

2002 To 2004 Air Quality Annual Report



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Department of Environmental Management
Air Quality Division
Pinellas County, Florida

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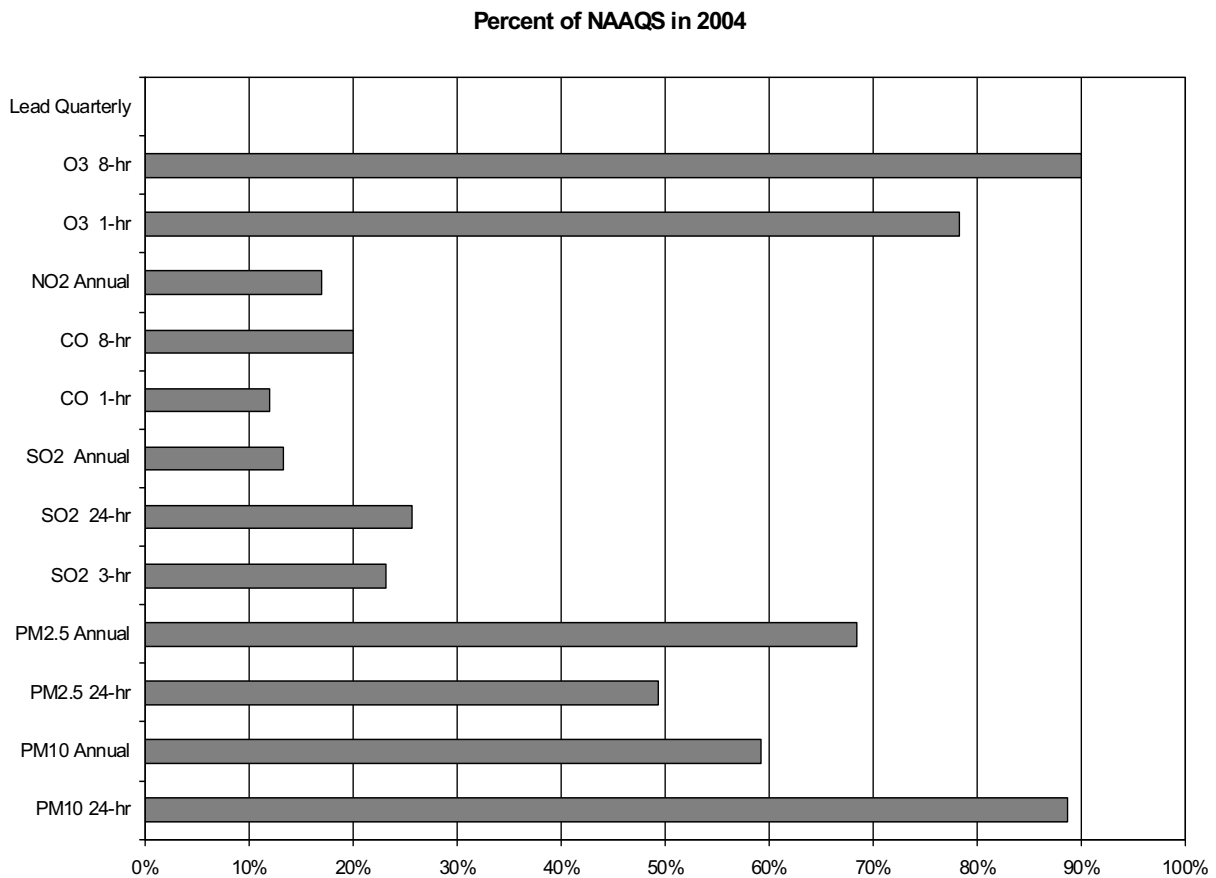
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EXECUTIVE SUMMARY

The Air Quality Division is dedicated to protect and preserve or enhance the air quality within Pinellas County. The following items represent milestones accomplished during the calendar years 2002 through 2004.

- National Ambient Air Quality Standards (NAAQS) have been established for the following pollutants: 1. Ozone; 2. Particulate Matter (fine and coarse/PM); 3. Carbon Monoxide; 4. Sulfur Dioxide; 5. Nitrogen Dioxide; and 6. Lead. Ozone and fine particulate matter are the pollutants of concern for Pinellas County. During past calendar years, the County had been out of compliance with the NAAQS for Ozone and is currently designated as a maintenance area for Ozone (meeting the standard, but bound by specific regulatory commitments to prevent backsliding into non-compliance). In 2002, the Supreme Court upheld revised standards the EPA established for Ozone and fine PM. The Tampa Bay area has met these new standards for the 2002-2004 evaluation period and will be listed as an attainment area during the upcoming federal area redesignation processes. The County continues to be in compliance with all other established NAAQS as shown in the graph below.



- The Air Quality Index (AQI) is a national standard for reporting daily air quality to the public in an understandable, health related manner. The AQI has six categories: 1. Good; 2. Moderate; 3. Unhealthy for Sensitive Groups; 4. Unhealthy; 5. Very Unhealthy; and 6. Hazardous. AQI values that fall into category 3 and higher represent monitoring values higher than the NAAQS. These days are considered unhealthy air quality days and require public cautionary statements. The AQI is available in the St. Petersburg Times, by phone (464-3392), the Air Quality Division's Website (www.pinellascounty.org/Environment/default.htm), and EPA's Airnow Website (www.airnow.gov). During 2004 the County had 300 Good days and 66 Moderate days.
- The Division continued to conduct air toxics monitoring (metals, carbonyls, and volatile organic compounds) at two locations (Azalea Park and Dunedin/Clearwater/Skyview Elementary during the period 2002 to 2004. The Hillsborough County Environmental Protection Commission (EPC) remains a partner in the toxics monitoring program and had two additional monitoring sites in their jurisdiction. Each county agency shares data, performs cost effective sampling analysis, etc. In the future, the Division will continue monitoring for air toxics as EPA develops and prioritizes the national air toxics program strategy. Of importance is the selection of this location for a national air toxics monitoring site (i.e. used to determine national trends and establish policy). Data analysis to date indicates that there are several chemicals (e.g. benzene and formaldehyde) in Pinellas County with concentrations above cancer benchmark levels that warrant continued investigation.
- The Division's Compliance and Enforcement Section continues to be aggressive in its compliance activities (facility inspections and enforcement activities), as well as, response to citizen complaints. The Section conducted 2,695 inspections and responded to 1,207 citizen's complaints during the period 2002 to 2004. In addition, reported stationary source emissions remained stable during this period.
- Program Priority Areas:
 1. Air Toxics - Continue monitoring and data assessment; Implementation of toxic source regulations as they are finalized by EPA; Selection and development of a NATTS site.
 2. NAAQS Regulatory Program Changes - Work with EPA and FDEP to establish area NAAQS designation and implement the revised ozone and fine particulate matter standards (e.g. revise State Implementation Plan).
 3. Public Outreach – Implement programs for forecasting ozone and particulate matter air quality.
 4. Compliance/Enforcement – Source Inspections (e.g. Title V and regulated toxic sources); the Asbestos and MACT programs continue to require significant compliance and enforcement activity.



What is Air Pollution?

Air pollution is defined as the presence in the outdoor atmosphere of any one or more substances in quantities which may be harmful or injurious to human health or welfare, animal or plant life, or which may reasonably interfere with the enjoyment of life, including outdoor recreation or property. Air pollution includes a vast array of substances, which may be introduced into our atmosphere in the form of vapors or particles from both natural and manmade sources.

Health and Economic Effects

In most cases, air pollution frequently affects those who are least prepared to protect themselves, namely children and the elderly. Although the effects of air pollution vary by pollutant type and length of exposure, the major health concern associated with air pollution is the aggravation of existing respiratory and cardiovascular diseases.

Sustained exposure to air pollution can result in high morbidity rates and premature death. Studies performed by a variety of governmental agencies and private organizations estimate the total health cost to be as high as the tens of billions of dollars per year for the total population of the United States.

Although the major economic impact from air pollution includes the costs associated with medical treatments, morbidity, and reduced productivity, air pollutants are capable of causing significant economic impacts in other ways. For example, the remediation of air toxics such as asbestos, formaldehyde, benzene and other toxics compounds can result in significant removal and disposal costs.

Conservation and Aesthetic Effects

Anthropogenic or man-made air pollution is generated primarily through the combustion of fossil fuels. In most cases, these fuels are derived from non-renewable natural resources like oil and coal. Thus, as we increase our demands for energy, air pollution will tend to increase without proper management, alternative fuels, or imposing additional controls.

Most of the air pollution generated within Pinellas County comes from transportation-related sources. The latest emission inventory updates (2002) indicate mobile sources contribute approximately 50% of the total oxides of nitrogen and volatile organic compound emissions.

Aesthetic effects may include intangible factors that can not be easily quantified. Air pollution can result in impaired visibility, excessive amounts of dirt and soot and nauseous odors that decrease personal comfort and enjoyment of the environment.

Climatology and Meteorology

Weather, climate and, in some instances, topography can play an important part in the formation and distribution of air pollution. The climate in Pinellas County can be described as sub-tropical with a primary wet season during the summer and a secondary wet season in the winter. During 2002, 62 inches of rain fell in the Tampa Bay area. During 2003 and 2004, 52 and 59 inches of precipitation, respectively, occurred in the Tampa Bay area. This led to three consecutive years with above normal rainfall (normal rainfall is 44 inches).

Sea breezes modify the sub-tropical climate and along with daily afternoon thunderstorms (the Tampa Bay area is the lightning capital of the United States), keep summertime temperatures in the low 90's. Even with long, warm and humid summers, the winters are quite mild, with temperatures in the 50's to low 70's. There can be some occurrences of freezing temperatures. During 2002 and 2003, at Tampa International Airport, there was only one day each winter that recorded a temperature at or below 32 degrees Fahrenheit. During 2004 there were no days with temperatures at or below 32 degrees Fahrenheit recorded at Tampa International Airport.

Given the dynamic nature of our area's weather, climatological and meteorological analysis are indispensable components in our efforts to adequately evaluate air pollution and the appropriateness of ambient air quality monitoring sites.

Ozone is created through a very complicated photochemical reaction of volatile organic compounds (VOC's), oxides of nitrogen (NOx) and, to a lesser degree, carbon monoxide (CO) in the presence of sunlight. Stagnant high pressure systems, coastal recirculation patterns, high surface temperatures, relatively low surface wind speeds and abundant sunlight, which provides the solar radiation necessary for the photochemical process, are key factors in the formation of surface ozone within Pinellas County.

Stationary high pressure systems create inversion conditions where air becomes stagnant and allows ozone precursors to accumulate. Our proximity to the coast and the various effects caused by the migration of fronts and thermal contrast in and around Tampa Bay and Gulf of Mexico, results in recirculating wind patterns promoting the accumulation and regional transport of ozone precursors.

Conversely, it is weather and relatively flat topography which prevents potential adverse air quality impacts from other air pollutants. For example, prevailing coastal winds and our relatively flat topography allow for ample mixing and dilution of pollutants such as CO. Thus, elevated and sustained ambient concentrations of these pollutants in Pinellas County are uncommon.

There are also dichotomous relationships that exist between weather, climate and air pollution. For example, during the rainy season, sulfur dioxide (SO₂) and nitrogen dioxide (NO₂) are precipitated from our atmosphere. However, this same precipitation acts as a medium for wet deposition of acidic compounds into our lakes and streams.



The Air Quality Program

Mission

The Air Quality Division is dedicated to protect, preserve and enhance the air quality within Pinellas County. The Division will accomplish its mission by providing and maintaining for the citizens and visitors of Pinellas County standards that will ensure atmospheric purity and freedom of the air from contaminants, which threaten public health and welfare.

Objective Strategy

Continued attainment of the National Ambient Air Quality Standards (NAAQS) for ozone and other pollutants is achieved through the implementation of air pollution control strategies consistent with authorization of the Clean Air Act Amendments of 1990. These include:

- Maintain programs to protect the public from high risk sources of toxic and hazardous air pollutants;
- Continue to develop programs that serve and educate the public concerning air pollution issues; and
- Maintain programs that will prevent the degradation of air quality where standards are being met.

Public Education and Outreach

The Air Quality Division's Public Education and Outreach Program promotes awareness of current air quality issues. This is accomplished by using a multi-media approach to provide up-to-date information to the public and private sectors. Air quality related information is presented through public speaking engagements, educational programs and printed materials such as brochures, fact sheets, and technical reports. In addition, a newly designed Air Quality Website was introduced during this time period. The website includes a wealth of information relating to air quality and air quality issues, including real time data and links to other agencies (e.g. FLDEP and EPA).

Environmental awareness extends beyond the workplace. To promote this sense of awareness, the Air Quality Division prepares articles, as required, for county publications. In addition, Air Quality Division staff provides interviews and information for the County Communications television station (Pinellas 18) as well as local news media outlets. Air Quality personnel often speak at workshops, training sessions, and events organized for public awareness. The Pinellas County Speakers bureau has had numerous requests for speakers from the Division. As a result of this, our message of promoting clean air activities and practices is sent to various environmental agencies, civic groups, county employees, and other interested parties.

Public Education and Outreach includes networking with other agencies, including the Hillsborough County Environmental Protection Commission (EPC). In addition, the Air Quality Division participates in various groups and activities such as the West Central Florida Air Quality Coordinating Committee, the Air and Waste Management Association, and the Pinellas County Science Fair.

Public Education and outreach activities conducted in 2002 included:

- Pinellas County Science Fair (February);
- EarthFest (April);
- Clean Air Month (May);
- USF Public Health Forum (June);
- Pollution Prevention Week (September);
- Commuter Choices Week (October); and
- The Great American Teach In (November).

Public Education and outreach activities conducted in 2003 included:

- Pinellas County Science Fair (February);
- EarthFest (April);
- Clean Air Month (May);
- Pollution Prevention Week (September);
- Commuter Choice Week (October); and
- The Great American Teach In (November).

Public Education and outreach activities conducted in 2004 included:

- Pinellas County Science Fair (February);
- Clean Air Month (May);
- Pollution Prevention Week (September);
- Commuter Choice Week (October); and
- The Great American Teach In (November).

In addition, Division staff participated in a number of projects that support grant activities. These projects and other partners include:

- Air toxics monitoring and assessment with the Hillsborough County Environmental Protection Commission (HCEPC);
- The Clean Air Partnership (CAP) with HCEPC. CAP is a program designed to promote commute alternatives and alternative fuels; and
- The Gulfcoast Florida American Lung Association air quality index awareness program.

Throughout the year, various air quality issues and policies come before our elected and appointed officials on the Board of County Commissioners and the Metropolitan Planning Organization. In these instances, the Division provides technical support and expertise at meetings, workshops and public hearings. Our purpose is to provide a clear understanding of the issues and their potential impact on Pinellas County.

Criteria Pollutants

The U.S. Environmental Protection Agency (EPA) is responsible for establishing and maintaining the National Ambient Air Quality Standards (NAAQS). Primary NAAQS are designed to protect the public health and secondary NAAQS are designed to protect public welfare including the effects of air pollution on visibility, materials and vegetation. (Refer to Table 1).

Table 1. NAAQS

Pollutant	Primary Stds.	Averaging Times	Secondary Stds.
Carbon Monoxide	9 ppm (10 mg/m ³)	8-hour ¹	None
	35 ppm (40 mg/m ³)	1-hour ¹	None
Lead	1.5 µg/m ³	Quarterly Average	Same as Primary
Nitrogen Dioxide	0.053 ppm (100 µg/m ³)	Annual (Arithmetic Mean)	Same as Primary
Particulate Matter (PM ₁₀)	50 µg/m ³	Annual ² (Arith. Mean)	Same as Primary
	150 µg/m ³	24-hour ¹	
Particulate Matter (PM _{2.5})	15.0 µg/m ³	Annual ³ (Arith. Mean)	Same as Primary
	65 µg/m ³	24-hour ⁴	
Ozone	0.08 ppm	8-hour ⁵	Same as Primary
	0.12 ppm	1-hour ⁶ (Applies only in limited areas)	Same as Primary
Sulfur Oxides	0.03 ppm	Annual (Arith. Mean)	-----
	0.14 ppm	24-hour ¹	-----
	-----	3-hour ¹	0.5 ppm (1300 µg/m ³)

¹ Not to be exceeded more than once per year.

² To attain this standard, the 3-year average of the weighted annual mean PM₁₀ concentration at each monitor within an area must not exceed 50 µg/m³.

³ To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

⁴ To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 µg/m³.

⁵ To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

⁶ (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.

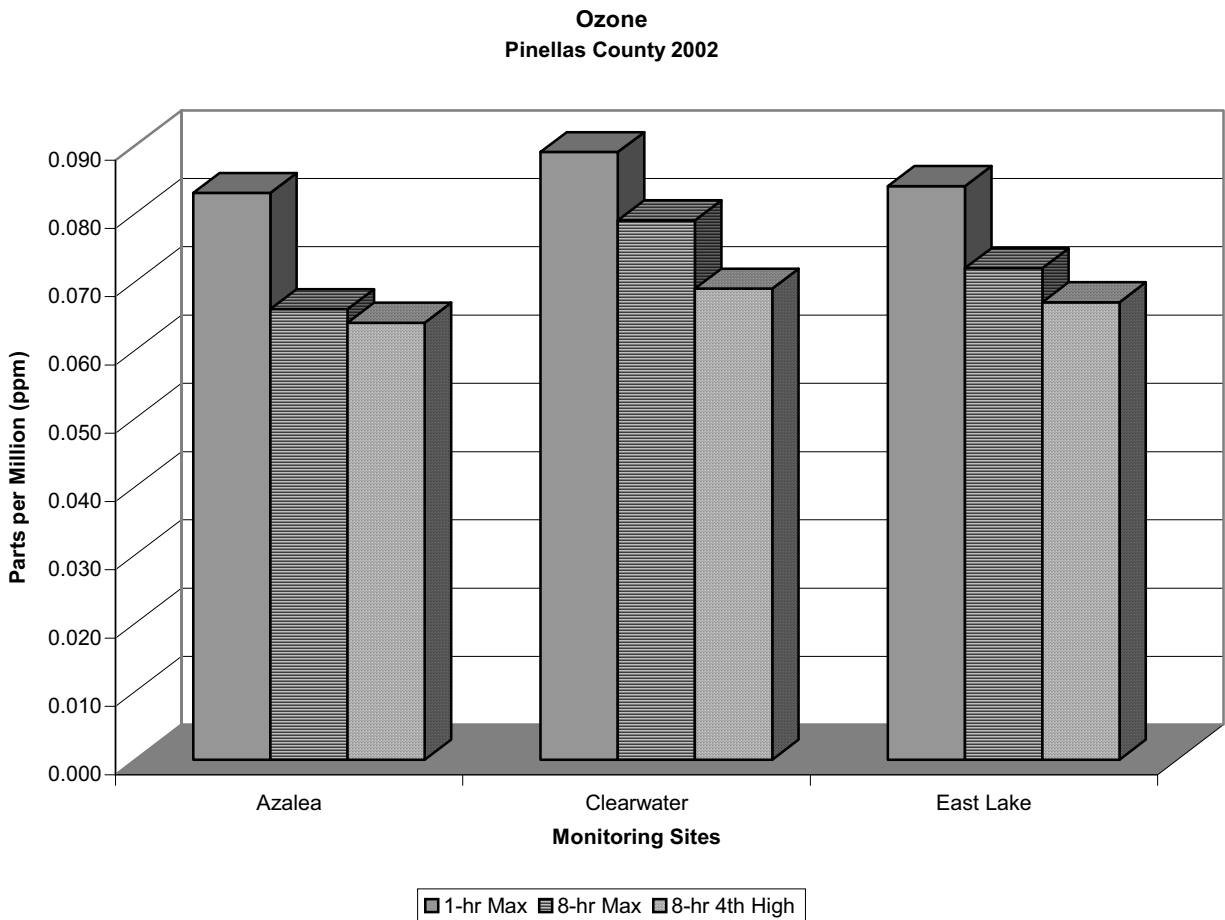
(b) As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact (EAC) Areas.

Ozone

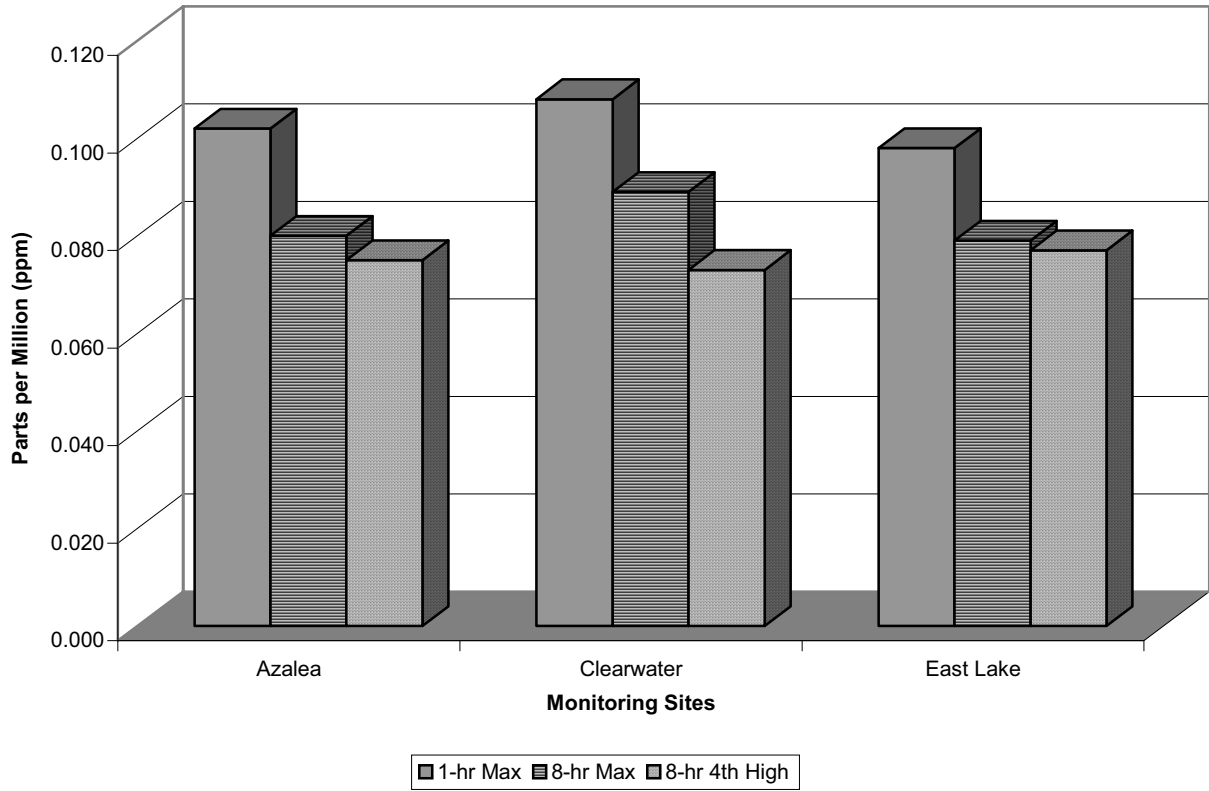
Ozone (O₃) is a colorless and highly unstable molecular form of oxygen that is associated with the presence of photochemical smog. Ozone is not emitted directly into the air from any source. Instead, it is formed by chemical reactions involving volatile organic compounds (VOC's) and oxides of nitrogen (NO_x) in the presence of sunlight. NO_x is emitted from sources of high temperature combustion. VOC's are emitted primarily from transportation sources such as cars and trucks. The highly reactive nature of ozone can cause health problems by damaging biological tissues and cells. High ambient levels of ozone can result in impaired breathing, coughing, nausea and pulmonary congestion. High levels of ozone can also cause noticeable foliar and ecosystem damage, reduce agricultural crop yields, and degrade paints, dyes and rubber products.

The Pinellas County Air Quality Division operates three ozone monitoring sites throughout the county, and on occasion measured levels approach the NAAQS. Maximum values for ozone from 2002 to 2004 are shown in Figure 1. (Reference Site Locations page 12).

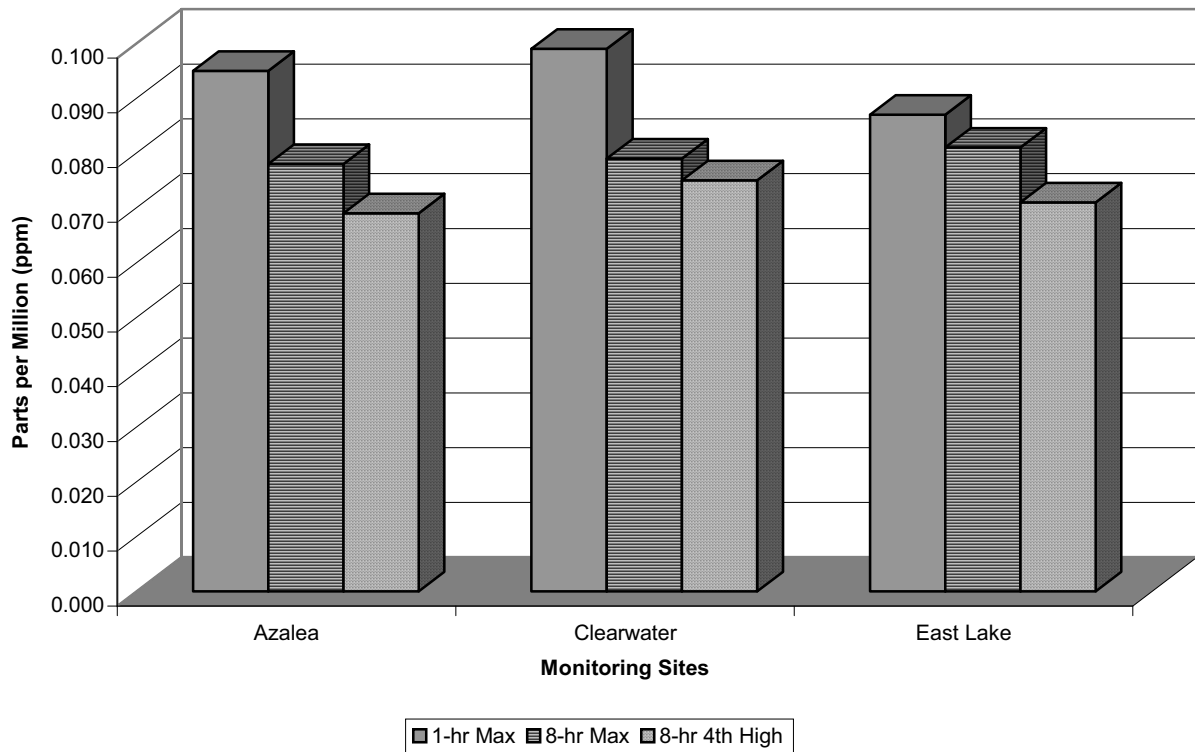
Figure 1. Ozone Values 2002 to 2004



**Ozone
Pinellas County 2003**

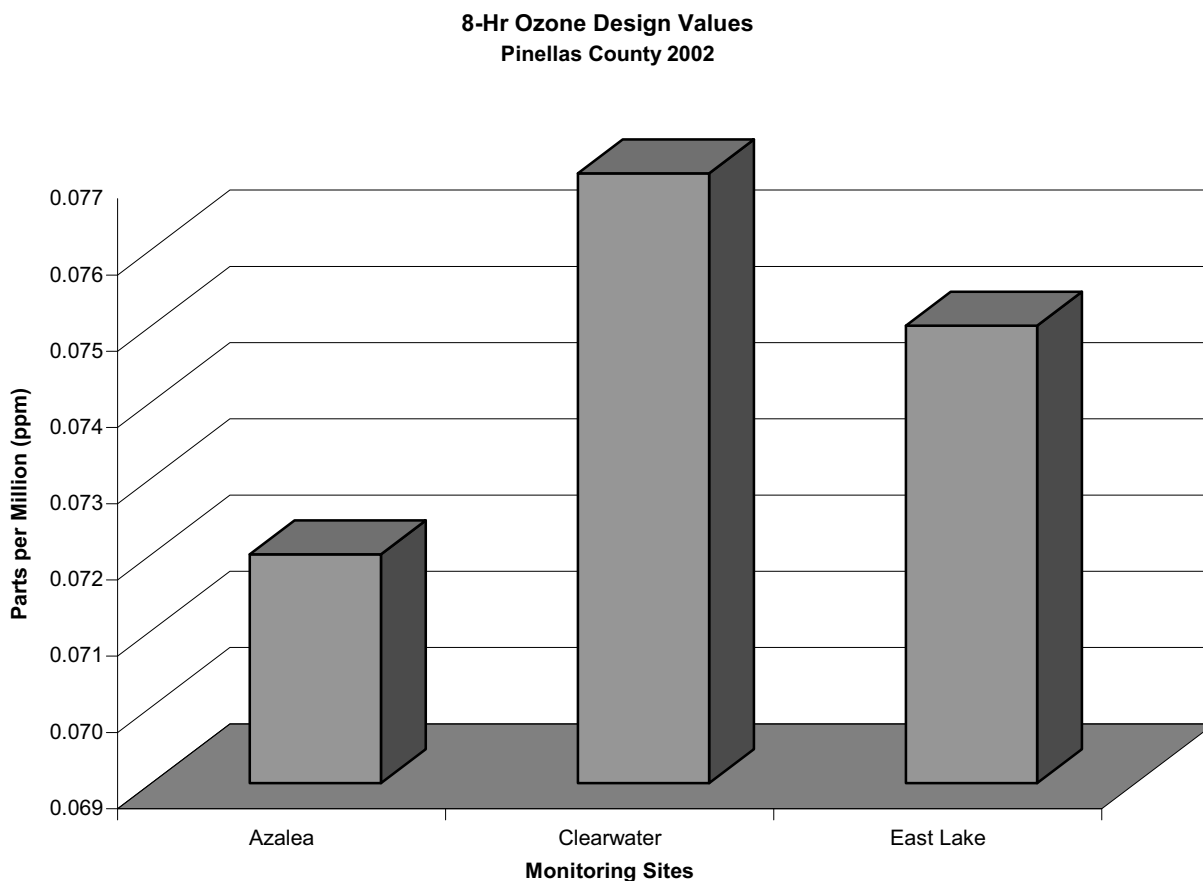


**Ozone
Pinellas County 2004**

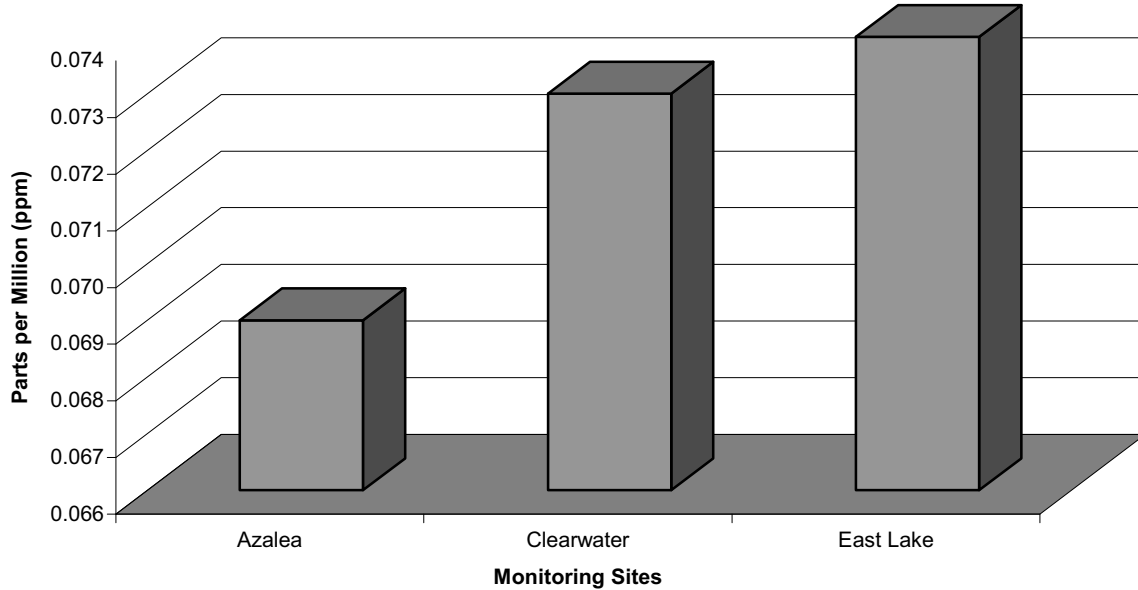


In July 1997, EPA changed the ozone standard from a maximum 1-hour concentration (0.12ppm) to an 8-hour average concentration standard (0.08ppm) that is more protective of public health. The 1-hour standard was defined as no more than one (1) exceedance per year, per site, averaged over three years. The new 8-hour standard states that an exceedance will occur when the 3-year average of the 4th highest daily maximum 8-hour concentration at a single site is above the standard. These values for the period from 2002 to 2004 are shown in Figure 2, which shows the 8-hour Ozone Design Values for all three ozone monitors in Pinellas County, for the periods 2000-2002, 2001-2003, and 2002-2004, respectively. Measured levels exceeded the National Ambient Air Quality Standards (NAAQS) on only one day during this period (in calendar year 2003).

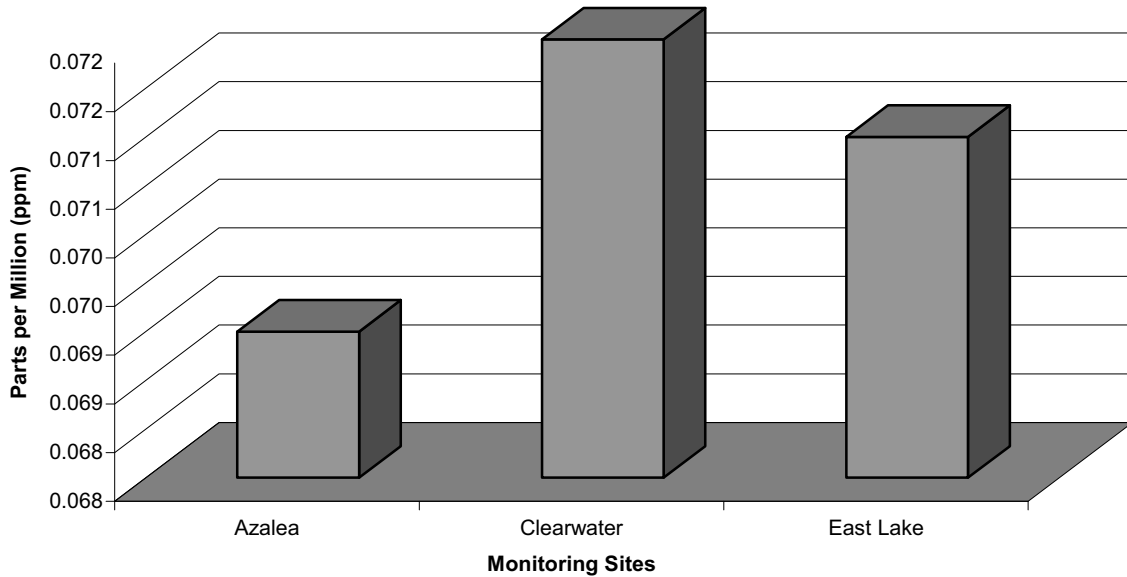
Figure 2. 8-Hour Ozone Design Values 2002 to 2004



**8-Hr Ozone Design Values
Pinellas County 2003**



**8-Hr Ozone Design Values
Pinellas County 2004**



EPA’s original plan to phase out and replace the 1-hour standard with the new 8-hour standard was delayed by a lawsuit eventually resolved in EPA’s favor. As a result, the new 8-hour standard will be adopted and the existing 1-hour standard will be revoked.

Based on current monitoring data, the Tampa Bay area will be designated as being in attainment for the new 8-hour standard. In order to avoid losing progress made under the 1-hour standard, certain emission control requirements and programs required under the revoked standard must remain in place.

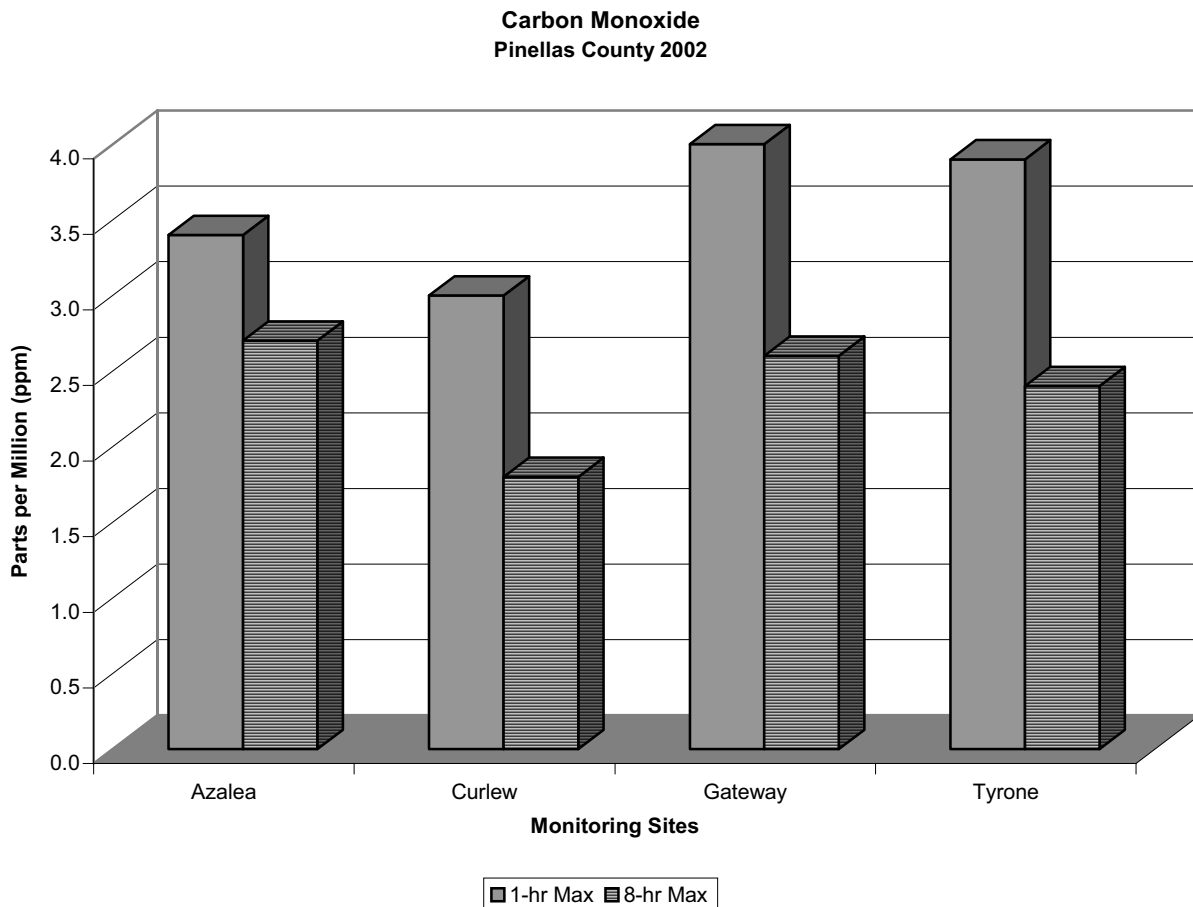
Carbon Monoxide

Carbon Monoxide (CO) is a by-product of the incomplete combustion of fuels. Transportation-related sources account for the majority of all CO pollution in the county.

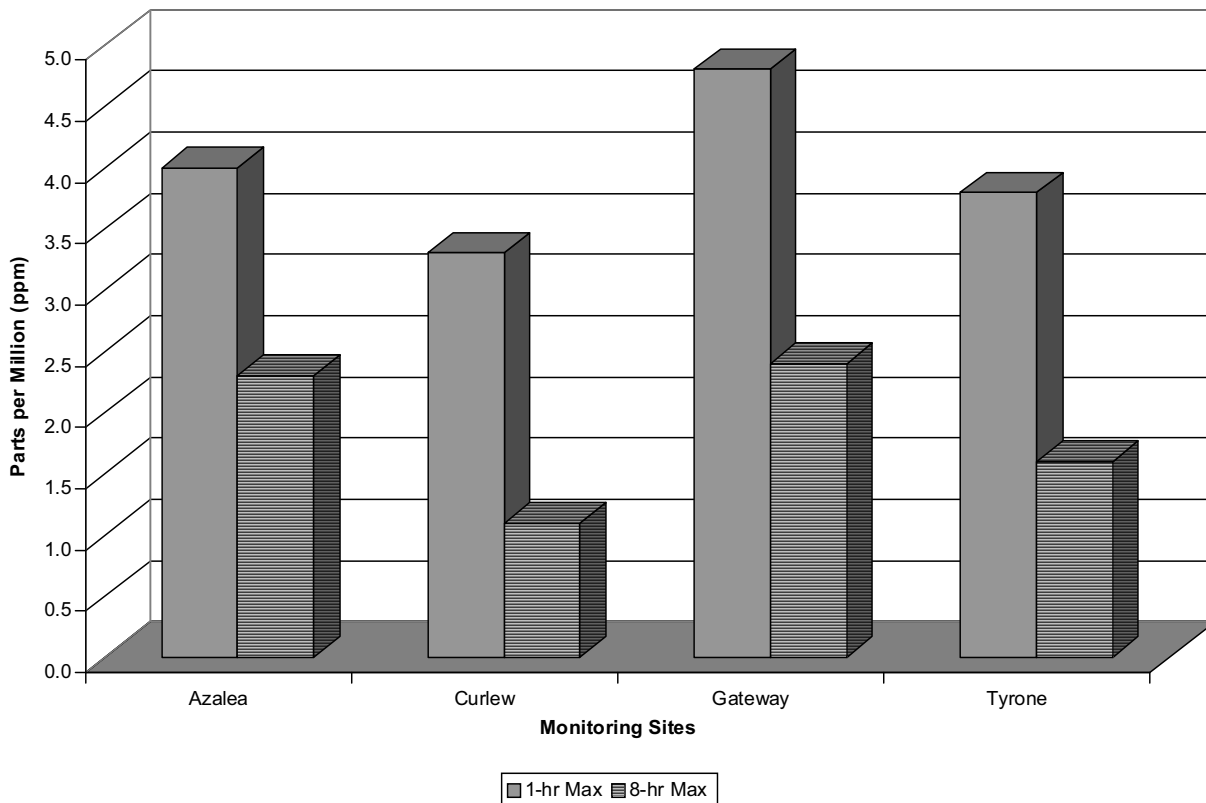
Carbon monoxide exposure can disrupt the delivery of oxygen to the body's organs and tissues. The health threat from CO is greater for those individuals who suffer from cardiovascular disease. Elevated levels of CO have been associated with impaired vision, loss of manual dexterity and the loss of short-term memory. Health effects from exposure to high levels of carbon monoxide can result in reduced productivity with impairment of work capacity, learning ability and performance of complex tasks. There are five CO monitoring sites located throughout the county.

The NAAQS for carbon monoxide is expressed as a 1-hour maximum of 35ppm and an 8-hour average of 9ppm. Figure 3 shows the maximum values for the period 2002-2004.

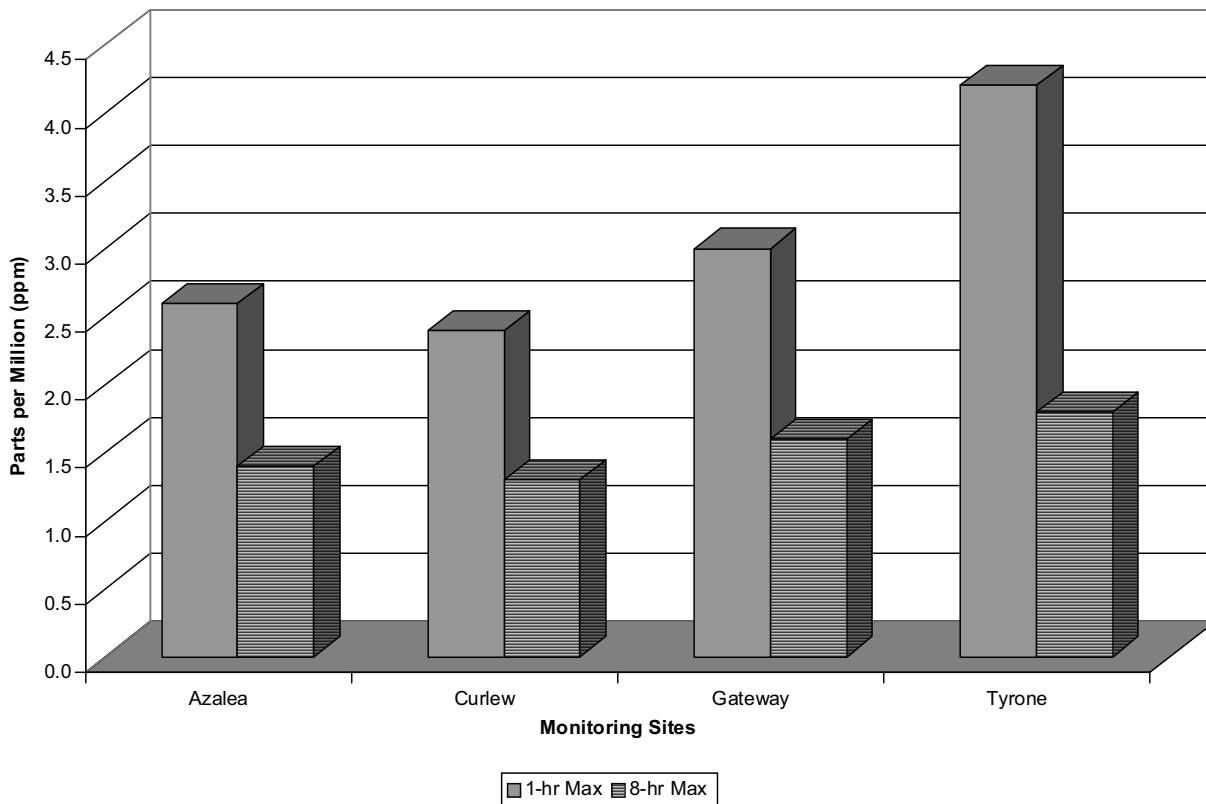
Figure 3. Carbon Monoxide Values 2002 to 2004



**Carbon Monoxide
Pinellas County 2003**



**Carbon Monoxide
Pinellas County 2004**



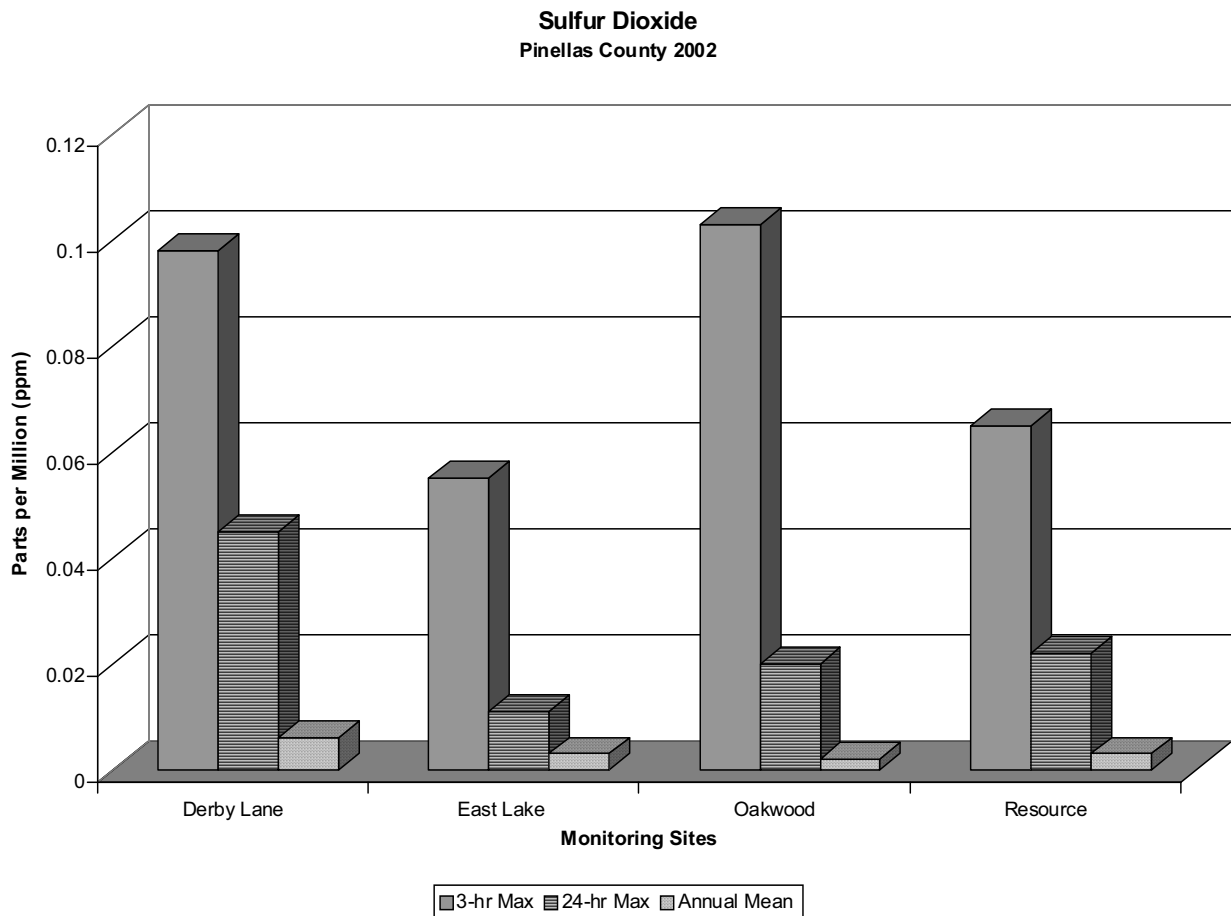
Sulfur Dioxide

Sulfur Dioxide (SO₂) is emitted primarily from steam power and steam-electric power generating facilities that consume sulfur-containing fossil fuels such as coal and oil.

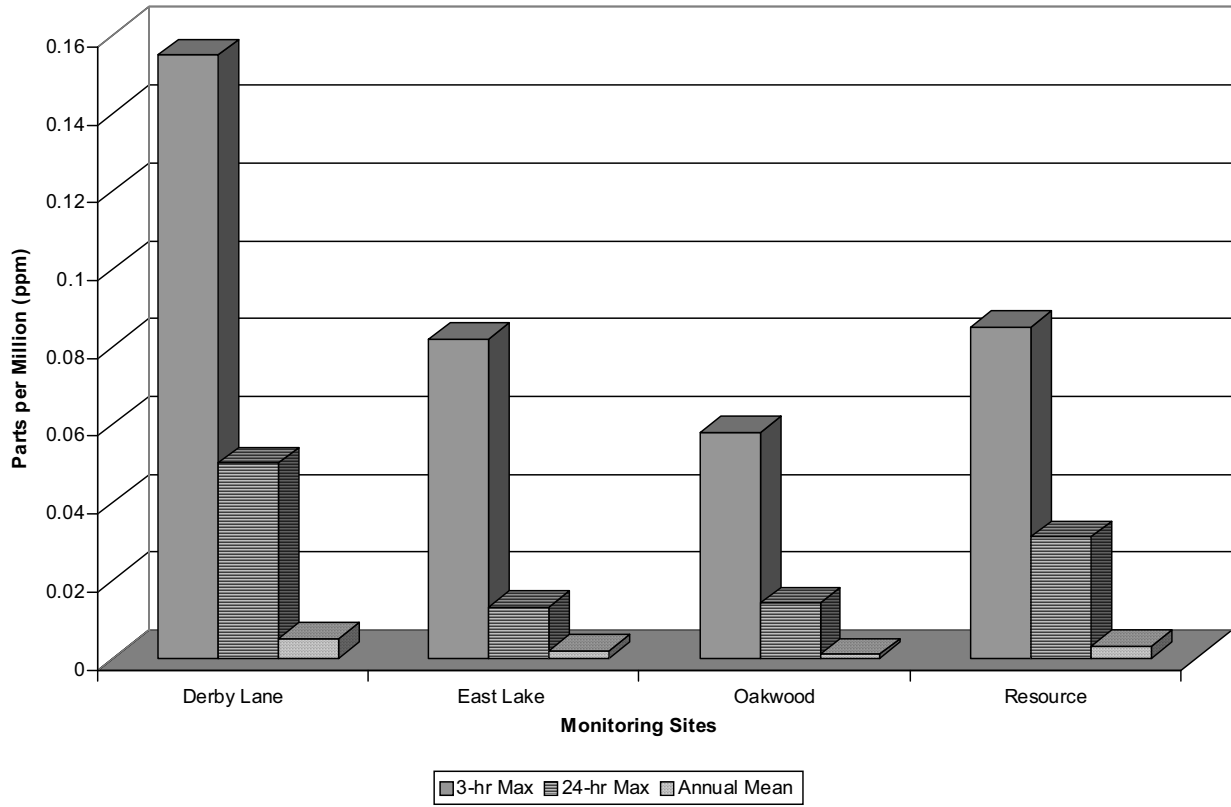
Asthmatics and others with respiratory diseases such as bronchitis, influenza and emphysema can be at risk when exposed to higher than normal ambient concentrations of sulfur dioxide. The Air Quality Division operates four SO₂ monitoring sites located throughout the county.

The NAAQS for SO₂ is expressed as an annual mean of 0.03ppm, a maximum 24-hour average of 0.14ppm, or a maximum 3-hour average of 0.5ppm. Figure 4 shows the maximum values for the period 2002-2004.

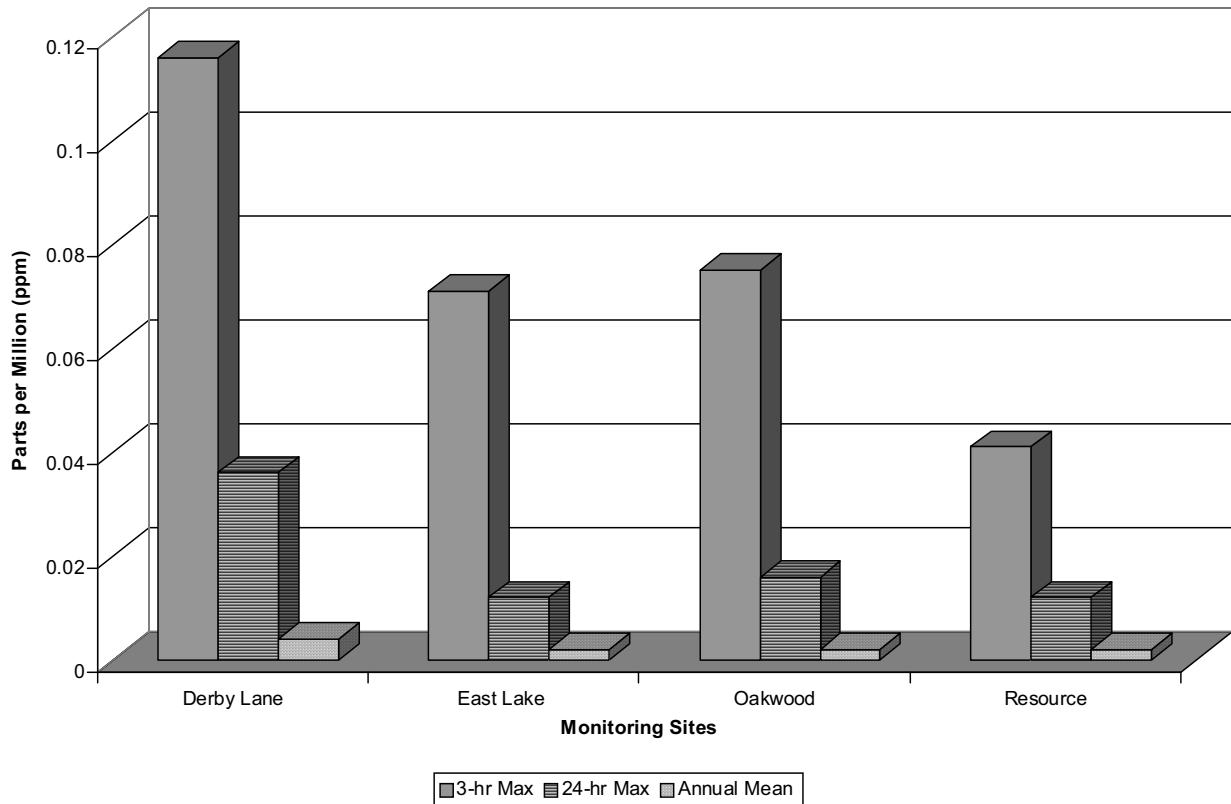
Figure 4. Sulfur Dioxide Values 2002 to 2004



**Sulfur Dioxide
Pinellas County 2003**



**Sulfur Dioxide
Pinellas County 2004**



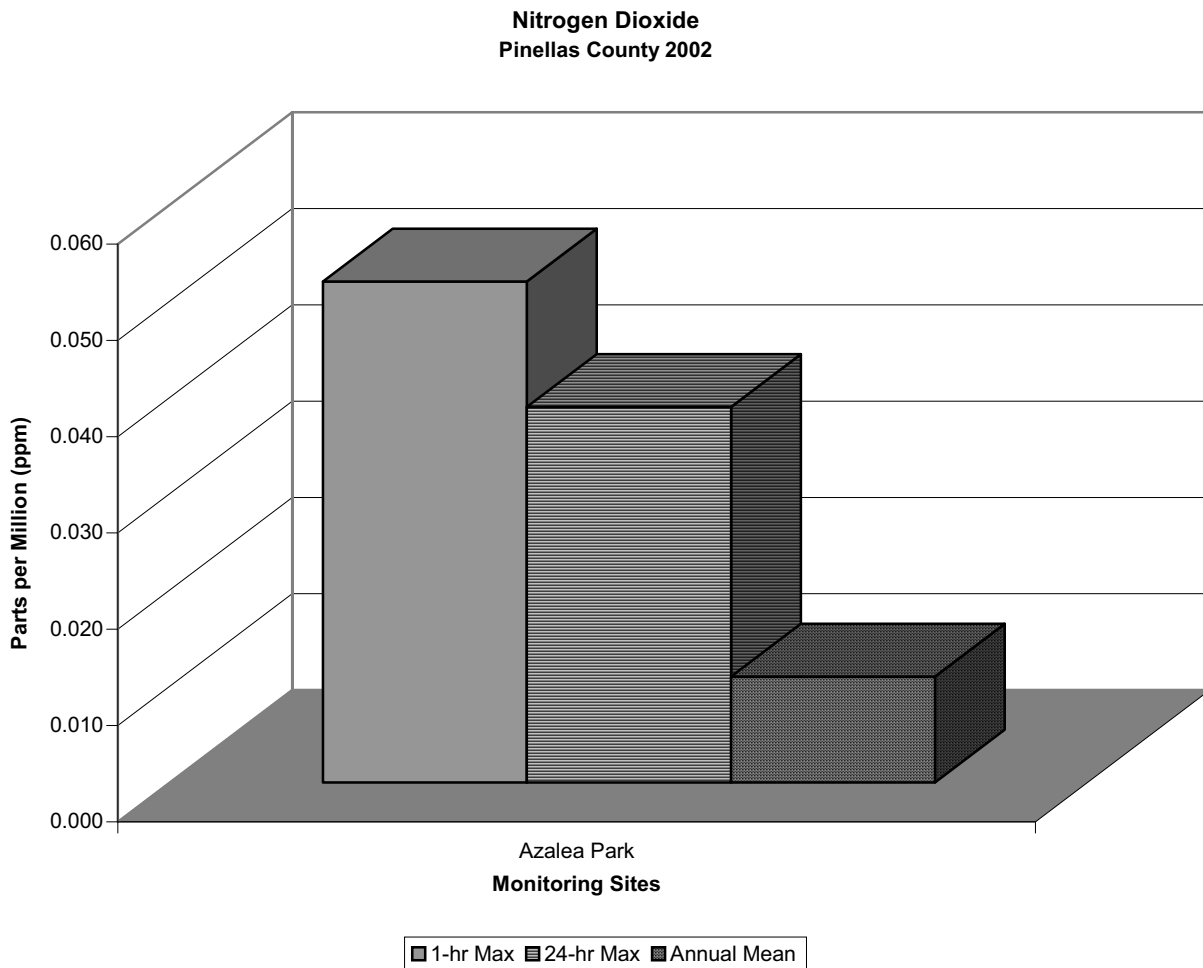
Nitrogen Dioxide

Much of the nitrogen dioxide (NO₂) in the atmosphere is formed from nitrogen oxide (NO) released during high temperature combustion of fuels. Primary sources of NO and NO₂ are coal- and oil-fired electric utility boilers and transportation sources such as gasoline and diesel powered cars, trucks and busses.

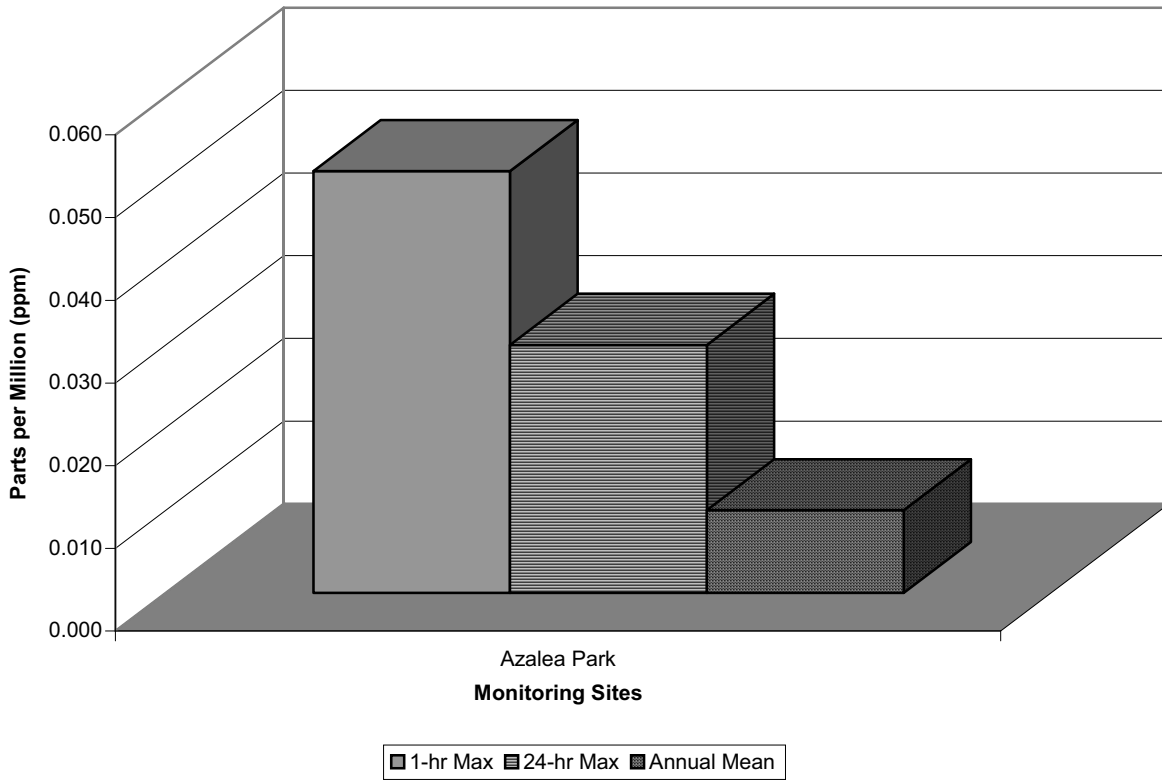
Asthmatics and others with respiratory diseases such as bronchitis, influenza and emphysema can be at risk when exposed to higher than normal ambient concentrations of nitrogen dioxide. There is one NO₂ monitoring site located in a high transportation area of the county and it produced annual measurements generally in the range of 20% of the ambient air quality standard during the three year period.

The NAAQS for nitrogen dioxide is expressed as an annual arithmetic mean of 0.05ppm. Figure 5 shows the maximum values for the period 2002-2004.

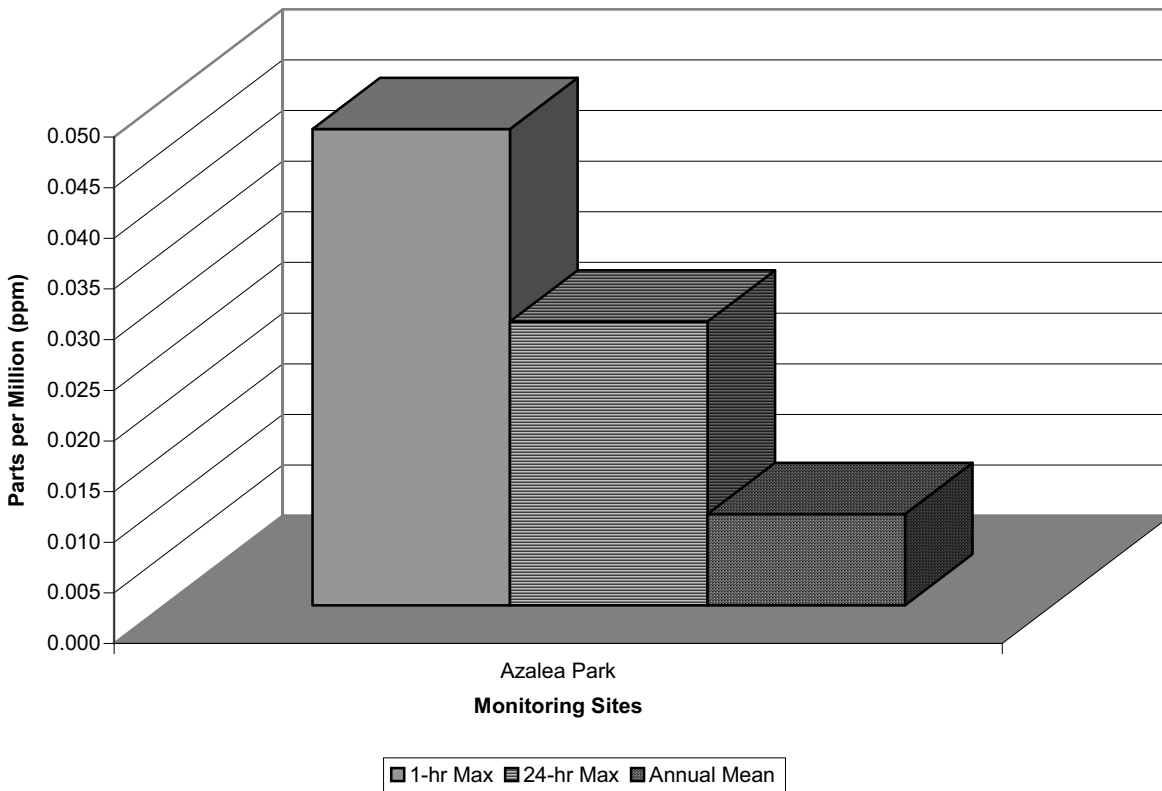
Figure 5. Nitrogen Dioxide Values 2002 to 2004



**Nitrogen Dioxide
Pinellas County 2003**



**Nitrogen Dioxide
Pinellas County 2004**



Particulate Matter

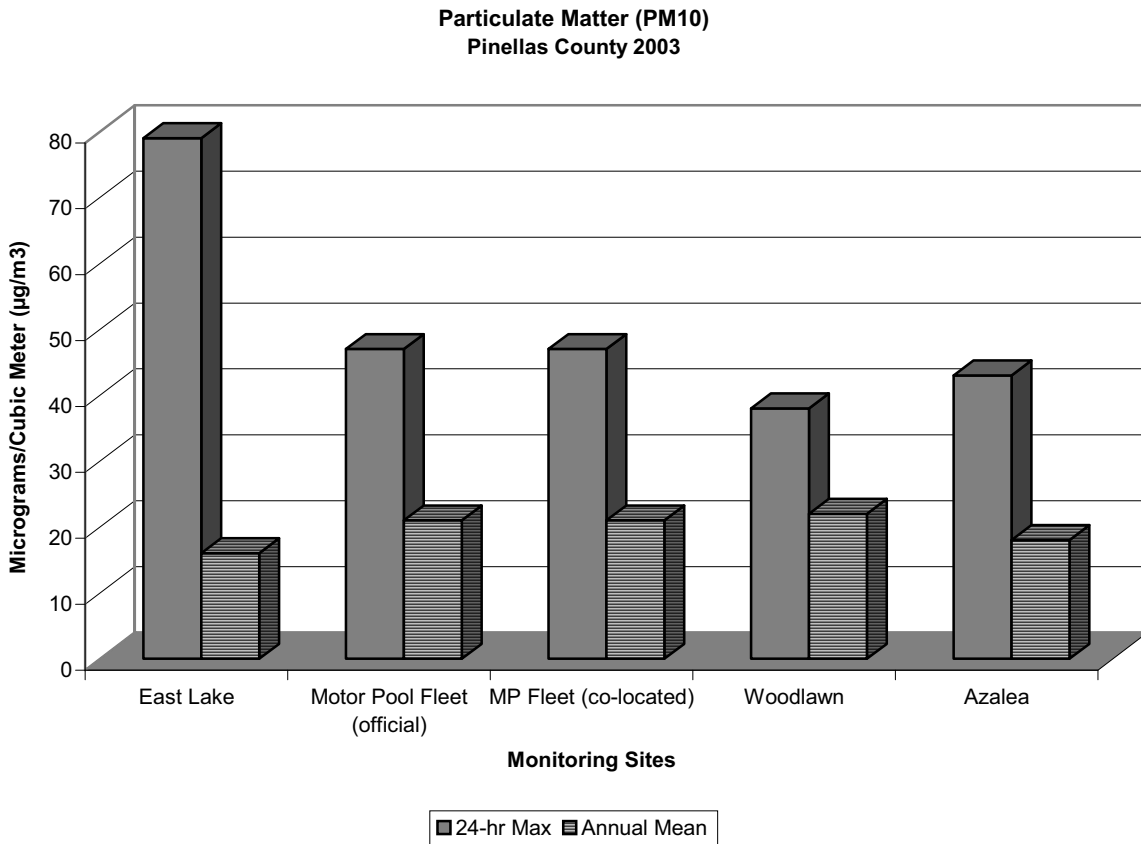
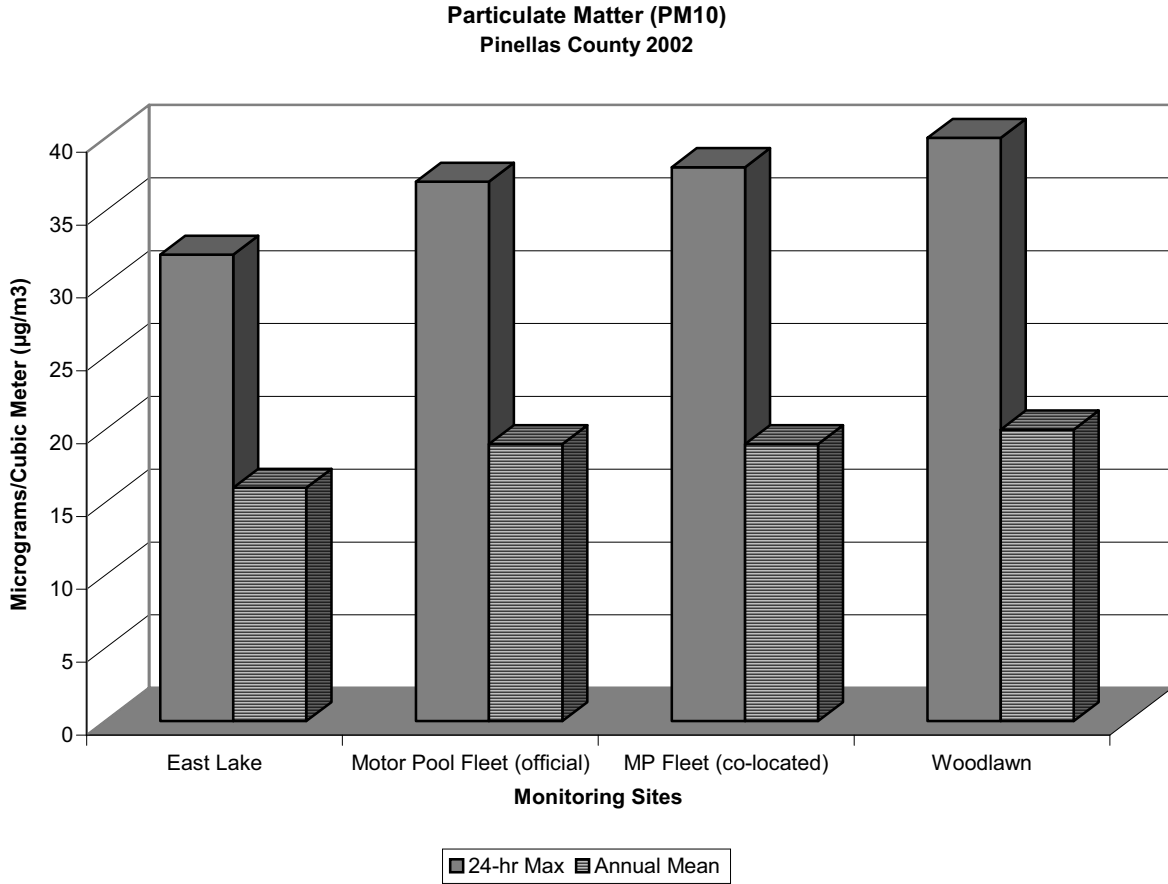
The characteristics, sources, and potential health effects of larger or “coarse” particles (from 2.5 to 10 micrometers in diameter) and smaller or “fine” particles (smaller than 2.5 micrometers in diameter) are very different. Coarse particles (PM10) come from sources such as windblown dust from agricultural fields, grinding operations, and dust kicked up on unpaved roads by vehicle traffic. Fine particles (PM2.5) are generally emitted from activities such as industrial and residential combustion, open burning of trash and garbage, and from vehicle exhaust. Fine particles are also formed in the atmosphere when gases such as sulfur dioxide, nitrogen oxides and volatile organic compounds, emitted by combustion activities, are transformed by chemical reactions in the air.

Coarse particles can accumulate in the respiratory system and aggravate health problems such as asthma. Fine particulates are a health threat because of their ability to penetrate deep into the lungs, causing premature mortality and increased hospital admissions. These fine particles are so small that several thousand of them could fit on the period at the end of a sentence. The elderly, children, asthmatics and individuals with pre-existing heart or lung disease are most at risk from particulate matter exposure.

The same fine particles linked to serious health effects are also a major cause of visibility impairment in many parts of the U.S., causing the visual range to be reduced up to 70% from natural conditions. In the east, the current range is only 14-24 miles versus a natural visibility of 90 miles. The particles can remain suspended in the air and travel long distances, meaning emissions from diesel trucks on I-95 can end up on the beaches of the Gulf Coast. Even dust from the Saharan Desert dust storms can be transported to the Gulf Coast region.

To help measure the particulate emissions in Pinellas County, there are four PM10 monitoring sites and two PM2.5 sites located throughout the county. The NAAQS for PM10 is expressed as an annual arithmetic mean of $50\mu\text{g}/\text{m}^3$ and as a 24-hour maximum mean of $150\mu\text{g}/\text{m}^3$, while PM2.5 has an annual mean of $15\mu\text{g}/\text{m}^3$ and a 24-hour maximum of $65\mu\text{g}/\text{m}^3$. Figures 6 and 7 show the maximum PM10 and PM2.5 values, respectively, for the period 2002-2004.

Figure 6. Coarse (PM10) Particulate Matter Values 2002 to 2004



**Particulate Matter (PM10)
Pinellas County 2004**

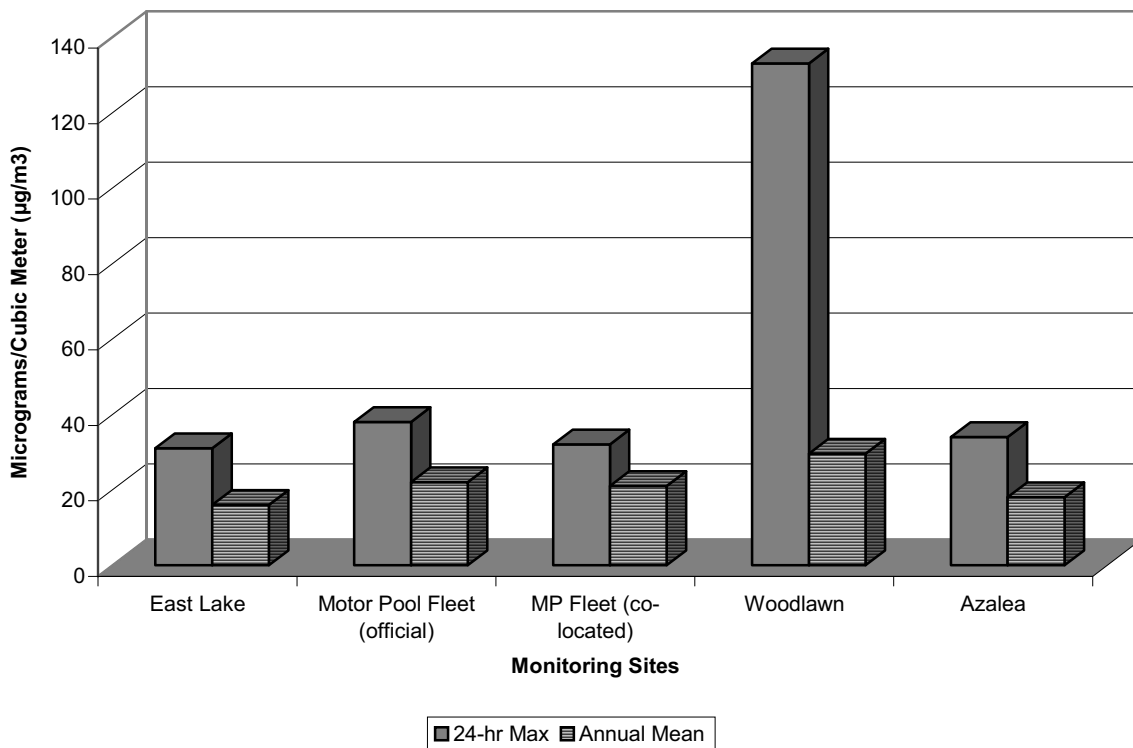
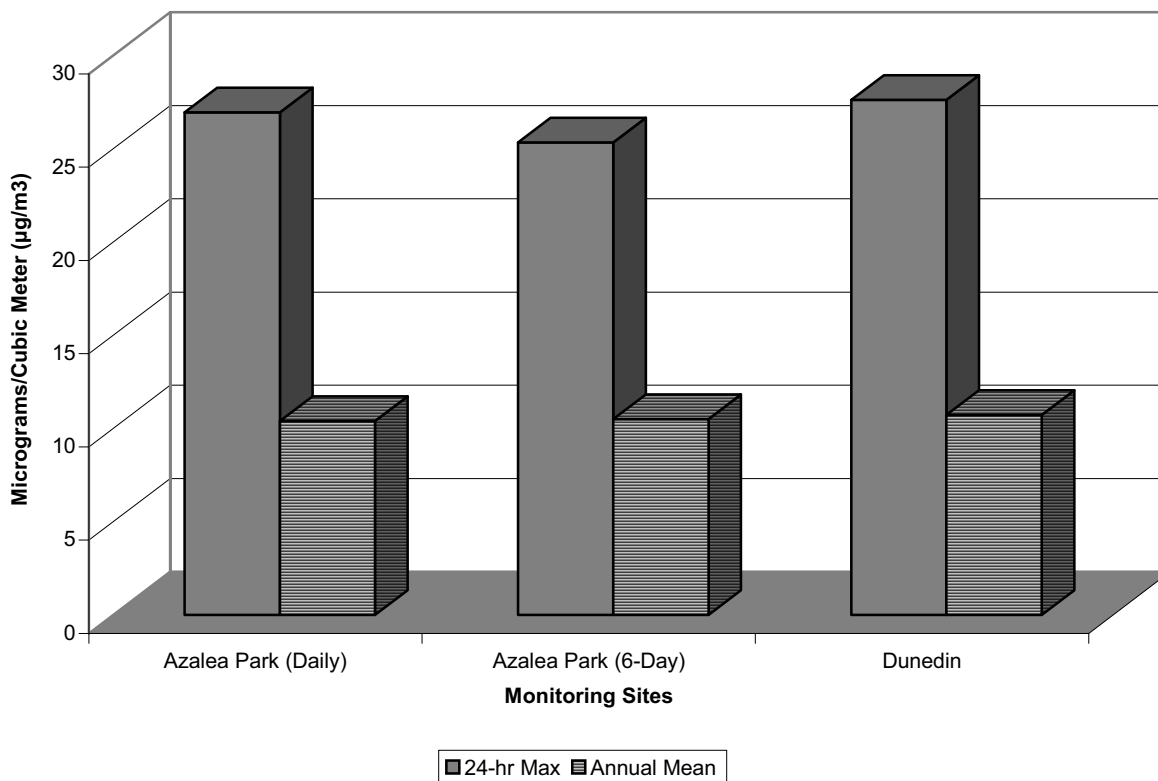
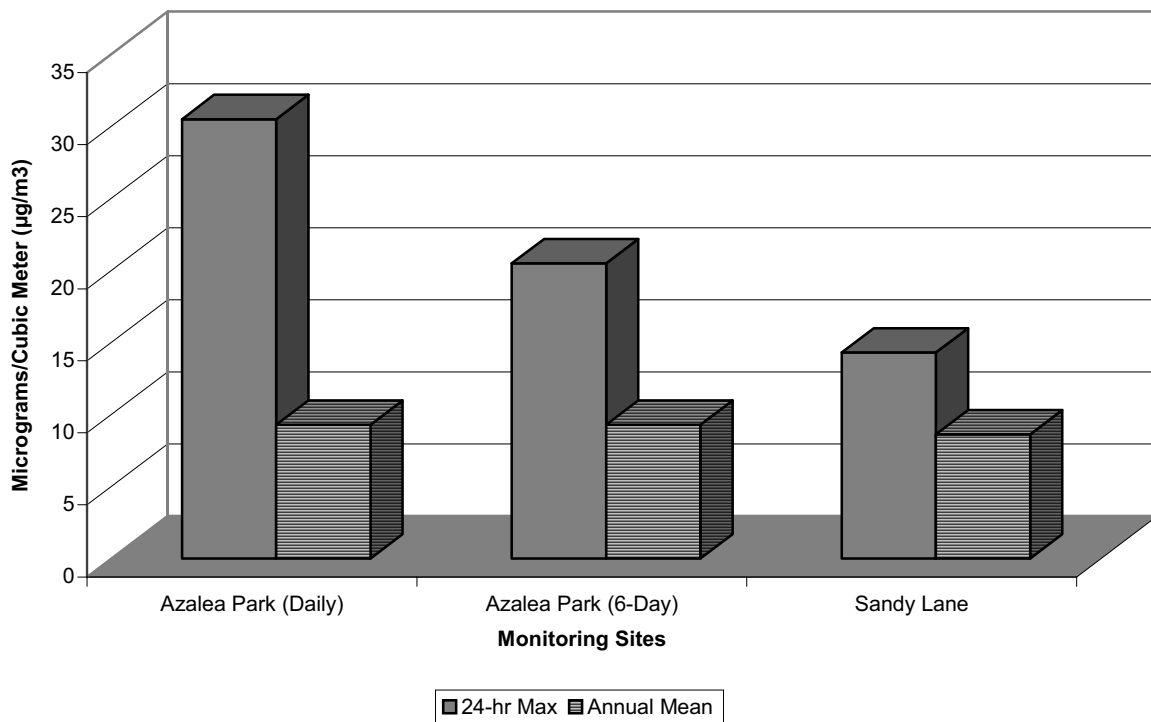


Figure 7. Fine (PM2.5) Particulate Matter Values 2002 to 2004

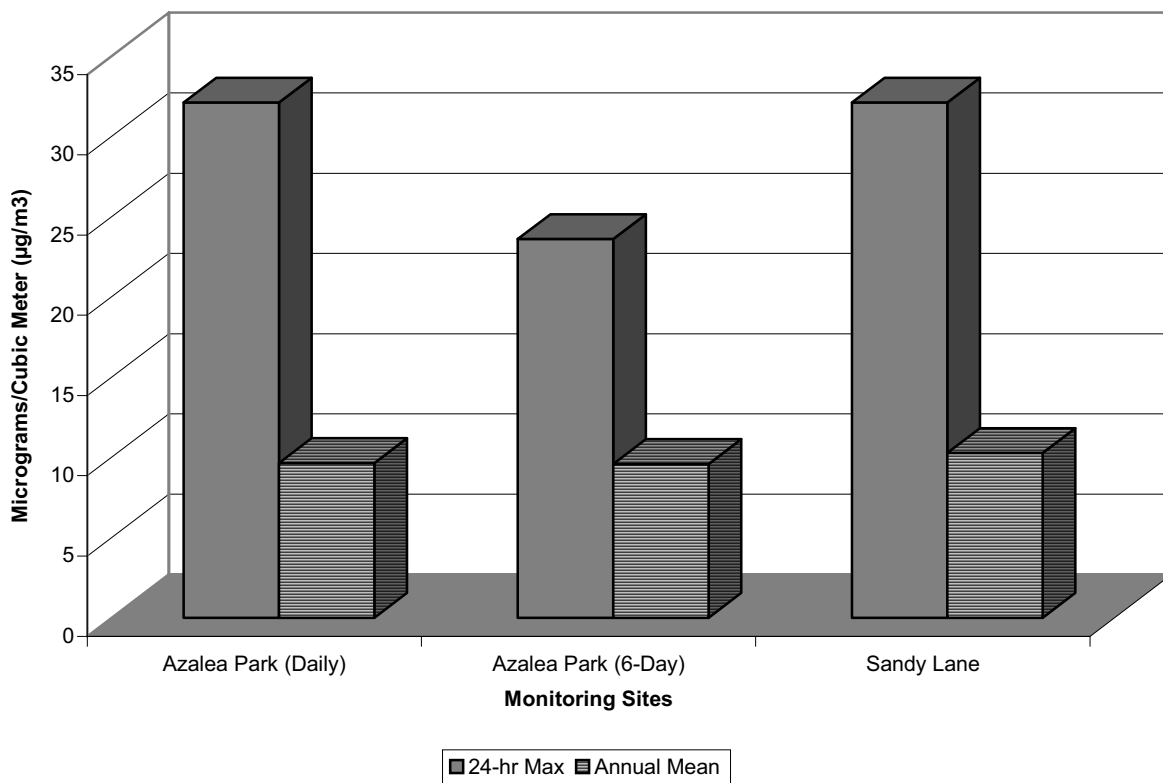
**Particulate Matter (PM2.5)
Pinellas County 2002**



**Particulate Matter (PM2.5)
Pinellas County 2003**



**Particulate Matter (PM2.5)
Pinellas County 2004**



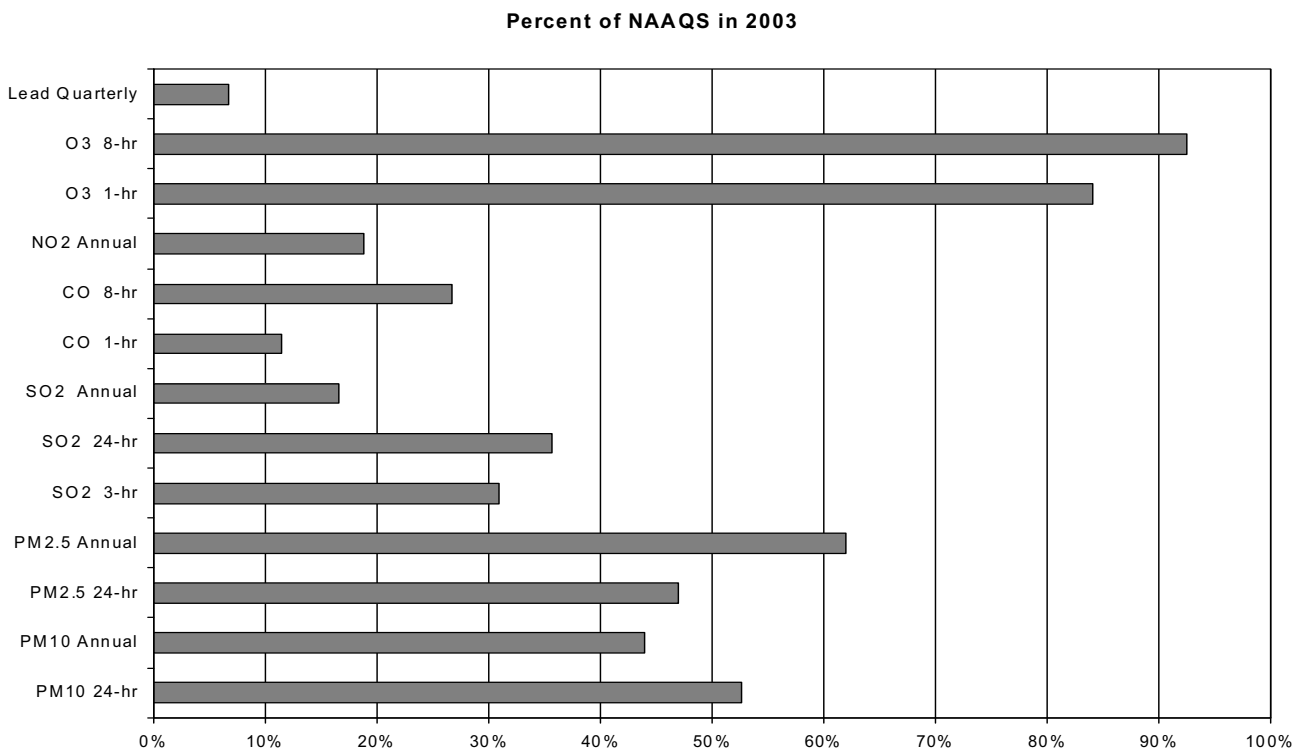
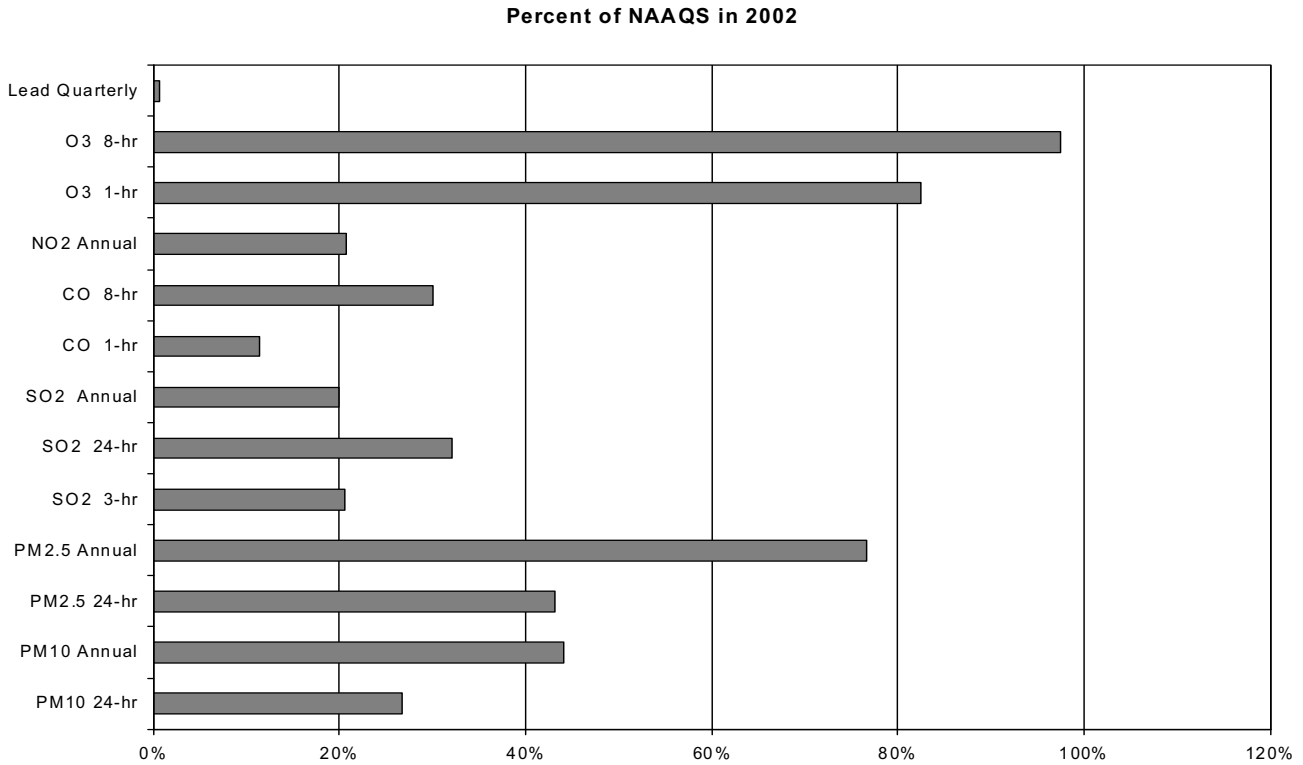
Lead

Lead (Pb) is primarily emitted from sources such as nonferrous smelters, battery plants and lead gasoline additives. Exposure of lead can occur through inhalation and/or ingestion leading to the accumulation of lead in the blood, bones, and soft tissues. Excessive exposure has been associated with various birth defects, high blood pressure and neurological problems such as seizures and behavioral disorders. At present there is one lead site located in the county, however, since 1991, primarily due to the use of unleaded gasoline, lead has been detected at less than 1% of the national standard (expressed as a calendar quarterly mean of 1.5 $\mu\text{g}/\text{m}^3$).

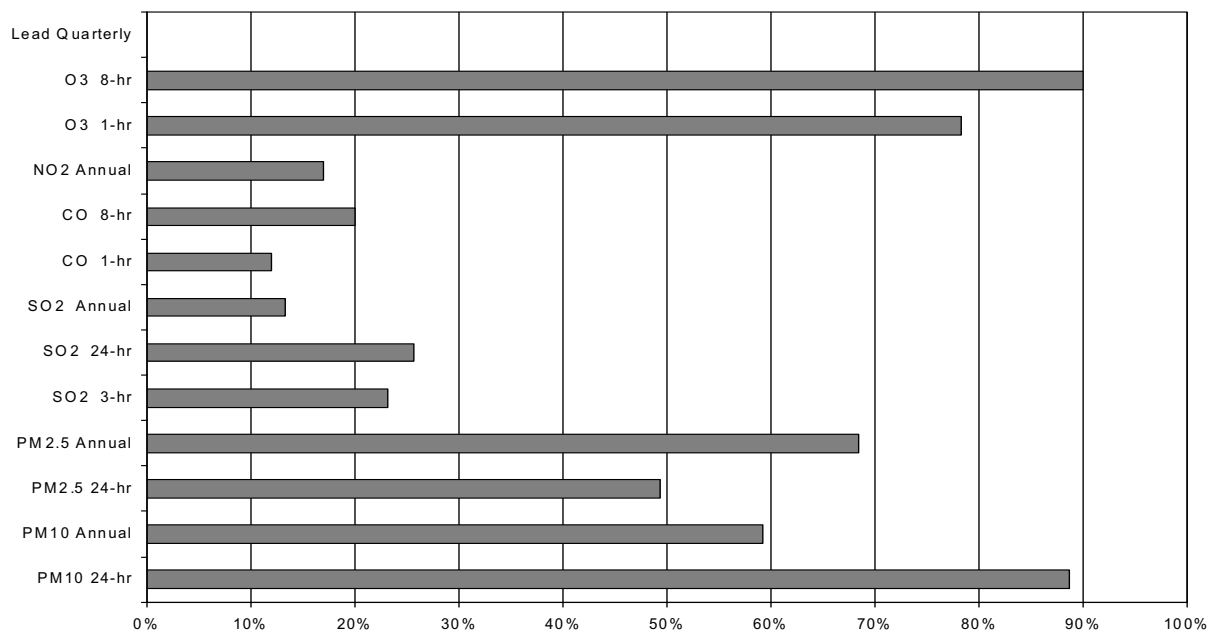
Comparison of ALL Criteria Pollutants

The following chart, Figure 8, shows the percentage of each criteria pollutant to its respective standard for the years 2002-2004. For this time period, Pinellas County was within the standard for all the criteria pollutants.

Figure 8. Criteria Pollutant NAAQS Status 2002 to 2004



Percent of NAAQS in 2004



Air Quality Index

The Air Quality Index (AQI), is a nation-wide standard method developed by the U.S. Environmental Protection Agency (EPA) for reporting daily air quality to the public in a health-related manner. It tells you how clean your air is and what associated health concerns you should be aware of. The AQI describes ambient air quality concentration levels for sulfur dioxide (SO₂), ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), and particulate matter (PM) in terms of a concentration index for the highest pollutant level in a given time period. The pollutant concentrations are measured and converted to numbers based on a mathematical formula that transforms ambient pollutant concentrations onto a health based scale. For all pollutants except fine particulate matter, an AQI of 101 or greater would be equal to the National Ambient Air Quality Standard (NAAQS). For Fine particulate matter an AQI of 151 or greater would equal the NAAQS, Table 2 provides the AQI health descriptor scale and cautionary statements.

Table 2. AQI Scale and Cautionary Statements

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0-50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51-100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101-150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151-200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201-300	Health alert: everyone may experience more serious health effects.
Hazardous	> 300	Health warnings of emergency conditions. The entire population is more likely to be affected.

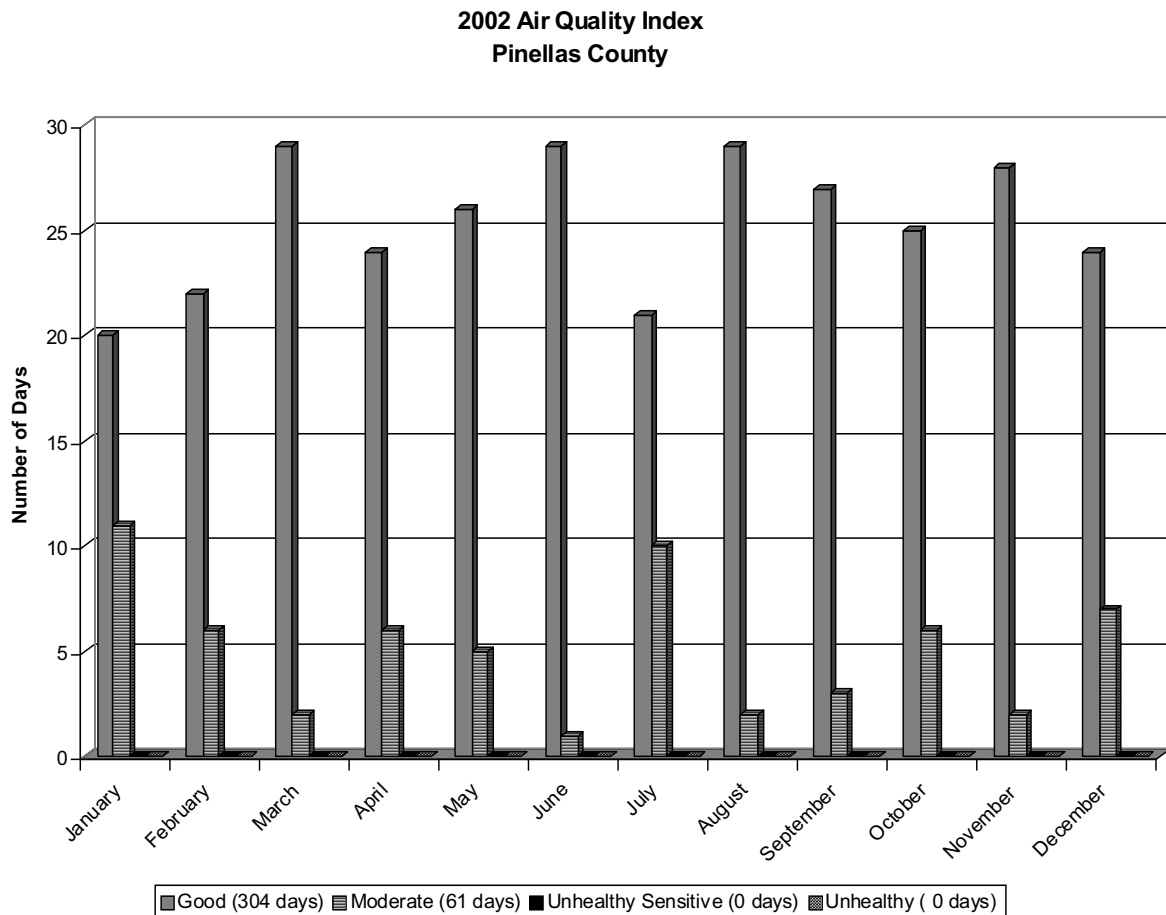
The higher the AQI value, the greater the level of air pollution and the greater the health danger. AQI values below 100 are generally thought of as satisfactory. When AQI values are above 100, air quality is considered to be unhealthy. Sensitive groups of people (children who are active outdoors, adults involved in moderate or strenuous outdoor activities, individuals with respiratory disease such as asthma, and individuals with heart disease) are impacted first, then as AQI values get higher everyone is impacted. Figure 10 and 11 illustrate the monthly trend during the 2002-2004 period and the previous ten-year trend, respectively. Changes in the ozone standard in 1999 from a 1-hour to an 8-hour standard make data comparisons difficult, however since 1999 the AQI has improved with more days in the good category and fewer in both the moderate and unhealthy categories.

The Air Quality Division’s Air Monitoring and Planning Sections forecast the current and next day AQI Monday through Friday at approximately 11:00 a.m. The daily air quality forecast is updated, as needed, at 4:00 p.m. and a forecast for Sunday is made on Friday. The forecast can be obtained from the following sources:

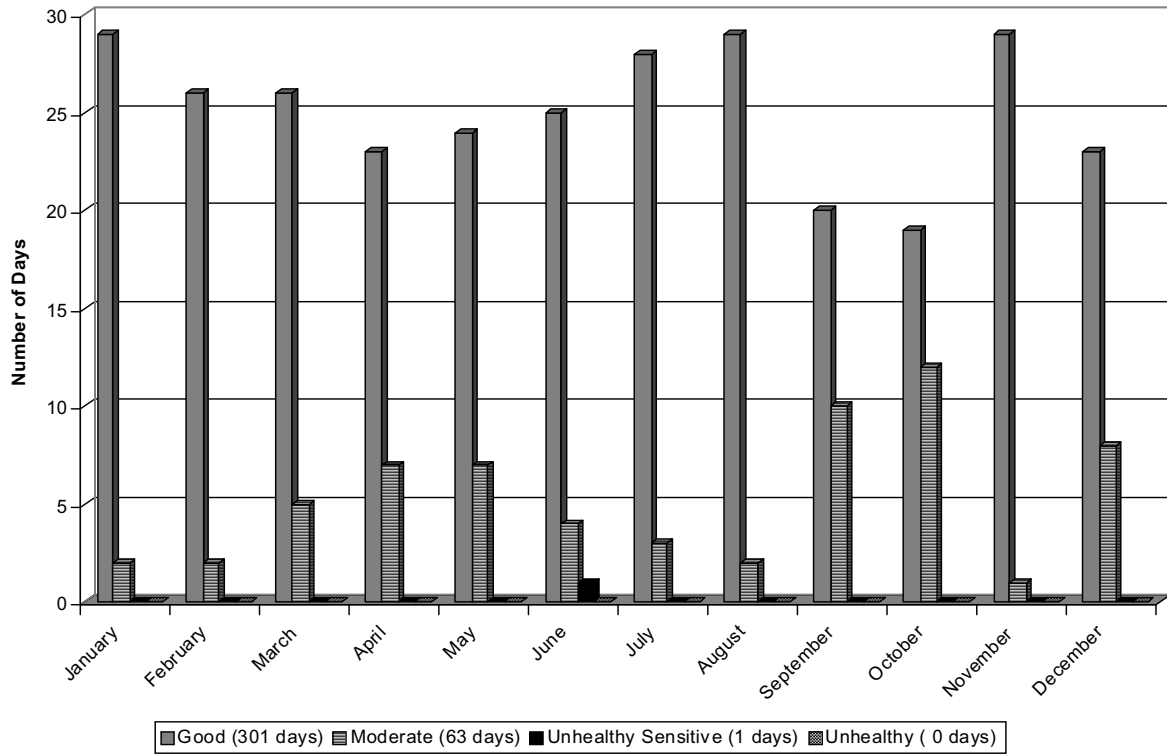
- Pre-recorded message at (727) 464-3392;
- Pinellas County website at www.pinellascounty.org;
- EPA Airnow website at www.airnow.gov

In addition, the St. Petersburg Times prints the previous day’s AQI every day in the weather section.

Figure 9. AQI Monthly Trend 2002 to 2004



**2003 Air Quality Index
Pinellas County**



**2004 Air Quality Index
Pinellas County**

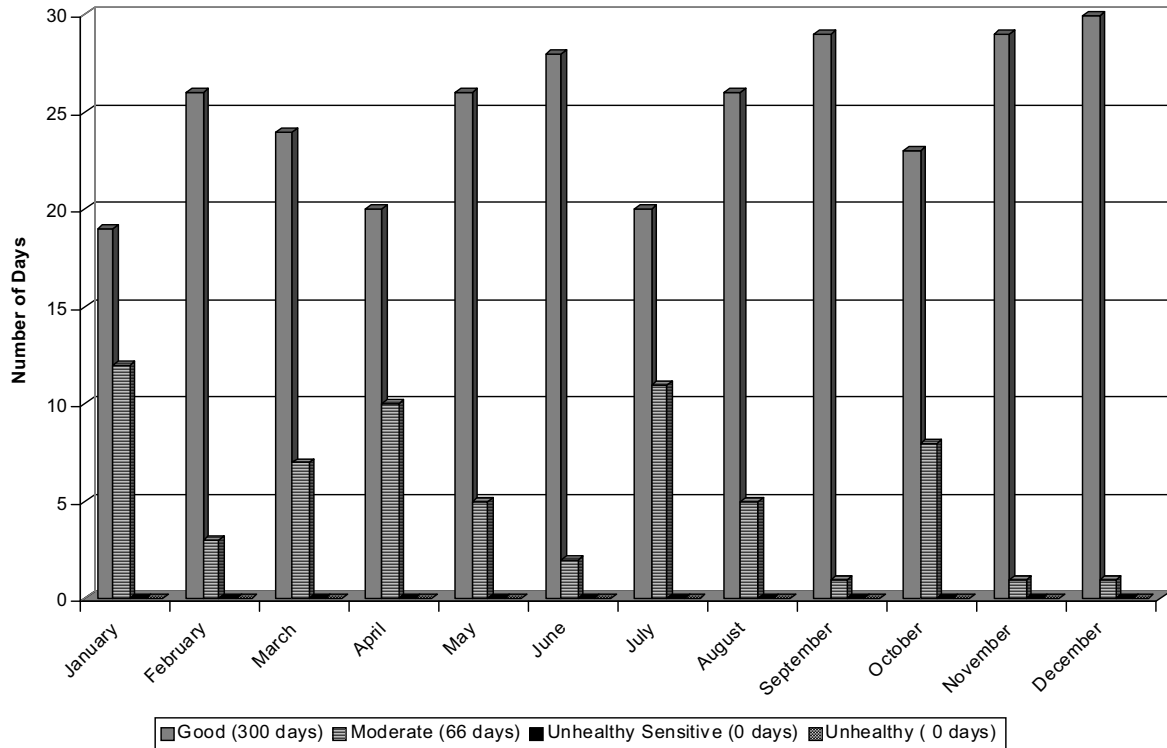
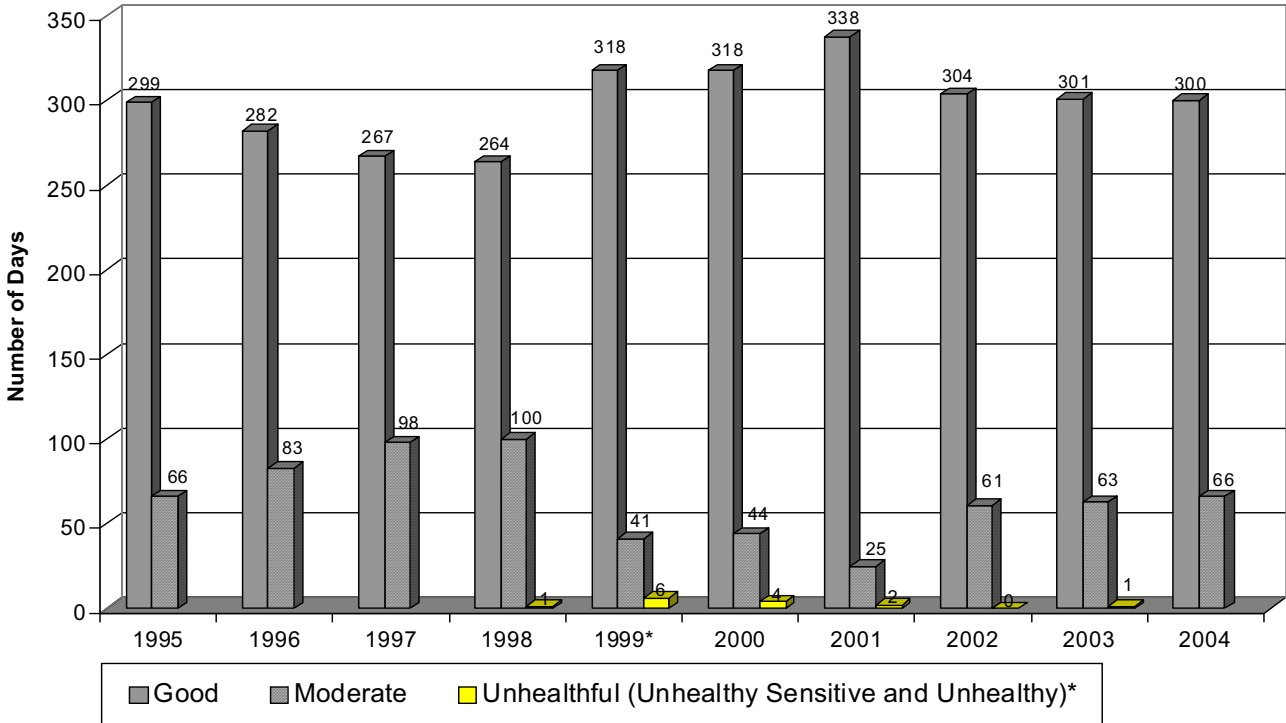


Figure 10. AQI 10-Year Trend 1995 to 2004



* In 1999, the unhealthful category was divided into 2 subgroups, unhealthy for sensitive groups and unhealthy.

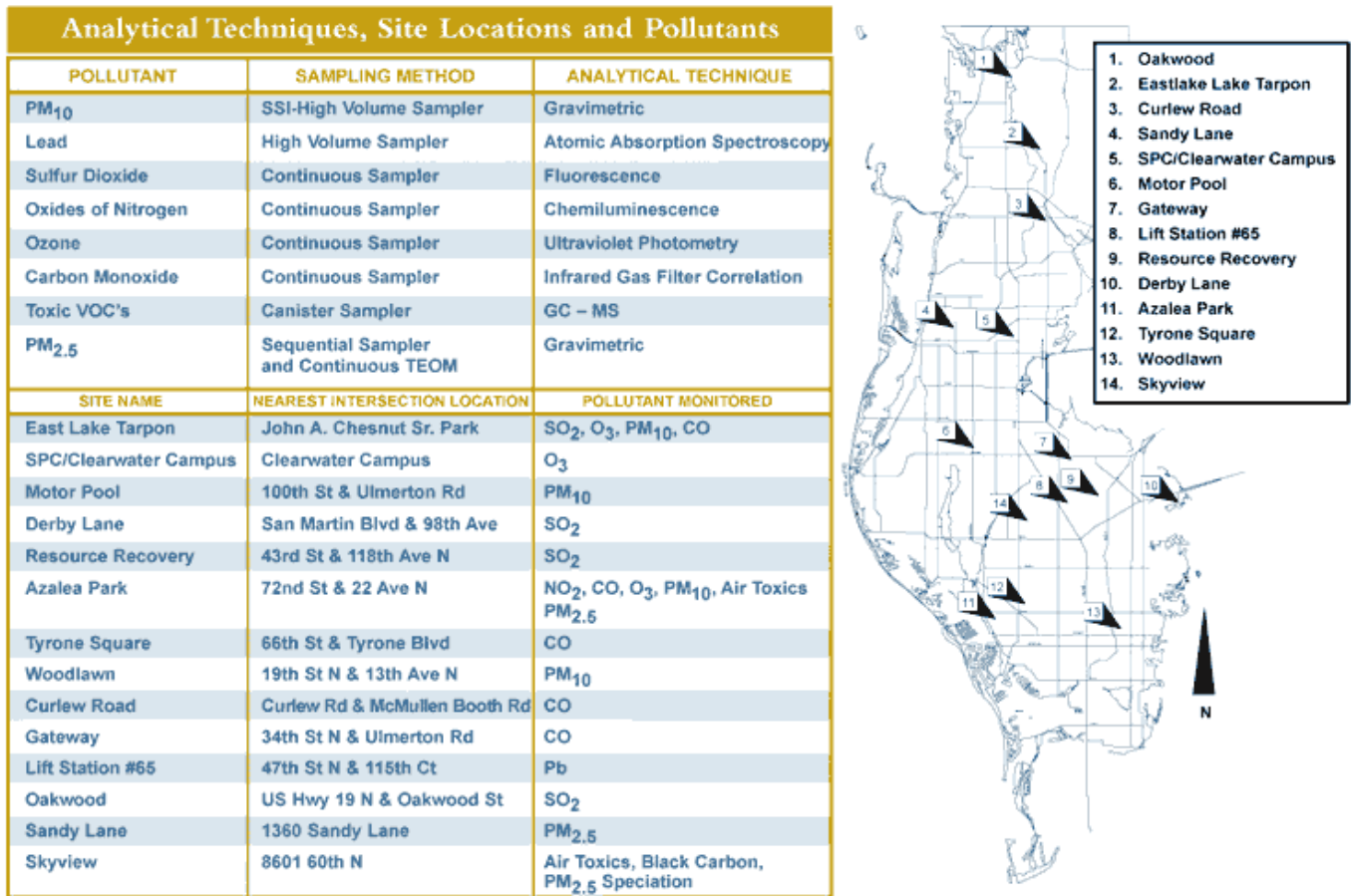
Program Operations

Air Monitoring

The framework for a well developed air quality management strategy begins with a balanced ambient monitoring network. A fully approved monitoring network must comply with uniform criteria for network design, measurement methodology, instrument siting and spatial representation, as defined in the code of Federal Regulations.

The monitoring of ambient air quality in Pinellas County is conducted through a system of periodic and continuous sampling stations around the county. The data collected from these networks provide the basis for developing the daily Air Quality Index, reviewing air pollution permits and evaluating the overall effectiveness of air pollution control strategies. In addition, monitoring is conducted for special studies. These monitoring sites are part of what is known as the National Ambient Monitoring Stations (NAMS) and the State and Local Air Monitoring Stations (SLAMS), and the National Air Toxics Trends Sites (NATTS). Figure 11 displays the location of monitoring sites in the county and Table 3 is a summary of the monitoring station's sampling method, analytical technique and location as of 2004.

Figure 11/Table 3. Monitoring Site Information



The county's air monitoring network is an EPA-approved program that has been in operation since 1975. The Air Monitoring Program measures air pollution concentration levels by operating two networks of air sampling stations or air monitors located throughout the County. Air pollutants from businesses, industry, and transportation sources are monitored in areas of expected maximum as well as typical concentrations. All monitoring data is subjected to a rigorous quality assurance program to ensure that the data are valid, representative, complete and known precision and accuracy. In addition, the Air Monitoring Program is subject to state and federal audits.

The Air Monitoring's Environmental Laboratory analyses samples for lead, asbestos, acid deposition, particulate and volatile organic compounds, as well as, providing technical information to the public and private sectors on issues related to air pollution.

Air Toxics Monitoring

Title III of the 1990 Clean Air Act Amendments list Hazardous Air Pollutants (HAP's), also called toxic air pollutants, and requires that source emissions for these pollutants be regulated. HAP's are of interest not only because they may pose adverse health and environmental effects, but also because a great deal remains to be learned about these pollutants due to the limited amount of available ambient monitoring studies. A significant number of the pollutants monitored by Pinellas County's Air Toxic Monitoring Program are HAP's. From 2002-2004, these pollutants, were measured at two monitoring sites (Azaela and Gateway/Skyview Elementary) and included volatile organic compounds (VOC's, e.g. benzene), metals (e.g. arsenic), and carbonyls (e.g. aldehydes).

The primary method for sampling HAP metals will be the collection of PM10 samples utilizing size selective inlet (SSI) high volume samplers. All nonvolatile compounds (metals) are sampled and analyzed using EPA Compendium Method IO-3. These compounds are analyzed as "total" metals. Samples are collected on 8X10 inch, quartz fiber filters utilizing PM 10 SSI hi-volume samplers. The EPC/HC laboratory performs the chemical analysis using ICP.

All carbonyl compounds sampled and analyzed for the project (except Acrolein) utilize the EPA Compendium Method TO-11A. Samples are collected on 2,4-dinitrophenylhydrazine cartridges and analyzed using high performance liquid chromatography. The Eastern Research Group (ERG), an EPA National Program contractor, provides technical and analytical support in accordance with their approved quality assurance plan.

The VOCs are sampled and analyzed using EPA Compendium Method TO-14A/15. Samplers are assembled using commercially available parts. They are collected in canisters and analyzed using gas chromatography/mass spectrometry (GC/MS) by the Pinellas County Department of Environmental Management (PCDEM), Air quality Division laboratory. Method detection limits (MDL) are determined using 40 CFR Appendix B to part 135. All concentrations are to be submitted as their actual (uncensored) numerical value. MDLs are submitted with each VOC data reading.

PCDEM will also measure elemental carbon (EC) using an aethalometer. This is a continuous instrument that draws samples through quartz tape. The EC particles are trapped on the tape and analyzed real time via spectrophotometry at 880 and 370 nm. The data are recorded on the site ESC data logger and polled to the central agency database. Data are also stored on an internal 3.5-inch drive and are retrieved during site visits.

PM_{2.5} speciation samples will be analyzed in accordance with the RTI (EPA National Program contractor) quality assurance plan.

Additional VOCs are extracted from the TO-14A/15 method because there is no additional cost to sample or analyze these compounds. The TO-14A/15, TO-11A, and IO-3 analyses provide additional data for HAPs not included in the Urban HAP list with minimal expenses for data management.

Permitting and Compliance

The Permitting and Compliance Program oversees both permitted and unpermitted sources of air pollution in Pinellas County. State permit applications are reviewed for air pollution sources to ensure compliance with control standards. Reviews are conducted for both major and minor sources. A major facility is one that emits 100 tons/year of criteria pollutants, 10 tons/year of any single hazardous air pollutant, or 25 tons of any combination of hazardous air pollutants. A minor facility is one that emits less than the major threshold levels. The program consists of the Toxics and Stationary Source Sections. The inspections include toxic and hazardous sources, as well as oil-fired power plants, waste incineration facilities, gasoline stations, paint and coating operations, and other sources that emit regulated pollutants.

Stationary sources staff inspect permitted and unpermitted sources, investigate citizen's complaints, compile annual emission inventories for air pollutants, review compliance test reports, inspect gasoline stations and tanker trucks for vapor recovery, and enforce the County's Comprehensive Air Quality Ordinance.

The Air Quality Asbestos/Air Toxics staff inspects permitted and unpermitted sources, investigates complaints, inspects demolition and renovation projects for proper removal and disposal of asbestos material, and cooperates with state and local agencies for asbestos notifications. Other activities include computer modeling to evaluate potential air toxic emission impacts, development of an air toxics control program, and special section projects.

During calendar years 2002-2004, compliance activities resulted in the processing of 340 warning letters and 163 consent orders. Consent orders are an enforcement action that requires the facility to make corrective changes and/or pay a penalty. Penalty revenues are deposited into the County Air Pollution Recovery Trust Fund and are used only for Division programs related to the control of emissions, air quality monitoring, facility inspections, and other such purposes related to the Permitting and Compliance Program. Tables 4 and 5 provide details of the Programs complaint and compliance activities.

Table 4. Complaint Activities 2002 to 2004

2002 Citizen's Complaints		2003 Citizen's Complaints	
Type	Quantity	Type	Quantity
Asbestos	45	Asbestos	51
Fugitive Dust	136	Fugitive Dust	61
Miscellaneous	39	Miscellaneous	3
Odor	125	Odor	99
Open Burning & Smoke	0	Open Burning & Smoke	13
Paint Fumes	47	Paint Fumes	27
Sandblasting	4	Sandblasting	2
VOC Fumes	18	VOC Fumes	26
Mobile Sources	0	Mobile Sources	0
Total Complaints	414	Total Complaints	282

2004 Citizen's Complaints	
Type	Quantity
Asbestos	37
Fugitive Dust	109
Miscellaneous	9
Odor	251
Open Burning & Smoke	35
Paint Fumes	37
Sandblasting	5
VOC Fumes	56
Mobile Sources	1
Total Complaints	503

Table 5. Compliance Activities 2002 to 2004

2002 Compliance Activities	
Type	Quantity
Asbestos Investigations	114
Asbestos Removal Projects	429
Compliance Inspections (Unpermitted)	103
Compliance Inspections (Permitted)	393
Gasoline Service Station Inspections	341
Gasoline Tanker Drops	8
Test Report Reviews	194
Consent Orders	38
Warning Letters	101
Penalties Collected	\$ 39,450
2003 Compliance Activities	
Type	Quantity
Asbestos Investigations	89
Asbestos Removal Projects	410
Compliance Inspections (Unpermitted)	58
Compliance Inspections (Permitted)	386
Gasoline Service Station Inspections	594
Gasoline Tanker Drops	4
Test Report Reviews	167
Consent Orders	53
Warning Letters	123
Penalties Collected	\$ 97,679
2004 Compliance Activities	
Type	Quantity
Asbestos Investigations	65
Asbestos Removal Projects	355
Compliance Inspections (Unpermitted)	62
Compliance Inspections (Permitted)	410
Gasoline Service Station Inspections	348
Gasoline Tanker Drops	7
Test Report Reviews	134
Consent Orders	72
Warning Letters	116
Penalties Collected	\$ 149,186

Point Source Inventory

The Air Quality Division prepares an annual emissions inventory of all permitted stationary point sources, which are required to submit an annual operating report. Minor sources, such as concrete batch plants animal crematories, and human crematories, are not required to submit annual reports. Estimates of actual emissions of particulates, oxides of sulfur, oxides of nitrogen, carbon monoxide, and volatile organic compounds in tons per year were derived from activity levels provided in each source's Annual Operating Report and, when available, from specific source testing information. Quality assurance checks of input data include reviews from completeness, accuracy, and reasonableness. EPA's Compilation of Emissions Factors Manual (AP-42) and Source Codes and Emission Factor Listing for Criteria Pollutants (FIRE v5.0) were used to provide the appropriate emission factors on a "best fit" basis. (See Table 6).

Table 6. Stationary Point Source Emission Inventories 2002 to 2004

2002 EMISSION INVENTORY OF STATIONARY POINT SOURCES PINELLAS COUNTY, FLORIDA¹						
Pollutant Type *****	Particulate	Particulate	Oxides of Sulfur	Oxides of Nitrogen	Carbon Monoxide	Volatile Organic Compound
Source Category	(PM)	(PM10)	(SOx)	(NOx)	(CO)	(VOC)
Manufacturing Process						
Fiberglass Boat Mfg.	0.6	0.3	0.0	0.0	0.0	301.7
Misc. Manufacturing	3.2	1.9	4.9	9.4	24.2	72.7
Surface Coating						
Coil Coating	0.1	0.1	0.0	1.8	18.1	3.5
Paper Coating	0.1	0.1	0.0	1.4	1.5	11.2
Plastic Coating	0.0	0.0	0.0	0.0	0.0	10.7
Misc. Surface Coating	2.7	0.6	0.0	0.5	0.1	51.7
Solvent Use						
Graphic Arts	0.2	0.2	0.0	0.2	0.1	183
Asphalt Plants	2.4	1.3	5.2	4.9	11.6	2.9 ²
Misc. Solvent Use	2.8	1.2	0.0	0.1	0.0	252.0
Combustion Sources						
Electric Utilities	695.5	501.9	19,737.2	4,989.3	429.3	85.9
Municipal Waste	26.6	26.6 ³	78.5	1,463.5	81.4	26.6
Misc. Combustion	13.4	7.7	6.4	76	27.2	6.4
TOTAL	747.6	541.9	19,832.2	6,547.1	593.5	1008.3

1. Emissions are reported in tons per year (tpy)
2. PM10 not specified for Municipal Waste

2. TOC (Total Organic Compounds) not VOC

**2003 EMISSION INVENTORY OF STATIONARY POINT SOURCES
PINELLAS COUNTY, FLORIDA¹**

Pollutant Type *****	Particulate (PM)	Particulate (PM10)	Oxides of Sulfur (SOx)	Oxides of Nitrogen (NOx)	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)
Source Category						
Manufacturing Process						
Fiberglass Boat Mfg.	0.6	0.4	0.0	0.0	0.0	249.5
Misc. Manufacturing	4.3	2.9	5.3	9.5	23.7	117.0
Surface Coating						
Coil Coating	0.2	0.2	0.0	2.5	24.9	3.2
Paper Coating	0.2	0.0	0.0	2.1	1.7	11.5
Plastic Coating	0.0	0.0	0.0	0.0	0.0	6.1
Misc. Surface Coating	2.7	0.7	0.0	0.6	0.1	50.4
Solvent Use						
Graphic Arts	0.1	0.0	0.0	0.2	0.1	182.9
Asphalt Plants	3.4	1.7	2.1	10.3	24.5	6.0 ²
Misc. Solvent Use	2.8	1.2	0.0	0.0	0.0	219.4
Combustion Sources						
Electric Utilities	1,031.9	718.5	34,067.5	5,370.3	440.3	59.9
Municipal Waste	13.1	13.1 ³	76.9	1,420.2	77.0	18.9
Misc. Combustion	8.3	5.7	7.4	43.3	16.5	2.9
TOTAL	1,067.6	744.4	34,154.2	6,859.0	608.8	927.7

1. Emissions are reported in tons per year (tpy)
3. PM10 not specified for Municipal Waste

2. TOC (Total Organic Compounds) not VOC

**2004 EMISSION INVENTORY OF STATIONARY POINT SOURCES
PINELLAS COUNTY, FLORIDA¹**

Pollutant Type *****	Particulate (PM)	Particulate (PM10)	Oxides of Sulfur (SOx)	Oxides of Nitrogen (NOx)	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)
Source Category						
Manufacturing Process						
Fiberglass Boat Mfg.	3.7	2.2	0.0	0.0	0.0	263.9
Misc. Manufacturing	2.9	2.5	5.4	13.6	24.7	151.7
Surface Coating						
Coil Coating	0.1	0.2	0.0	1.5	11.9	7.0
Paper Coating	1.0	0.0	0.1	2.3	1.9	12.0
Plastic Coating	0.0	0.0	0.0	0.0	0.0	4.1
Misc. Surface Coating	1.8	0.4	0.1	0.7	0.0	53.5
Solvent Use						
Graphic Arts	0.1	0.0	0.0	0.3	0.1	158.4
Asphalt Plants	2.0	0.7	5.1	8.5	20.2	4.9 ²
Misc. Solvent Use	0.3	0.3	0.0	0.0	0.0	212.0
Combustion Sources						
Electric Utilities	801.7	565.6	20,363.6	5,132.5	431.1	56.4
Municipal Waste	4.9	4.9 ³	76.9	1,564.1	131.0	0.0
Misc. Combustion	3.5	3.2	5.3	35.0	28.6	3.6
TOTAL	822.0	580.0	20,456.5	6,758.5	649.5	927.5

1. Emissions are reported in tons per year (tpy)
3. PM10 not specified for Municipal Waste

2. TOC (Total Organic Compounds) not VOC

Planning and Analysis

The Air Quality Planning and Analysis Program is responsible for development reviews, policy analysis, air monitoring site analysis and coordination of the Division's public education and outreach program, which develops public information material and provides public speakers. Other planning activities include projects such as preparing the Division's annual report, air quality transportation analysis, development of emission inventories, and special research projects.

Program staff review proposed changes to federal, state, and local regulations and provide both comment and analysis on the impact of the regulatory changes. In addition, the Program supports various regulatory agencies and governmental bodies including the Board of County Commissioners, Metropolitan Planning Organization and the Florida Department of Environmental Protection. Program staff provides technical information and testimony, as needed, at various workshops and public meetings.

Administration

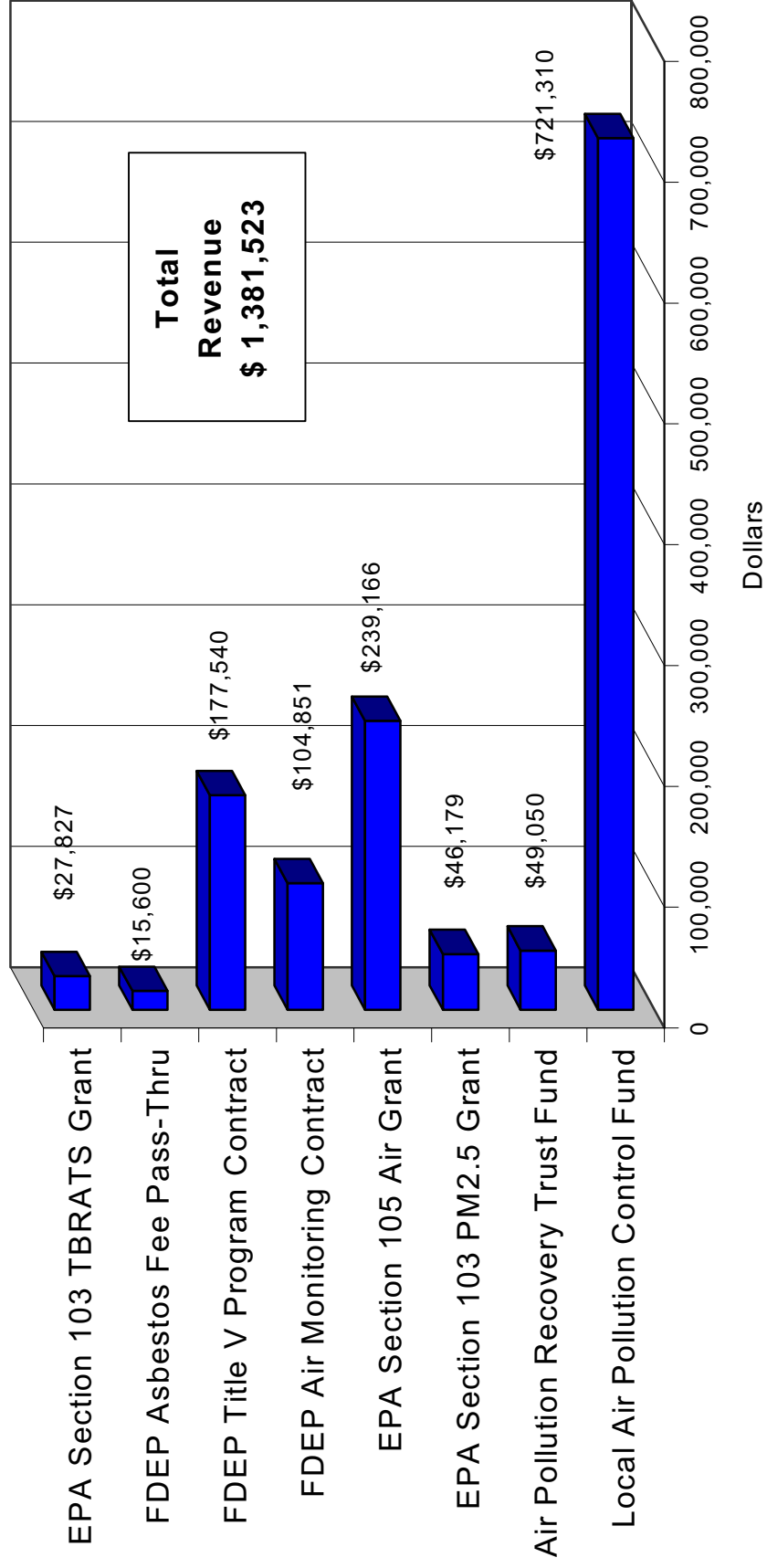
Administration supports key administrative and daily operational needs. Staff is responsible for maintaining the division's budget and federal grants, program and policy development, interagency coordination, media relations and clerical support. Tables 7 and 8 provide financial information for the period 2002-2004.

Table 7. Fiscal Year Expenses

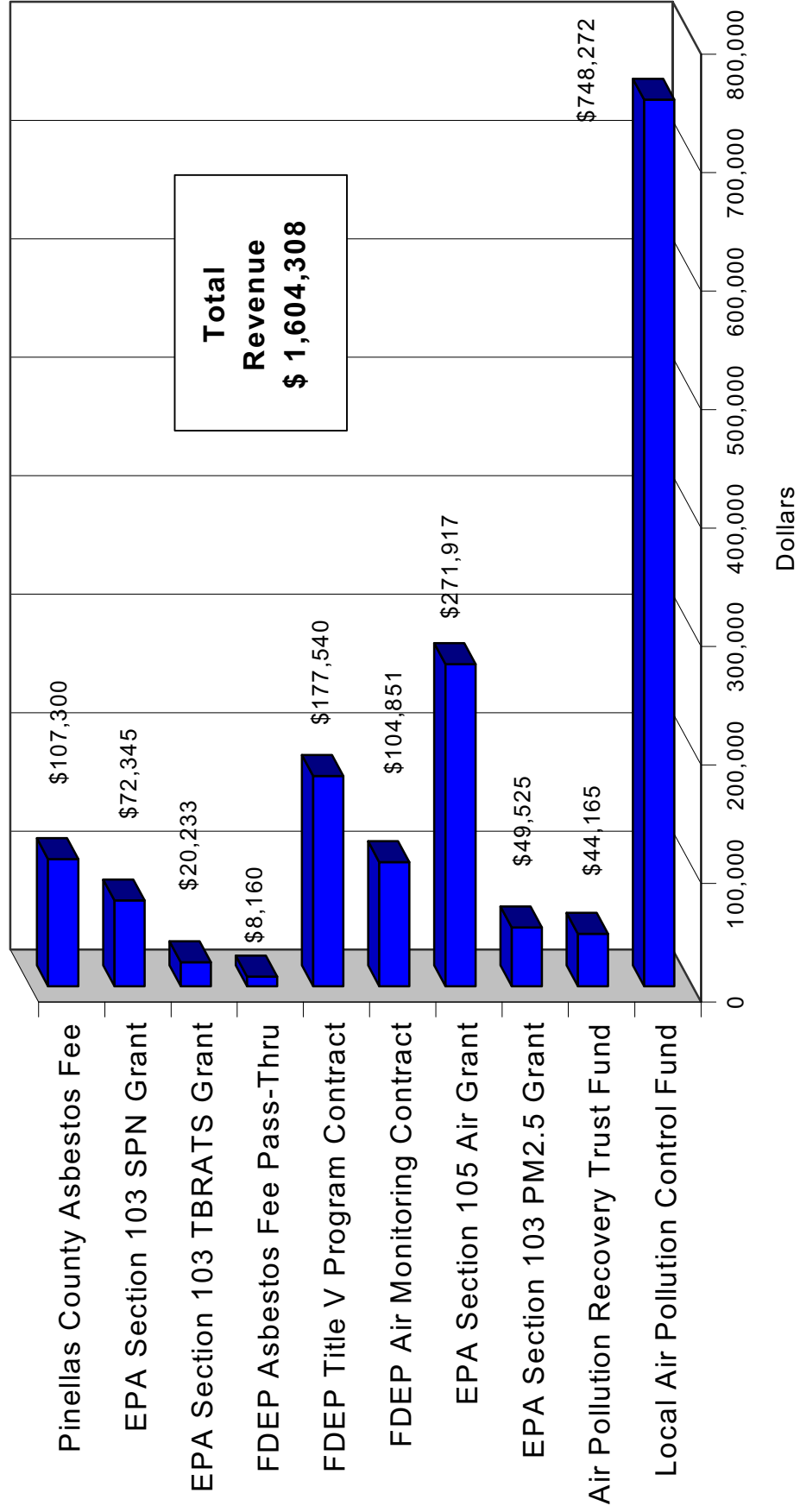
Year/Funding Source	2002	2003	2004
Local Pollution Control Fund (License Plate Fee)			
Personnel Services	\$452,897.00	\$574,482.00	\$586,380.00
Operating Expenses	\$252,209.00	\$218,139.00	\$195,469.00
Subtotal	\$705,106.00	\$792,621.00	\$781,849.00
Air Pollution Recovery Fund			
Operating Expenses	\$17,080.00	\$10,238.00	\$13,998.00
Capital Outlay	\$43,135.00	\$33,927.00	\$13,700.00
Subtotal	\$60,215.00	\$44,165.00	\$27,698.00
Air Quality General Fund			
Personnel Services	\$969,111.00	\$1,005,438.00	\$1,107,209.00
Operating Expenses	\$65,151.00	\$69,652.00	\$70,435.00
Subtotal	\$1,030,262.00	\$1,075,090.00	\$1,177,644.00
Total Expenses	\$1,795,583.00	\$1,911,876.00	\$1,987,191.00

Table 8. Program Revenue Fiscal Years 2002 to 2004

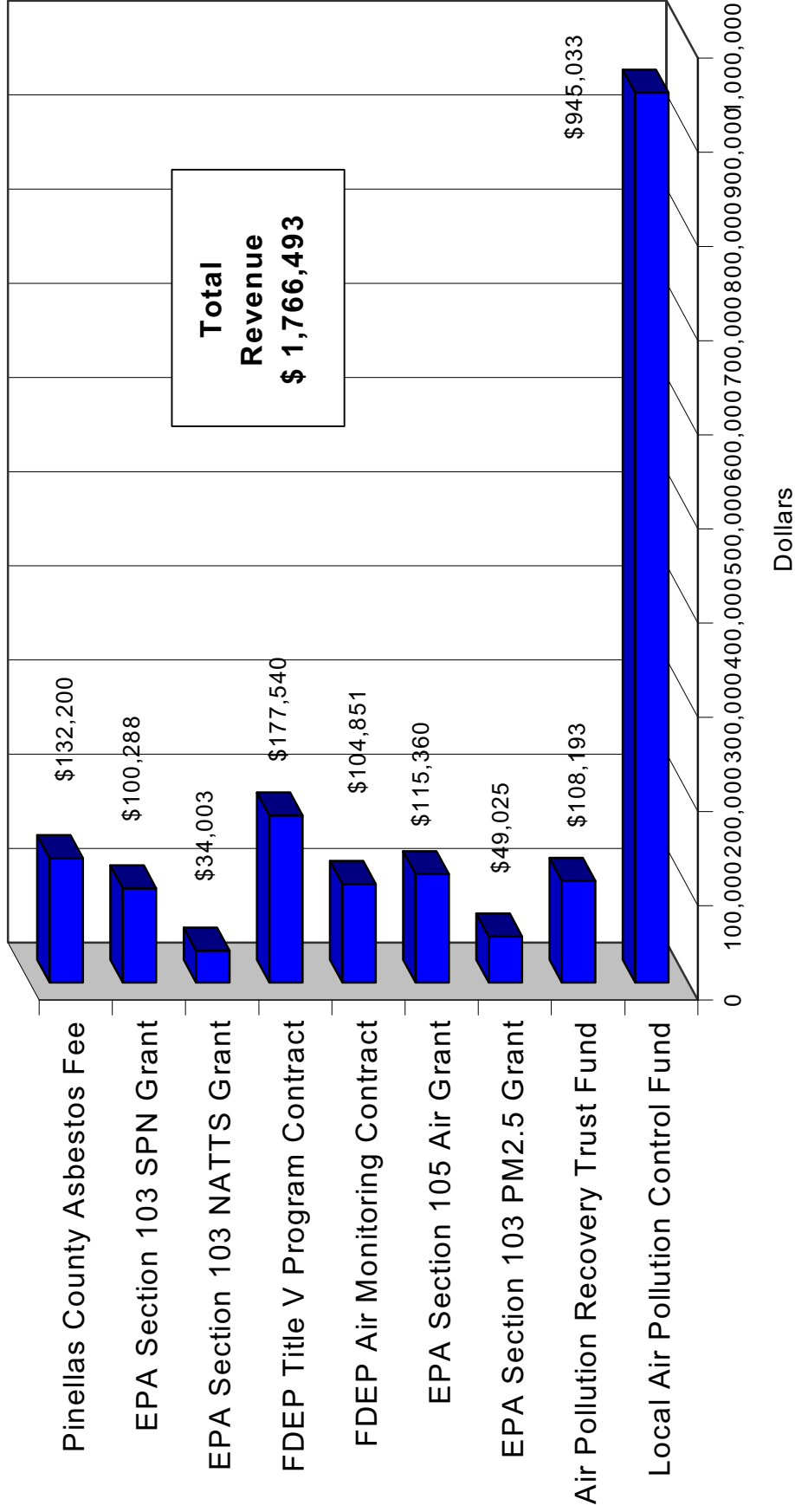
Program Revenue Fiscal Year 2002



Program Revenue Fiscal Year 2003



Program Revenue Fiscal Year 2004



Regulations and Special Projects

Regulatory Updates for 2002, 2003, and 2004

The US Environmental Protection Agency (EPA) continued to develop rules to control specific sources of emissions (e.g. toxic emission controls for municipal waste incinerators). In addition, the EPA continued to work on regulations and national scale programs during the period from 2002 to 2004. These programs include:

2002

- Emission standards for new non-road engines that reduce oxides of nitrogen, hydrocarbon, and carbon monoxide emissions from several groups of previously unregulated non-road engines. These include large industrial spark-ignition engines (e.g. forklifts and electric generators), recreation vehicles (e.g. snowmobiles and ATVs), and diesel marine engines used in recreational boats.

2003

- Proposal to control mercury emissions from coal-burning power plants. This will include the installation of control technologies, as well as, declining annual caps on emissions. These caps can be attained by the use of control technologies or emissions trading.
- Introduction of the Clean School Bus USA Program. This is a voluntary program designed to reduce particulate matter emissions from diesel school buses through bus idle reduction strategies, retrofit of emission control devices on existing school buses, and the replacement of older, higher emitting buses with newer, low emission buses. Grant money will be made available to implement this program.

2004

- The non-road diesel rule requires stringent pollution controls on diesel engines used in industries such as construction, agriculture, and mining, as well as limit the amount of sulfur in non-road diesel fuels. Over 650,000 pieces of non-road diesel equipment sold in the US each year will be covered by this rule making. Non-road fuel sulfur levels will be lowered from 3000 parts per million (ppm) to 15 ppm by the year 2010.
- Area designations for the new 8-hour ozone standard were made final by April, 2004. The Tampa bay area was designated as an attainment area for the new standard, although, certain programs and policies applicable under the old 1-hour standard will be retained in order to prevent loss of any progress made under to old standard.
- Area designations for the new fine particulate (PM 2.5) standard were completed by December, 2004. The Tampa Bay area designated as an attainment area for this standard.

NAAQS Status

The EPA annually reviews ambient air monitoring data collected in counties nationwide. The data is used to determine a county's compliance with National Ambient Air Quality Standards (NAAQS) for ozone, particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, and lead. Pinellas County continues to be in compliance with NAAQS for all six pollutants (See Figure 9).

In 1997, EPA promulgated a new NAAQS for ozone, based on an 8-hour average, that would be more protective of public health than the 1-hour ozone standard. EPA's authority to implement the new standard was challenged in court, however the issue was decided in EPA's favor. Despite revoking the one-hour standard certain regulatory programs will remain in effect to prevent a backsliding or deterioration of the progress made under the old one-hour standard. Based on the most recent three years ozone data Pinellas County was classified as achieving attainment for the eight-hour ozone standard. In addition, the County is classified as being in attainment for all other NAAQS.

National and Local Air Toxics Assessment

Under the Clean Air Act (CAA) Amendments of 1990, the U.S. Environmental Protection Agency (EPA) is required to reduce lifetime cancer risks from major sources of 188 hazardous air pollutants (HAP's) to one in one million. The CAA requires that over time EPA regulations for major sources should "provide an ample margin of safety to protect public health." Benchmark concentrations are the amount of a pollutant below which there is likely to be no public health concern. For a carcinogenic hazard, EPA uses a benchmark concentration of one in a million excess probability of contracting cancer over a lifetime of exposure. For non-carcinogens, EPA's benchmark concentrations are based on long-term exposure or short-term exposure. For long-term exposure, the inhalation reference concentration is used to represent that level. For short-term exposure, the benchmark chosen is a Level of Concern developed for the Superfund (hazardous material cleanup) program divided by a factor of 1000, for added safety. The Level of Concern is indicative of levels of airborne concentrations of chemicals for which no serious irreversible health effects are expected to occur after exposure to the pollutant for 30 minutes.

EPA is currently conducts a National-scale Air Toxics Assessment (NATA) that includes 33 air toxics that present the greatest threat to public health. The last year for which NATA was performed was 2002. The goal of NATA is to identify those air toxics that are of greatest potential concerns, in terms of contribution to population risk. The results will be used to set priorities for the collection of additional air toxics data. The assessment also includes diesel particulate matter that is used as a surrogate measure for diesel exhaust. The assessment includes four steps:

- Compiling a national emissions inventory of air toxics emissions from outdoor sources,
- Estimating ambient concentrations of air toxics across the contiguous United States,
- Estimating population exposure across the contiguous United States, and
- Characterizing potential public health risk due to inhalation of air toxics, including both cancer and non-cancer effects.

There are certain limitations to the assessment: the analysis is based on one year of data only, it assesses only 33 air toxics plus diesel exhaust; it only addresses inhalation exposures and risks; it does not capture localized impacts and risks; and finally, it focuses on average population risks for ambient outdoor exposure only. There are also uncertainties inherent in the assessment, including: the quality of the emission inventories and other data sources; the range of error and uncertainty within the dispersion and exposure models; the uncertainty and variability in Unit Risk Estimates; and the uncertainty in reference concentrations used for non-cancer risks. In general terms, on a national scale, NATA has identified mobile and area sources as being responsible for a majority of the health risks associated with air toxic emissions.

The first NATA assessment was performed for the data year 1996 and again for the data year 1999. In the future, it is expected that the NATA assessment will be performed every three years (2002, 2005, 2008, etc.). Final results of the assessment for a given year generally lag behind by 3-5 years due to the data gathering and analytical complexities. It is hoped that the results of these continued assessments will provide important information to help EPA continue to develop and implement a national toxics program. Specifically, the results of these national-scale assessments will be used to:

- Identify air toxics of greatest potential concern;
- Set priorities for the collection of additional air toxics data;
- Characterize the relative contributions to air toxic concentrations and population exposures from different types of toxic emission sources (e.g., mobile sources);
- Establish baseline and standard inventories for tracking trends over time in modeled ambient concentrations of air toxics;
- Establish a baseline and horizon year inventories for measuring progress toward meeting goals for reductions of inhalation risk ambient air toxics

There are many limitations on the accuracy of NATA results. One significant limitation is the uncertainty in many dose-response concentrations associated with health benchmark concentrations that are designed to protect the public from adverse health effects. Such concentrations are determined primarily through laboratory research on animals, often with linear extrapolation of adverse health effects from large to small doses/exposures. Also, some health effects assigned to inhalation of a pollutant are actually determined based on ingestion or dermal contact with a pollutant. Other significant limitations include, but are not limited to, the accuracy of the emissions and emissions related data into the NATA air dispersion model and limitations of this model to account for chemical interactions and pollutant concentrations very close to the source. Pinellas County Air Quality Division (AQD) staff are currently involved in data collection, data analyses and health assessment efforts to maximize the accuracy of the NATA model inputs and scientifically test any NATA indications of locally adverse health effects. A critical component of these AQD efforts is ambient air toxics monitoring.

The success of the NATA and other air toxics programs depends, in part, on compiling ambient monitoring data needed to characterize air toxics concentrations/depositions and validate/adjust the models used in the assessment to simulate real-world conditions. Therefore, EPA is establishing a national network for collecting additional data by providing grant dollars to support the analysis of existing and new ambient air toxics monitoring sites. These sites are referred to as NATTS, National Air Toxics Trend sites. There are 23 NATTS sites to date representing both urban and rural environments. The Tampa Bay Area, consisting of two sites, one each in Pinellas County and Hillsborough County.

Pinellas County's review of NATA 1999 emissions modeling results and available 2002 ambient air toxics monitoring data indicates average ambient concentrations of 14 HAPs to be present in concentrations exceeding EPA public health screening benchmarks for cancer or non-cancer adverse health effects. These were 7 of these 14 HAPs indicated above the cancer risk benchmark in the NATA 1999 assessment and Pinellas County 2002 ambient air toxics monitoring data: benzene, ethylene dibromide, butadiene, carbon tetrachloride, acetaldehyde, tetrachloroethane and 1,1,2,2-tetrachloroethane. Naphthalene and acrolein were also indicated above benchmarks in NATA 1999, but have not been monitored. Pinellas County 2002 ambient air toxics monitoring indicated an additional five HAPs above the cancer risk: acrylonitrile, p-dichlorobenzene, arsenic, chromium and ethylene dichloride. Only acrolein exceeded the non-cancer benchmark. The non-cancer benchmark is not associated with any calculable risk, but rather indicates the potential for non-cancer adverse health effects. The other 13 HAPs exceeded the lowest

cancer risk benchmark, a situation in which increased and refined data collection and exposure assessment efforts are recommended. In addition, 2 of these 13 HAPs, benzene and acrylonitrile, exceeded the higher level cancer risk benchmark, a situation in which emissions and/or exposure reduction is recommended.

Emission reduction is not indicated as a significant issue by NATA 1999 for ethylene dibromide, carbon tetrachloride or 1,1,2,2-tetrachloroethane, because over 99% of their cancer risk is from background concentrations. Background concentrations result from emissions that occurred in the past, travel many miles or take years to break down chemically. According to NATA 1999, 5 of the 9 HAPs above benchmarks would remain above benchmark based solely on active emissions (without background concentrations): benzene, acetaldehyde, butadiene, naphthalene and acrolein. However, assuming the background concentrations assigned to HAPs in NATA 1999 are proportionally accurate with respect to active emissions, 4 of the 5 HAPs with concentrations indicated above the cancer benchmark in Pinellas County 2002 monitoring would also remain above cancer benchmarks based solely on active emissions: acrylonitrile, p-dichlorobenzene, arsenic and chromium. According to NATA 1999, emissions of these four HAPs originate from stationary sources only (i.e. industrial power plants and incinerators, chemical evaporation from commercial use and municipal landfills), with the exception of a small percentage of mobile source chromium emissions. In contrast, mobile source emissions dominate for the four NATA 1999 HAPs that remain above benchmarks based solely on active emissions. Mobile sources accounted for 66% of NATA 1999 cancer risk and mobile source carcinogen emissions have increased from 58% of total carcinogenic emissions in 1999 to 89% of total carcinogenic emissions in 2002.

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