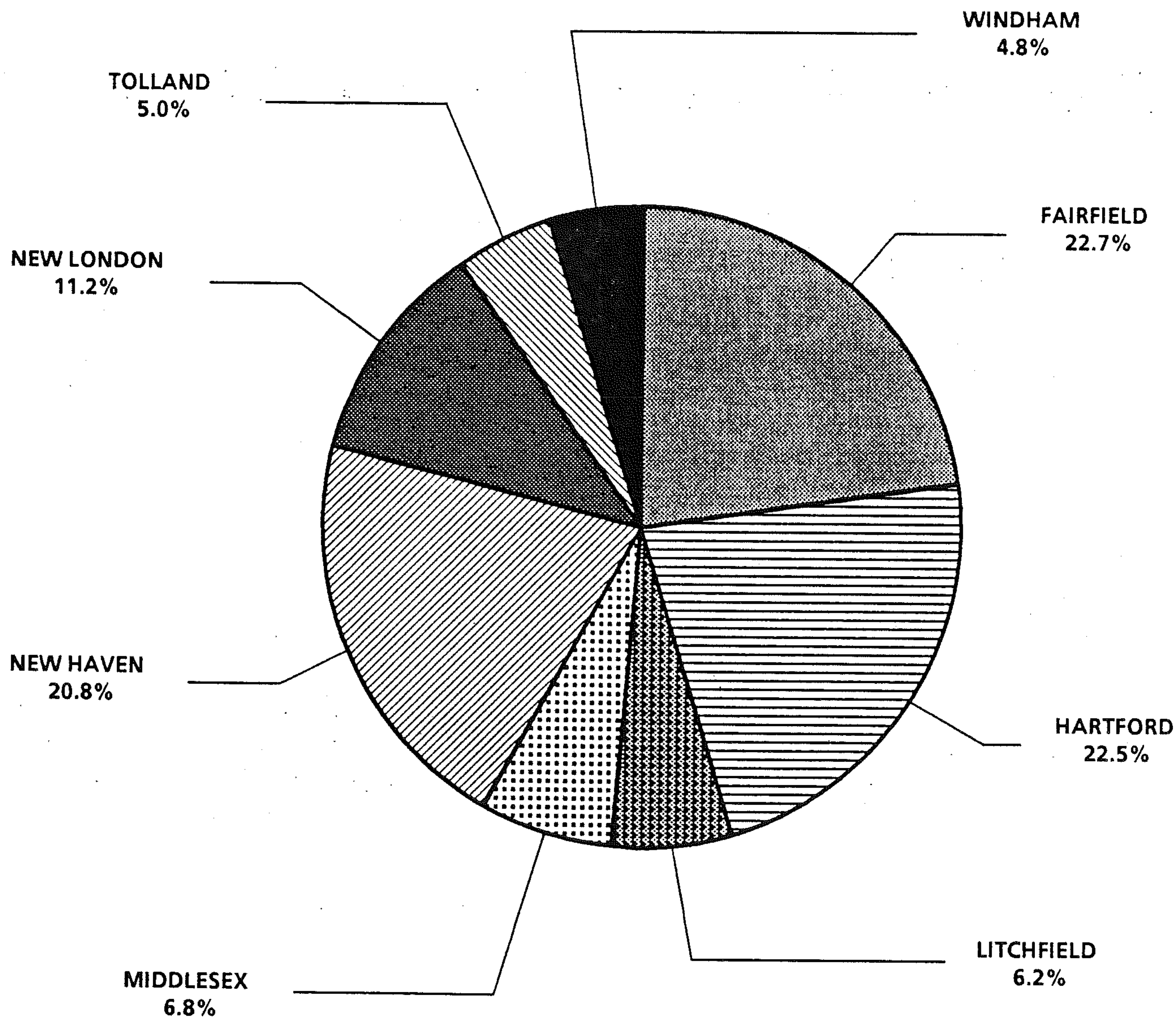


Figure 34

1984 TOTAL SUSPENDED PARTICULATES

Total Emissions by County

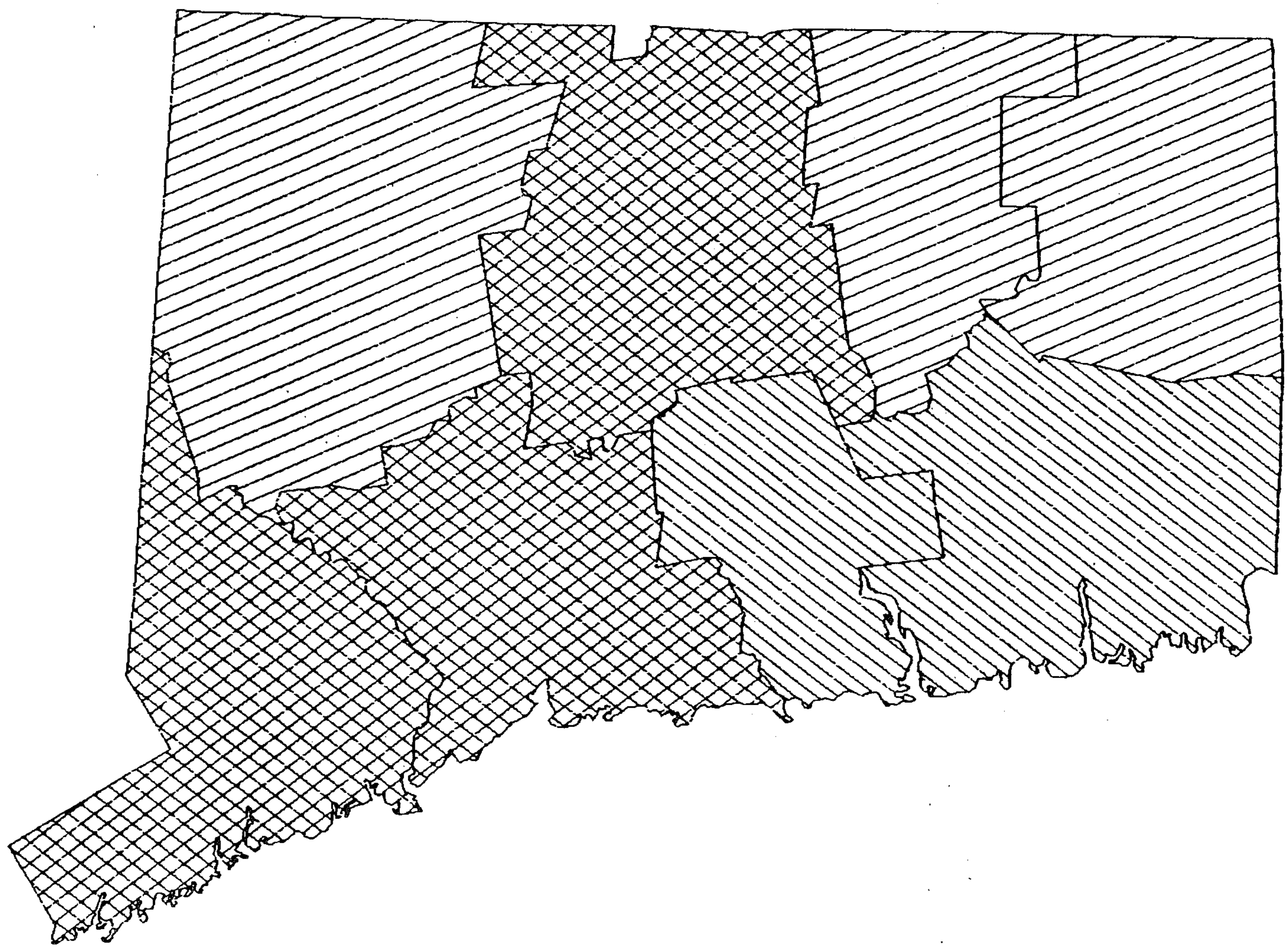
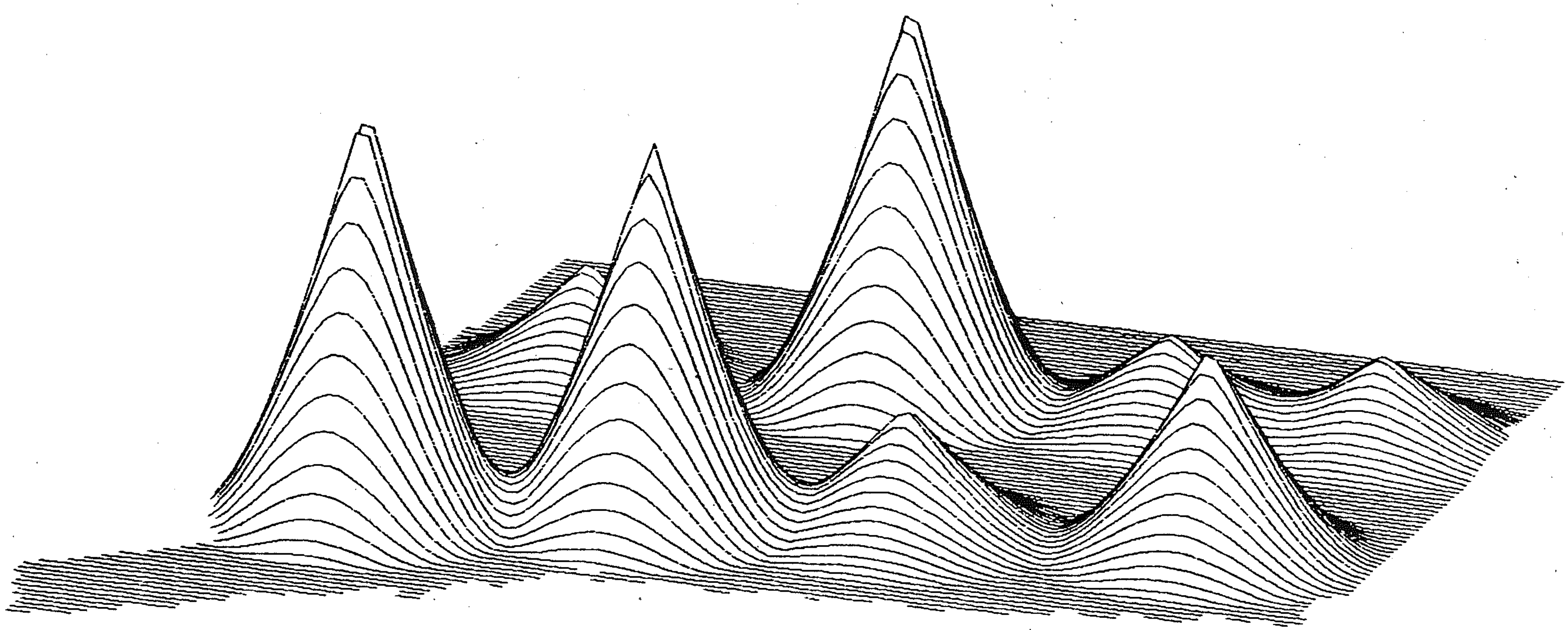


Figure 35

1984 TOTAL SUSPENDED PARTICULATES

Total Emissions by County



Three Dimensional View of TSP Emissions

FIGURE 36

1984 CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION EMISSIONS INVENTORY BY COUNTY SULFUR DIOXIDE

TOTAL TONS PER YEAR - 98,419

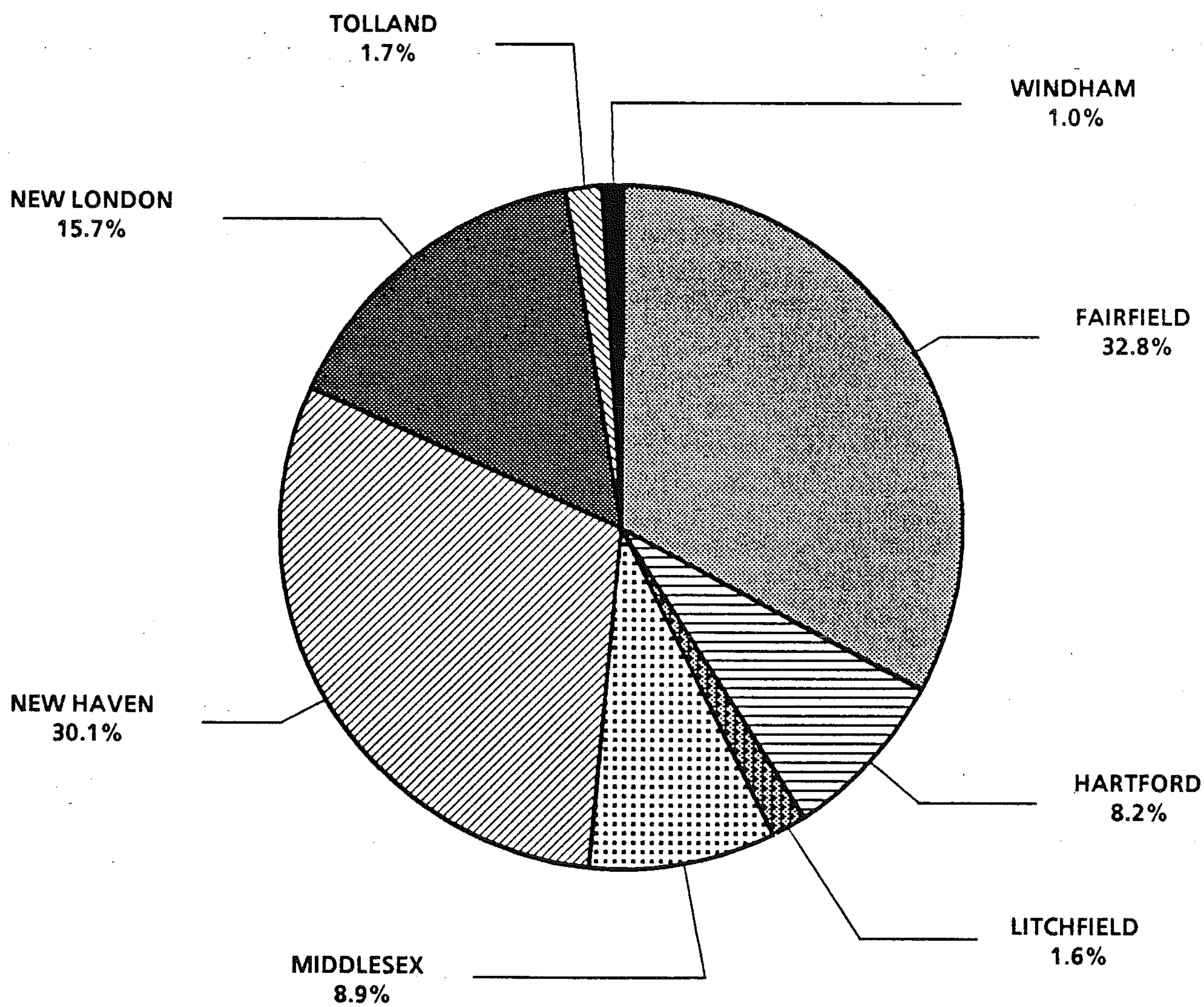


Figure 37

1984 SULFUR DIOXIDE

Total Emissions by County

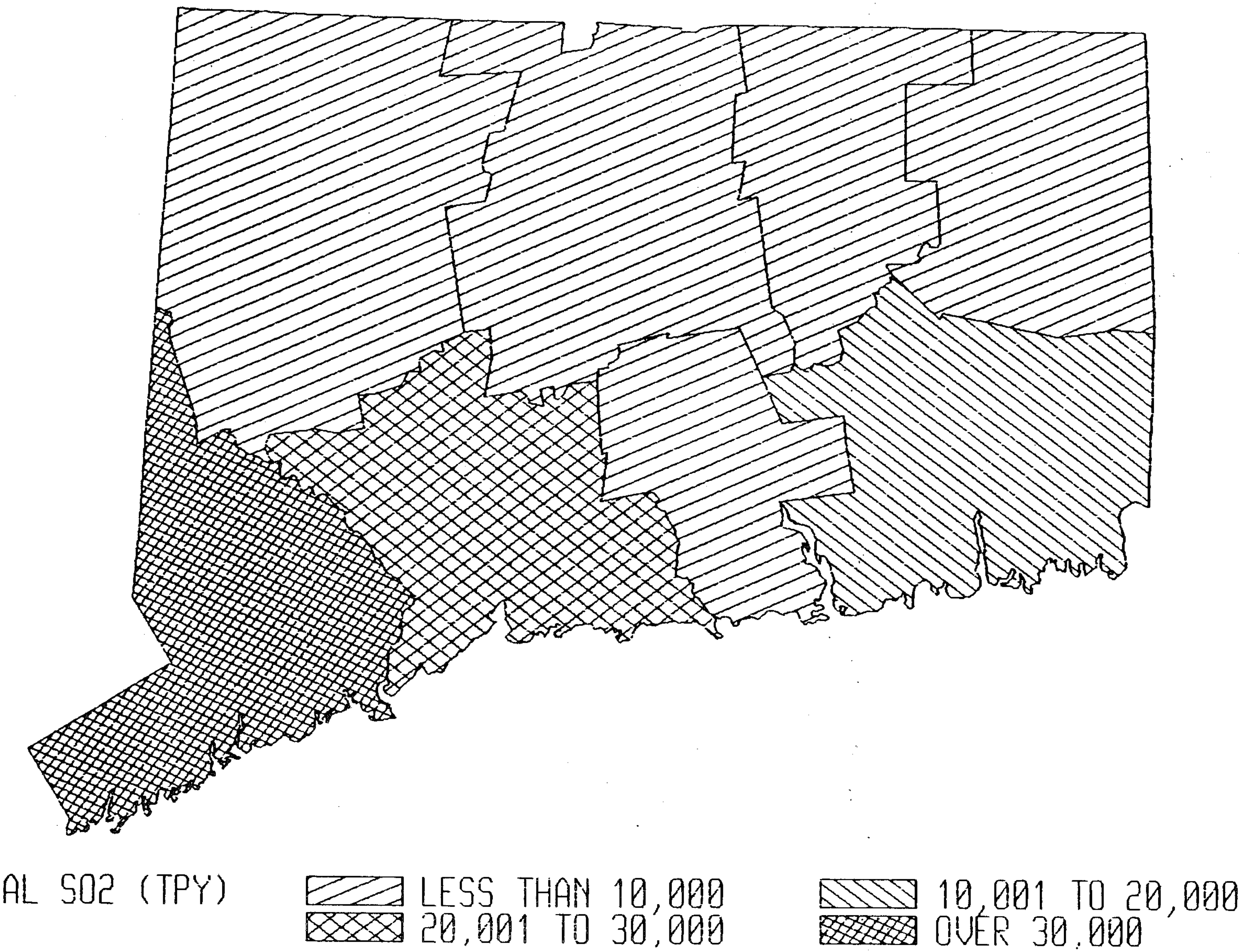
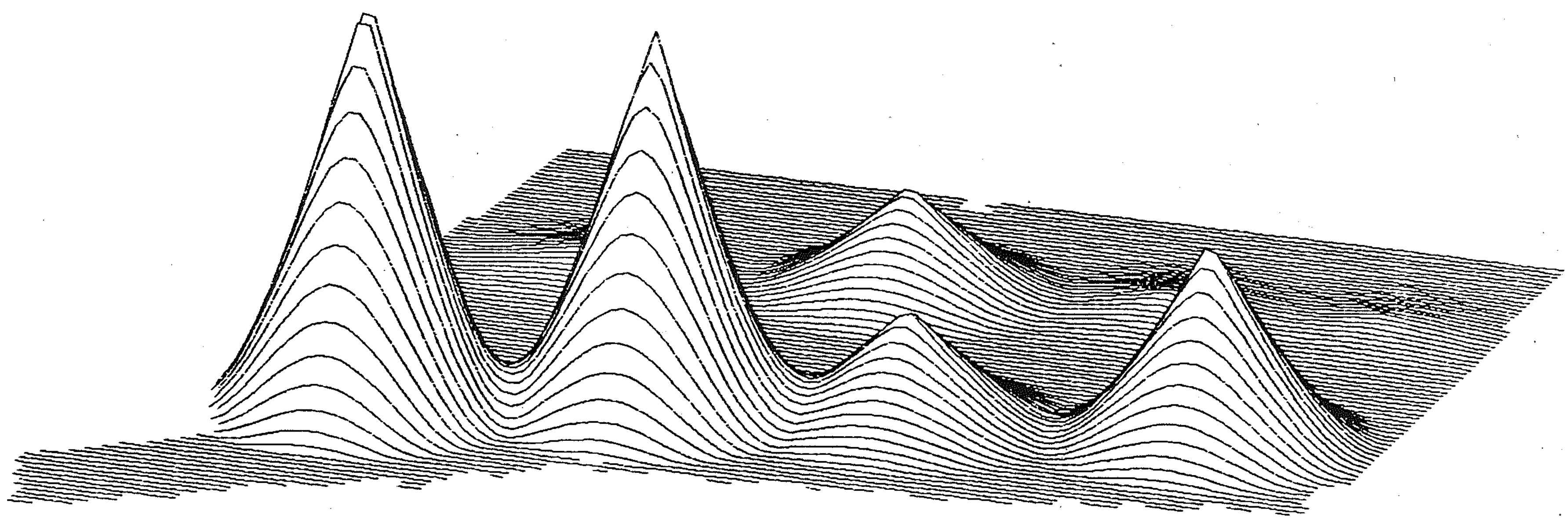


Figure 38

1984 SULFUR DIOXIDE

Total Emissions by County



Three Dimensional View of SO_2 Emissions

FIGURE 39

1984 CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
EMISSIONS INVENTORY BY COUNTY
CARBON MONOXIDE

TOTAL TONS PER YEAR - 648,689

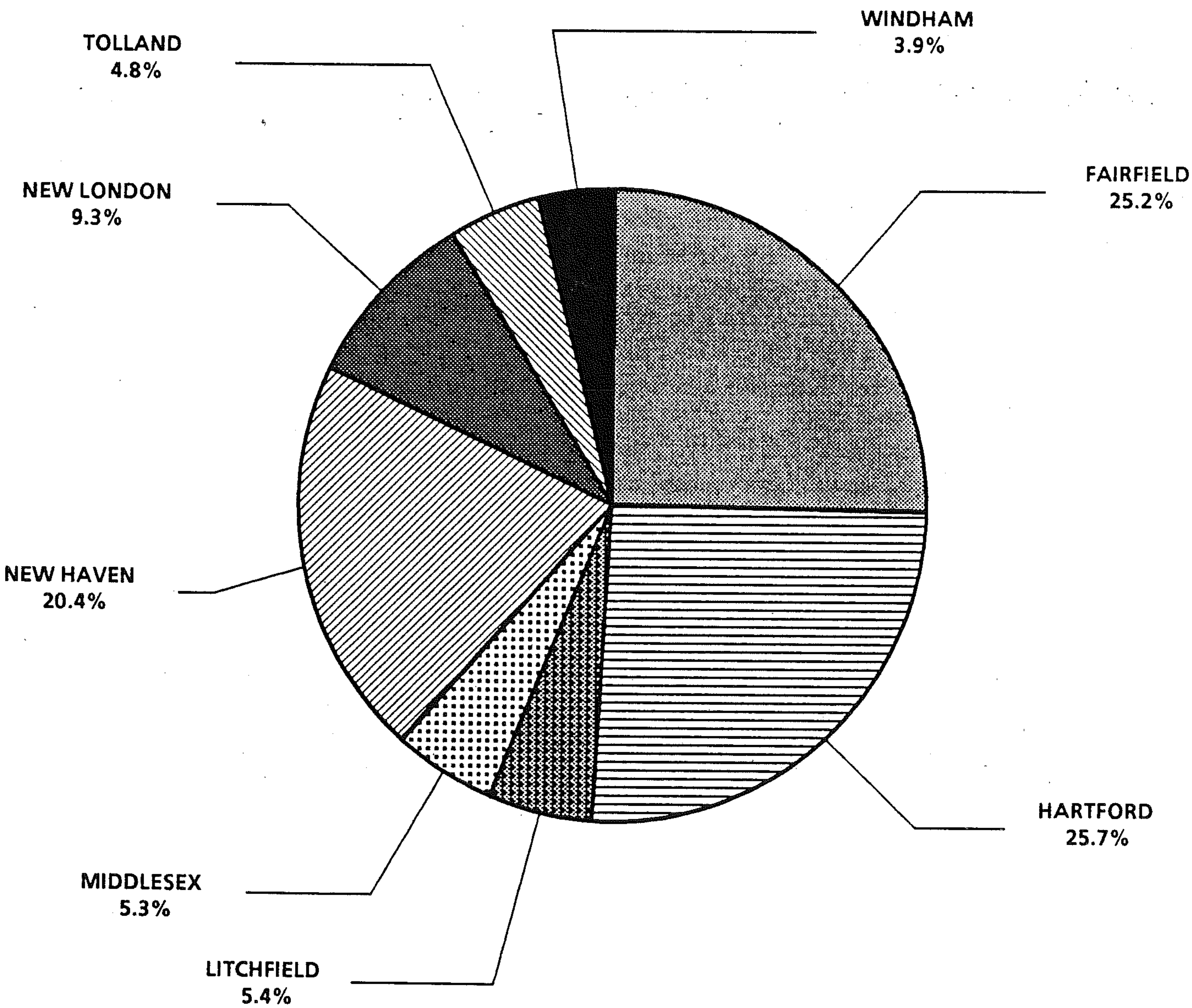


Figure 40

1984 CARBON MONOXIDE

Total Emissions by County

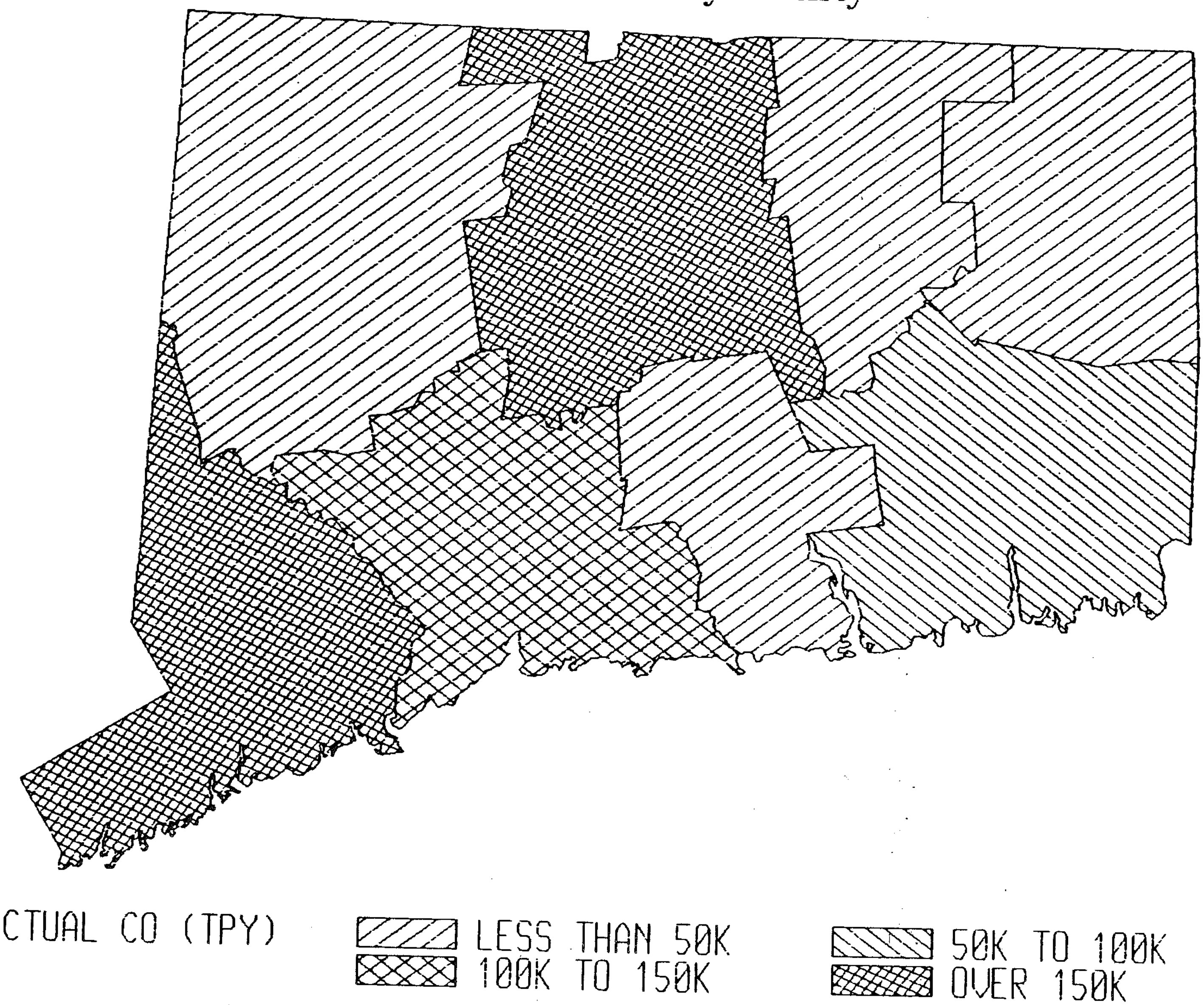
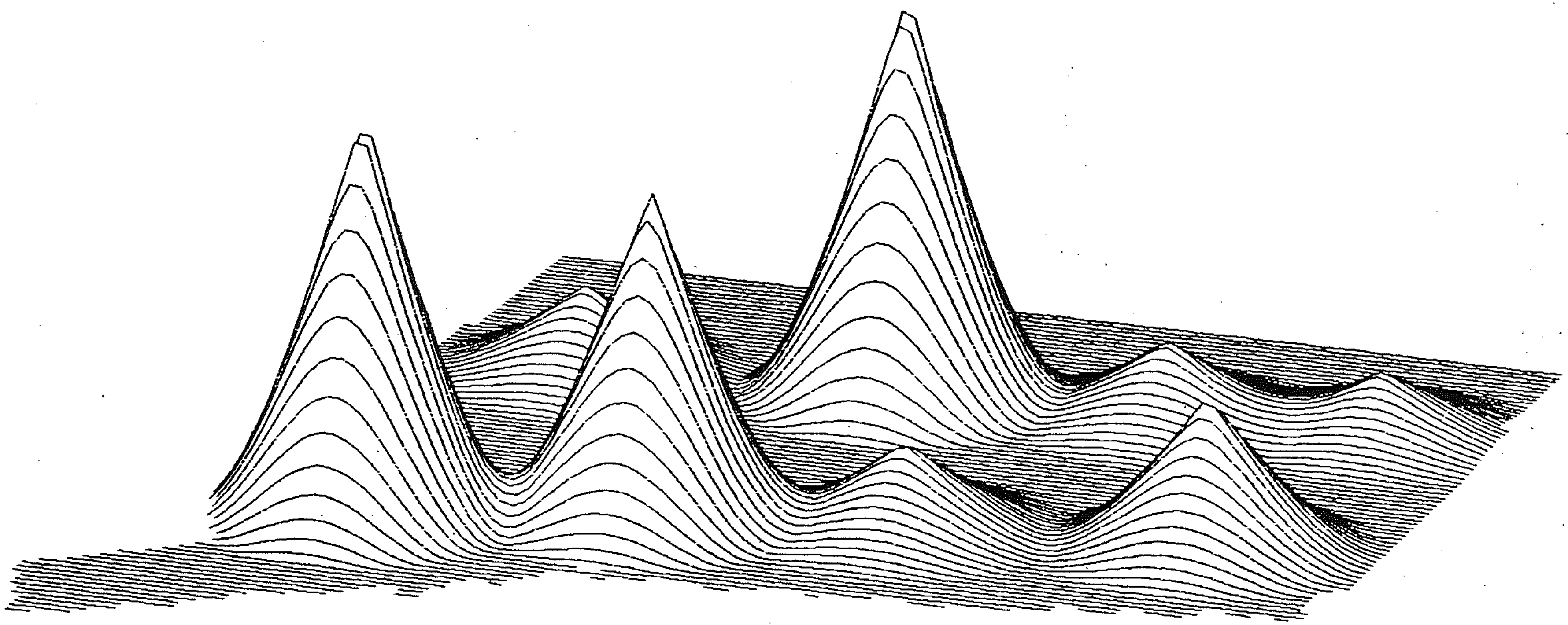


Figure 41

1984 CARBON MONOXIDE

Total Emissions by County



Three Dimensional View of CO Emissions

FIGURE 42

1984 CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION EMISSIONS INVENTORY BY COUNTY VOLATILE ORGANIC COMPOUNDS

TOTAL TONS PER YEAR - 168,936

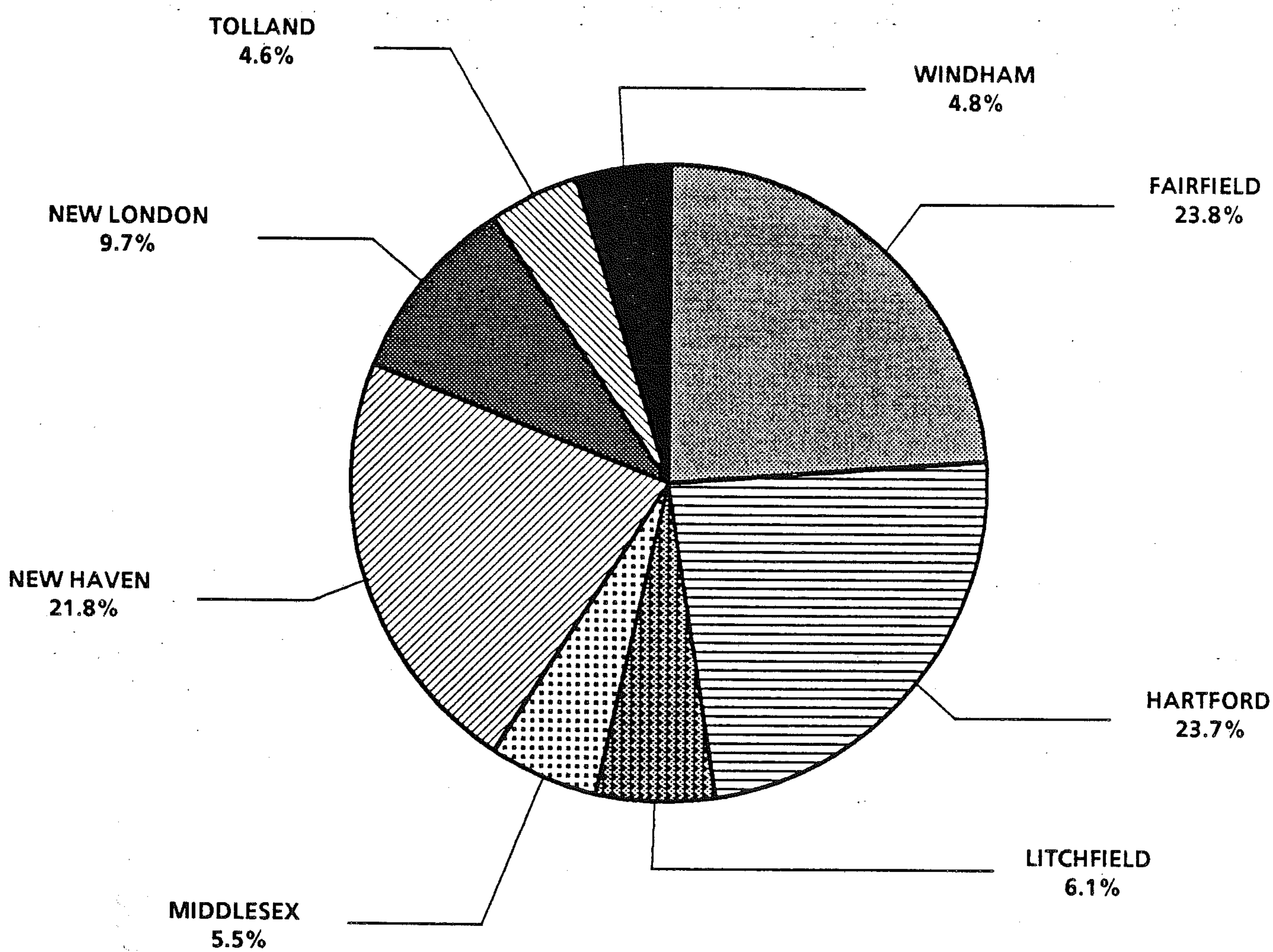


Figure 43

1984 VOLATILE ORGANIC COMPOUNDS

Total Emissions by County

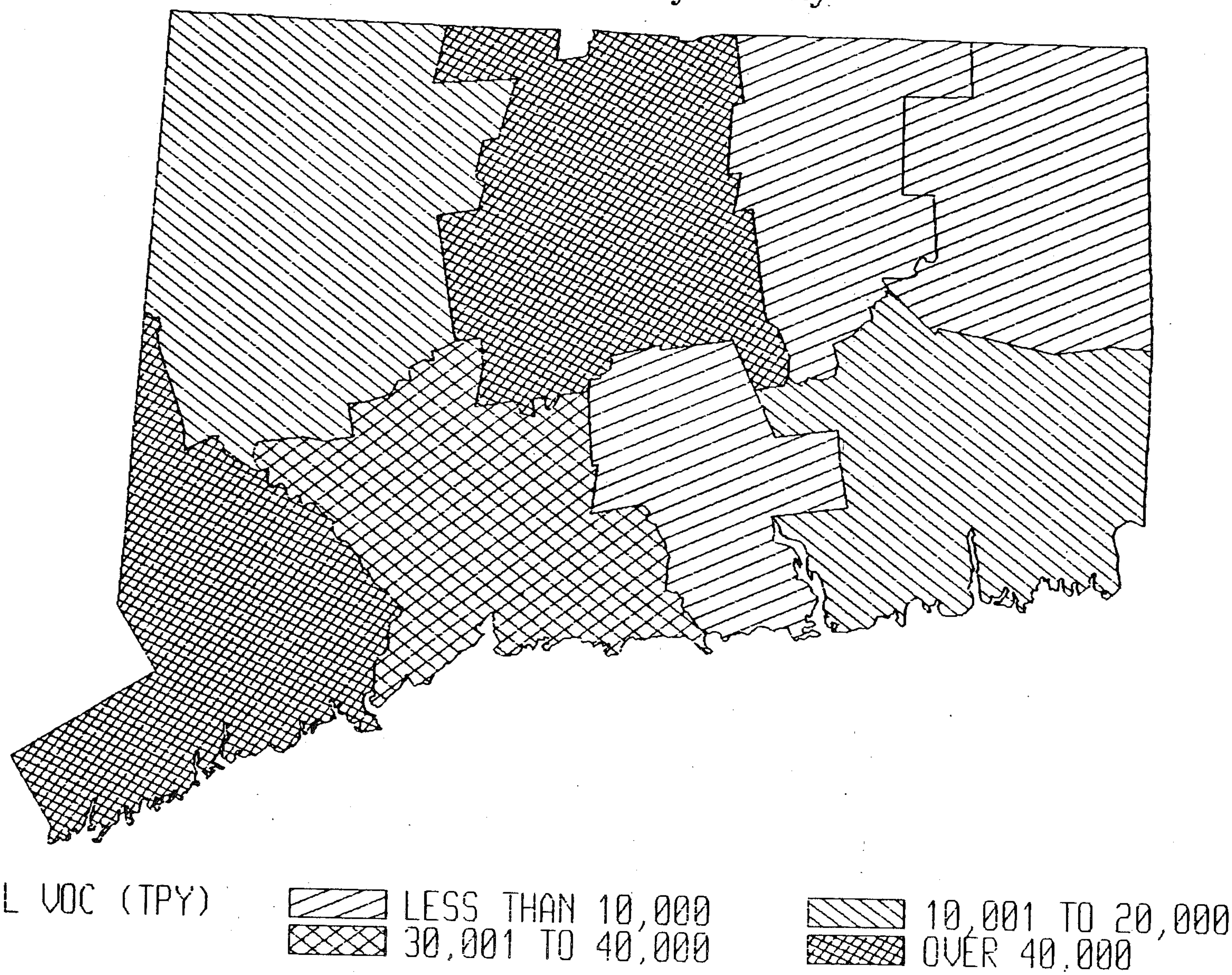
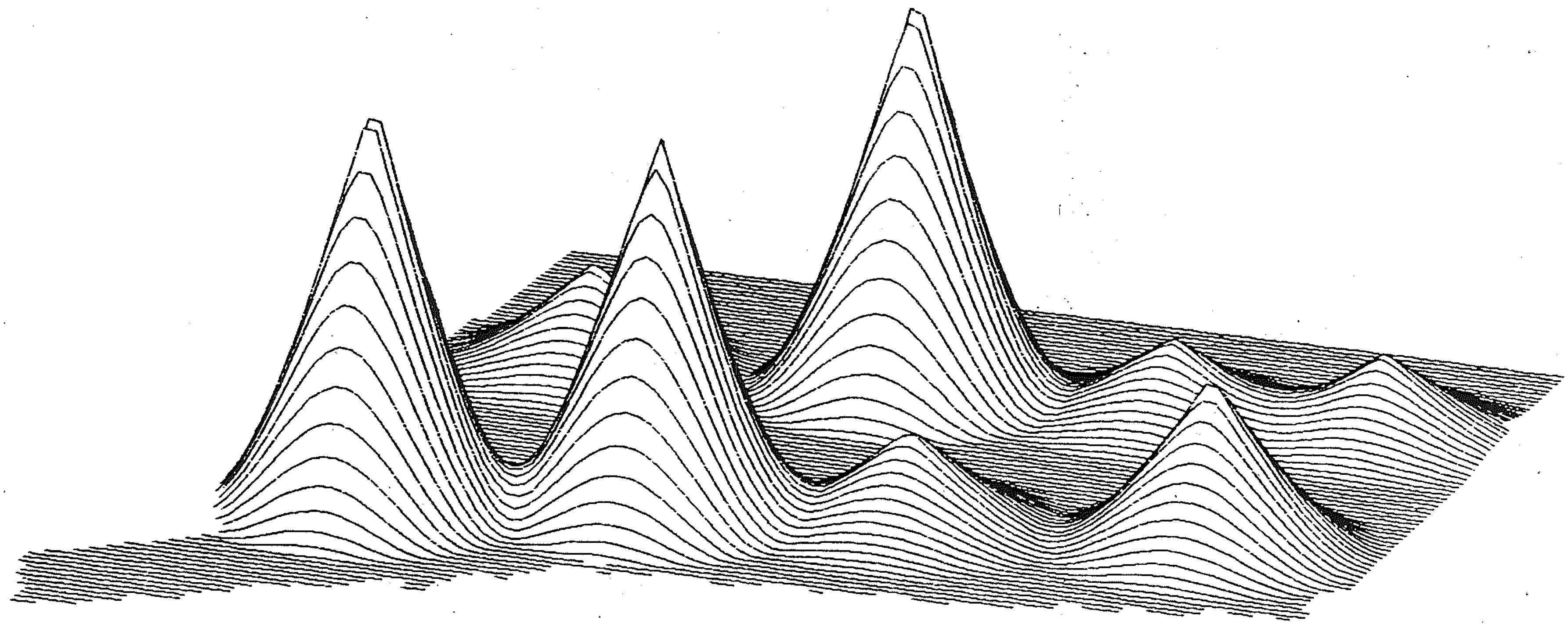


Figure 44

1984 VOLATILE ORGANIC COMPOUNDS

Total Emissions by County



Three Dimensional View of VOC Emissions

FIGURE 45

1984 CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
EMISSIONS INVENTORY BY COUNTY
NITROGEN OXIDES, EXPRESSED AS NO_2

TOTAL TONS PER YEAR - 146,590

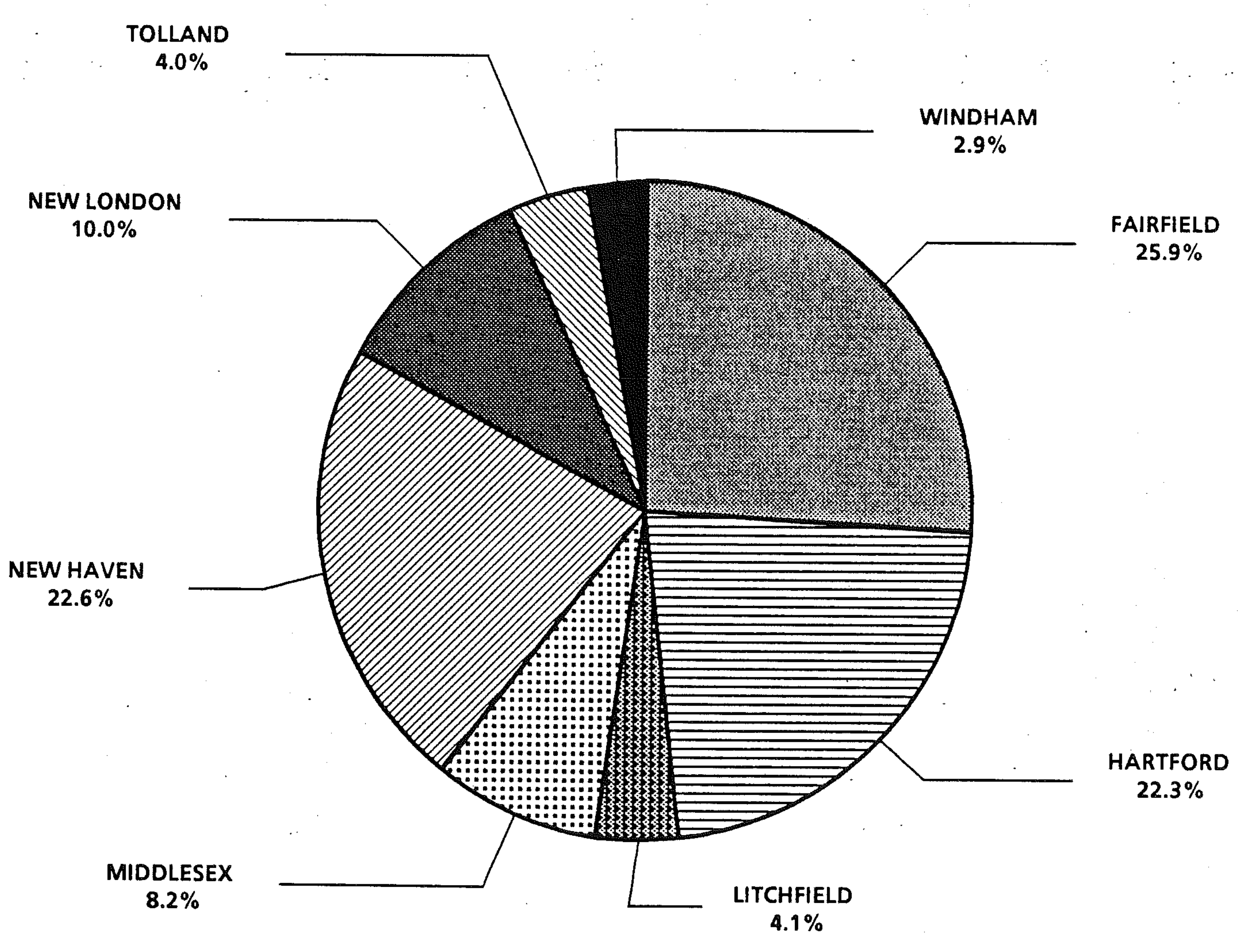
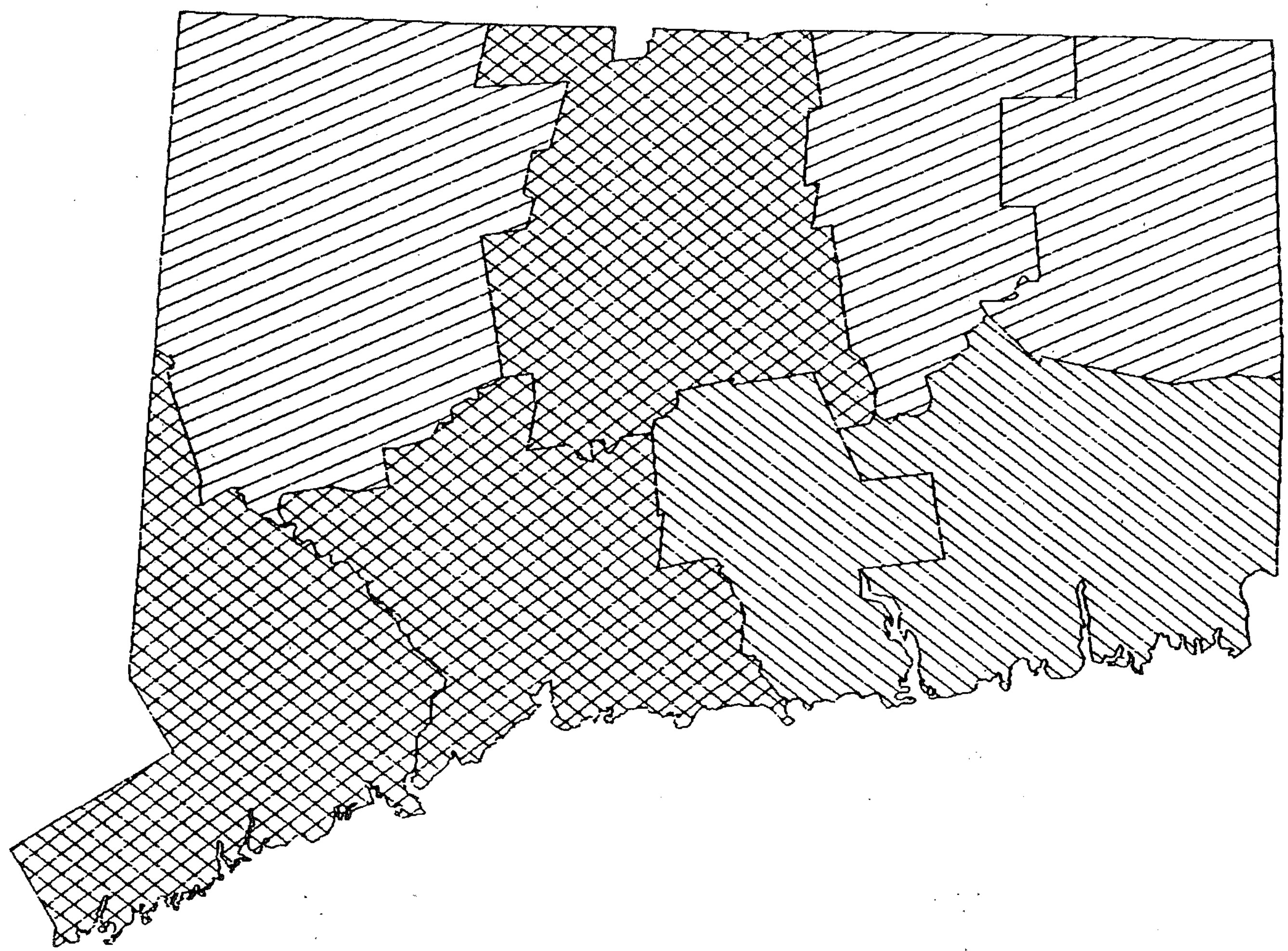


Figure 46

1984 NITROGEN OXIDES

(Expressed as Nitrogen Dioxide)

Total Emissions by County



ACTUAL NO2 (TPY)

LESS THAN 10,000

OVER 30,000

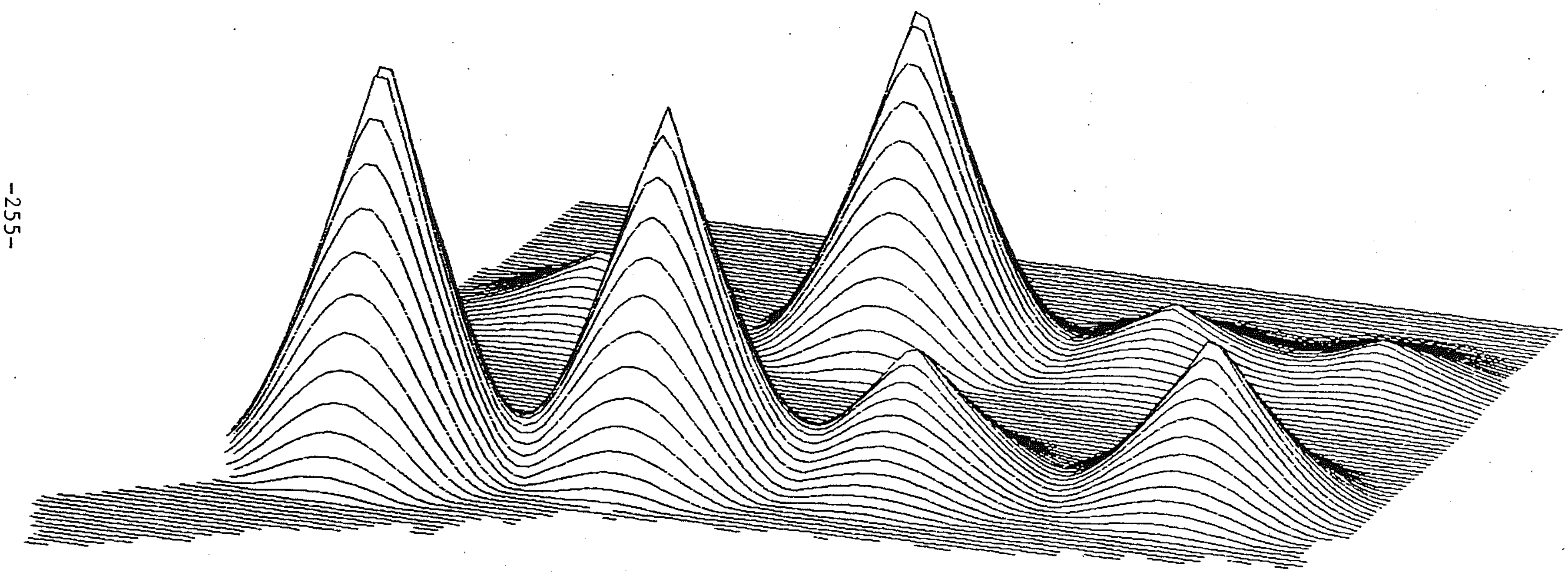
10,001 TO 20,000

Figure 47

1984 NITROGEN OXIDES

(Expressed as Nitrogen Dioxide)

Total Emissions by County



Three Dimensional View of NO2 Emissions

27. Wolff, G.T., P.J. Lioy, and G.D. Wight, *"An Overview of the Current Ozone Problem in the Northeastern and Midwestern U.S.,"* In: Proceed. Mid-Atlantic States APCA Conf. on Hydrocarbon Control Feasibility, p. 98, New York, N.Y., April, 1977.

28. Wolff, G.T., P.J. Lioy, G.D. Wight, R.E. Meyers, and R.T.Cederwall, *"An Investigation of Long-Range Transport of Ozone Across the Midwestern and Eastern U.S.,"* Atmos. Environ. 11:797 (1977).

XIV. ERRATA

During the preparation of this document, a number of errors were discovered and corrected. In order to prevent any confusion in the mind of the reader over conflicting data presented in this and previous editions of this document, the errors and corrections are presented below:

- Regarding the 1983 Air Quality Summary,

  1. In Section IV, on page 116, in the second paragraph, the last sentence should say that the largest increase is 0.096 ppm, not 96 ppm.
  2. In Section XI, Table 35 should be amended as follows:

     a. Under ozone, the urban area for the town of Stafford should be "none";

     b. Under total suspended particulates, the urban area for the town of New Britain should be New Britain; for the town of Milford should be Bridgeport; and for the town of Willimantic should be "none"; and

     c. Under ozone, total suspended particulates and lead, the urban area for Middletown should be Hartford.

- Regarding previous Air Quality Summaries, Table 33 in the 1981 Summary and Table 32 in the 1982 Summary should be amended as specified in item 2 above.

Errata reported in the 1983 Air Quality Summary

- Regarding 1968 TSP data, all references to site Greenwich 003 should be ignored. This site had insufficient data for a valid annual average concentration.

- Regarding 1969 TSP data, the annual geometric mean concentration for site Naugatuck 001 has been changed from 92.6 to 92.5 ug/m^3.

- Regarding 1971 TSP data, the annual geometric mean concentration for site Norwalk 001 has been changed from 57.0 to 57.1 ug/m^3.

- Regarding 1972 TSP data,

  1. The annual geometric mean concentration for site New Haven 001 has been changed from 54.8 to 54.9 ug/m^3, and
  2. All references to site Enfield 003 should be ignored. This site was not part of the official particulate sampling network.

- Regarding 1968-1972 TSP data, all references to the following monitoring sites should be ignored: Bridgeport A 001, Hartford A 001, New Haven A 001, and Waterbury A 001. Questions about the handling of the sample filters are serious enough to invalidate all data from these sites.

- Regarding 1980 TSP data, the following corrections have been made:

    1. **Bridgeport 001:** The number of samples for the year has been changed from 57 to 58, and the annual geometric mean concentration has been changed from 47.8 to 47.6 ug/m^3.

    2. **Bridgeport 123:** the annual geometric mean concentration has been changed from 64.2 to 63.8 ug/m^3.

    3. **Greenwich 016:** All references to this site should be ignored. This site is considered to have been unsuitably located for acceptable particulate monitoring.

    4. **Morris 001:** The standard deviation of the sampling data has been changed from 1.567 to 1.557.

- Regarding 1981 TSP data, the following corrections have been made:

    1. **Bristol 001:** The number of samples for the year has been changed from 55 to 58, and the annual geometric mean concentration has been changed from 34.1 to 34.6 ug/m^3.

- Regarding TSP data for the years 1975 through 1981, all references to sites Torrington 123 and Waterbury 123 should be ignored. These sites are now considered to have been unsuitably located for acceptable particulate monitoring.

- The above corrections, where relevant, are implicit in Table 2 and Table 8 of the 1982 Air Quality Summary. Accordingly, versions of these tables found in post-1974 (and pre-1982) editions of this document contain erroneous information and should be ignored or appropriately footnoted.

- Regarding Table 2, some of the earlier editions of this document have contained versions of this table which appeared to present annual "arithmetic" mean data. This is incorrect. All versions of this table contain annual "geometric" mean data.