



Flag Program

Coordinator Handbook

May 2013



P I N A L ♦ C O U N T Y

Wide open opportunity



Flag Program

GOOD	MODERATE	UNHEALTHY FOR SENSITIVE GROUPS	UNHEALTHY	VERY UNHEALTHY	HAZARDOUS
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FACT SHEET

- The Air Quality Index (AQI) categorizes the quality of the air through easy to understand terms and colors
- AQI flags are provided to school districts by Pinal County Air Quality (through an EPA grant to ADEQ)
- Participating schools will receive a daily email with the Pinal County air quality forecast through EnviroFlash 
- Each school raises the appropriate AQI color coded (i.e. green – good, moderate – yellow, etc.) flag daily
- Schools will have the information necessary to take appropriate measures to protect students during days with poor air quality
- AQI flags inform students, parents and the general public about air quality conditions in Pinal County
- It is the goal of the AQI flag program that the increased awareness through the AQI Flag Program will help people make decisions to minimize polluting activities
- Questions? Contact Scott DiBiase with Pinal County Air Quality, (520)866-6929 or scott.dibiase@pinalcountyaz.gov

What is the Air Quality Index (AQI)?

The Air Quality Index (AQI) is a unit less number that tells you how clean or polluted the air outside is along with what associated health effects may be a concern for you. The AQI focuses on health effects you may experience within a few hours or days after breathing polluted air.

There are six criteria air pollutants regulated by the Clean Air Act (CAA) through the Environmental Protection Agency (EPA):

1. Ground-level ozone (O₃)
2. Particulates 10 microns and smaller in diameter (PM₁₀)
3. Particulates 2.5 microns and smaller in diameter (PM_{2.5})
4. Carbon Monoxide (CO)
5. Sulfur Dioxide (SO₂)
6. Nitrogen Dioxide (NO₂)

The AQI is a yardstick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI level of 50 represents good air quality with little potential to affect public health, while an AQI value over 300 represents hazardous air quality.

An AQI value of 100 corresponds to the National Ambient Air Quality Standard (NAAQS) for a particular pollutant.

The table below shows the AQI levels

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
<i>When the AQI is in this range:</i>	<i>...air quality conditions are:</i>	<i>...as symbolized by this color:</i>
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

What is the Air Quality Index (AQI)? (Continued)

Below is another more descriptive AQI table with meanings for the various AQI categories.

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.

What is the AQI Flag Program?

The AQI Flag Program is an education and outreach tool for schools to use in order to inform and educate students, parents, teachers and the general public about the air quality in their local area.

The program was funded through an EPA grant and the sets of flags are provided by the Arizona Department of Environmental Quality (ADEQ) through Pinal County Air Quality.

The set of flags includes the following:

1. Green flag – represents good on the AQI scale
2. Yellow flag – represents moderate on the AQI scale
3. Orange flag – represents unhealthy for sensitive groups on the AQI scale
4. Red flag – represents unhealthy for everyone on the AQI scale

How does the AQI Flag Program work?

A daily air quality forecast for Pinal County is developed by Pinal County Air Quality.

A school representative (i.e. AQI Flag Program Coordinator) signs up with EPA sponsored EnviroFlash (<http://www.enviroflash.info/signup.cfm>) and automatically receives a daily email (approximately 1-3 p.m.) with the next day's AQI forecast (see example below)

Mail From: Scott DiBiase <Scott.dibiase@pinalcountyaz.gov>
File Edit View Actions Tools Window Help
Close Reply Forward Open Next
Mail Properties Personalize Message Source
From: Scott DiBiase <Scott.dibiase@pinalcountyaz.gov>
To: DiBiase, Scott
Subject: Pinal County Action Day has been forecasted! 3/25/2009

Air Quality Notifications
PINAL COUNTY
EnviroFlash
New Environmental Alert System

An Air Quality Action Day has been declared for Pinal County, AZ, on Thursday, Mar 26

Today and Tomorrow's Forecast

Wednesday, Mar 25:	65 AQI	Moderate	Yellow	Particle Pollution (10 microns)
Thursday, Mar 26:	125 AQI	Unhealthy for Sensitive Groups	Orange	Particle Pollution (10 microns)

Extended Forecast

Friday, Mar 27:	70 AQI	Moderate	Yellow	Particle Pollution (10 microns)
Saturday, Mar 28:		Forecast Unavailable		
Sunday, Mar 29:		Forecast Unavailable		
Monday, Mar 30:		Forecast Unavailable		

Updated Wednesday, March 25, 2009 at 11:30 a.m.*** PM10 HIGH POLLUTION ADVISORY IN EFFECT FORTHURSDAY MARCH 26, 2009 ***A vigorous area of low pressure is going to move through the four corners region during the second half of Thursday. The cold front associated with the area of low pressure will move through the local area during the afternoon/evening period on Thursday. Unfortunately this system will be dry and will bring windy conditions for the local area with sustained winds around 20-25 mph and wind gusts of 35-40 mph on Thursday afternoon and evening. Areas of blowing dust are expected and as a result a PM10 High Pollution Advisory (HPA) has been issued for Thursday. People with respiratory and/or heart ailments should limit outdoor activities on Thursday afternoon and evening in order to reduce health impacts. We can all play a part in reducing our dust causing activities on Thursday. The less the ground surface is disturbed the less PM10 (i.e. dust) available for the winds to pick up and blow around. Check back on Thursday for an updated forecast. Forecaster SD.

Additional air quality information is available at

AQI index (yesterday's monitoring summary) report
<http://pinalcountyaz.gov/Departments/AirQuality/Pages/AirQualityReport.aspx>
AQI forecast report <http://pinalcountyaz.gov/Legacy/AirQual/pdf/Forecast/aqforecast.pdf>

Do not reply directly to this email. If you want more information on the air quality forecast, or other aspects of the local air quality program, please contact your local air quality agency using the information above. For more information on the U.S. EPA's AIRNow Program, visit <http://www.airnow.gov>.

[To unsubscribe or edit your EnviroFlash account](#)

This message is compliant with the federal Can Spam Act of 2003 (Public Law 108-187)

The AQI Flag Program Coordinator raises the appropriate colored flag corresponding to the daily forecast using the school's flagpole.

How does the AQI Flag Program work? (Continued)

Depending on the forecasted AQI level, schools can plan outdoor activities and if necessary move outdoor activities indoors in order to limit possible health effects due to poor air quality.

The AQI Flag Program also provides a possible teaching curriculum for science teachers. It's a great opportunity for students to learn about air quality along with meteorology which plays a large role in air quality. (<http://www.airnow.gov/index.cfm?action=learning.forteachers>)

The AQI Flag Program empowers schools, teachers, students and parents by providing air quality information so that people can make informed decisions on their outdoor activities. In addition, the Flag Program is a tool that can educate people about their local air quality, the importance of the air we breathe, and how it impacts our health.

What are the coordinator's responsibilities?

- Either sign up directly or have Scott DiBiase (scott.dibiase@pinalcountyz.gov) sign you up to EnviroFlash (<http://www.enviroflash.info/signup.cfm>). If you choose to do the subscription to EnviroFlash yourself, do the following in the subscription screen (see screen shot below)

EnviroFlash - Sign-Up - Windows Internet Explorer

http://www.enviroflash.info/signup.cfm

File Edit View Favorites Tools Help

Google Search Sign In

EnviroFlash - Sign-Up Home Feeds (1) Print Page Tools

AIRNOW Air Quality Notifications **EnviroFlash**

EnviroFlash Home
EnviroFlash Challenge Results
EnviroFlash Fact Sheet (PDF)
Learn how EnviroFlash works!
EnviroFlash on Twitter!
AIRNow RSS Feeds
EnviroFlash Toolkit
Available to AIRNow partner agencies
About the Air Quality Index (AQI) (PDF)
Today's National Air Quality Forecast
Recommend to a friend
About EnviroFlash

[Subscribe to EnviroFlash | Registered Subscribers](#)

(Step 1 of 3)
Sign up and Start Receiving Your Air Quality Forecast Today!
Fill out the form below to get started.

Subscriber Information

Email Address: * [Subscribing with your phone?](#)
First Name:
Last Name:
ZIP Code: *

* required fields

Forecast City Selection [Change City](#)

Nearest EnviroFlash City:

Email Preferences

Format: HTML Text Only Short

Receive Action Day Notifications:

Receive Forecasts: Forecasts are unavailable for this city.

Receive Current Conditions: Current Conditions are unavailable for this city.

Select minimum level at which to receive daily forecast Emails

Forecasts	Current	AQI Values	Levels	Colors
<input type="radio"/>	<input type="radio"/>	0-50	Good (receive daily forecast)	Green
<input type="radio"/>	<input type="radio"/>	51-100	Moderate	Yellow
<input type="radio"/>	<input type="radio"/>	101-150	Unhealthy for Sensitive Groups	Orange
<input type="radio"/>	<input type="radio"/>	151-200	Unhealthy	Red
<input type="radio"/>	<input type="radio"/>	201-300	Very Unhealthy	Purple
<input type="radio"/>	<input type="radio"/>	301+	Hazardous	Maroon

Next

- Fill in the subscriber information with the zip code that your school is located
- The zip code will help select the Forecast City (see screen shot below)
- If you're interested, you can also receive the AQI forecasts via Twitter by clicking on the Twitter links. This will open up the appropriate Twitter page for the forecast location and from there you can click the Follow button to start following.

EnviroFlash - Sign-Up - Windows Internet Explorer

http://www.enviroflash.info/signup.cfm

File Edit View Favorites Tools Help

Google Search More >>

EnviroFlash - Sign-Up

AIRNOW Air Quality Notifications **EnviroFlash**
Your Environmental News Flash

[Subscribe to EnviroFlash](#) | [Registered Subscribers](#)

(Step 1 of 3)
Sign up and Start Receiving Your Air Quality Forecast Today!
Fill out the form below to get started.

Subscriber Information

Email Address: * [Subscribing with your phone?](#)

First Name:

Last Name:

ZIP Code: *

* required fields

Forecast City Selection [Change City](#)

Nearest EnviroFlash City: **San Tan Valley, AZ**

You can also follow San Tan Valley air quality on twitter

[Forecasts](#) [Action Days](#)

Email Preferences

Format: HTML Text Only Short

Receive Action Day Notifications:

Receive Forecasts:

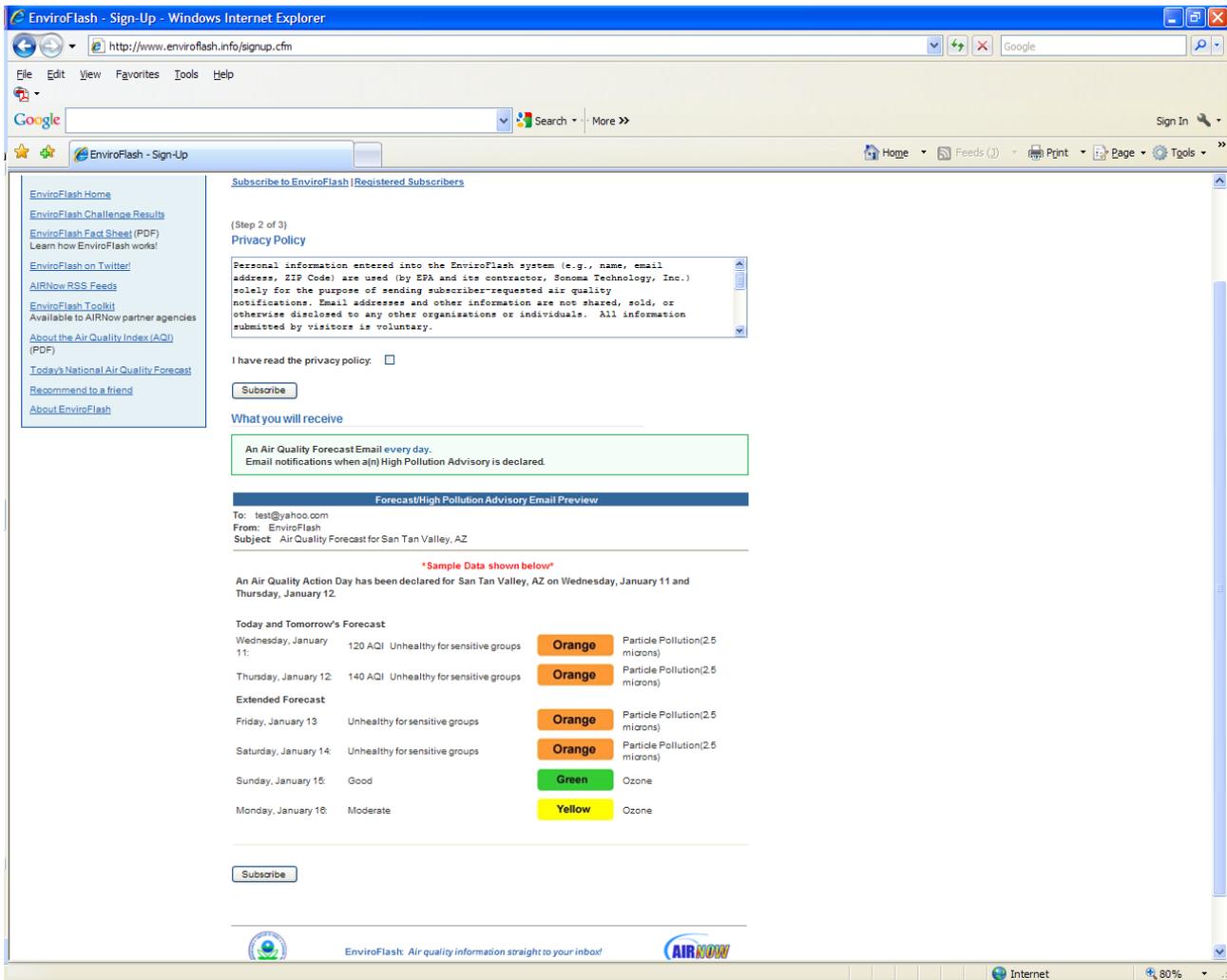
Receive Current Conditions: Current Conditions are unavailable for this city.

Select minimum level at which to receive daily forecast Emails

Forecasts	Current	AQI Values	Levels	Colors
<input type="radio"/>	<input type="radio"/>	0-50	Good (receive daily forecast)	Green
<input type="radio"/>	<input type="radio"/>	51-100	Moderate	Yellow
<input type="radio"/>	<input type="radio"/>	101-150	Unhealthy for Sensitive Groups	Orange
<input type="radio"/>	<input type="radio"/>	151-200	Unhealthy	Red
<input type="radio"/>	<input type="radio"/>	201-300	Very Unhealthy	Purple
<input type="radio"/>	<input type="radio"/>	301+	Hazardous	Maroon

- Click the Receive Forecasts box in the Email Preferences section and the type of email format you'd like to receive (i.e. HTML, Text Only, etc.)
- Choose the 0-50 Forecasts AQI Values in order to receive all forecasts.
- Click the Next button

- The next screen will look like this,



- Read the Privacy Policy and click the “I have read the privacy policy” box below it.
- Information on what you will receive (including a sample email) is below the Privacy Policy.
- **Click the Subscribe button to complete the EnviroFlash subscription process.**
- You will receive the daily AQI forecast from EnviroFlash between 1-3 p.m. everyday.
- Each morning raise the appropriate colored AQI flag for that day.
- If you have any questions or inquiries about the AQI flag program, please call Scott DiBiase at (520)866-6969 or email scott.dibiase@pinalcountyaz.gov
- **If/when the AQI Flag coordinator is replaced with a new person; please contact Scott DiBiase with the new coordinator’s contact information.**
-

What are the coordinator's responsibilities? (Continued)

- Provide educational information to school staff, parents, students and the community on the purpose of the AQI Flag Program and the meaning behind each colored flag.
 - Educational materials on air quality can be found on the www.AIRNOW.gov website (LEARNING CENTER on the right hand side of the main webpage)

The screenshot shows the AIRNOW website homepage in a Windows Internet Explorer browser. The page features a navigation bar with links for 'About AIRNOW', 'AIRNOW Partners', 'FAQs', and 'Contact Us'. A search bar is located in the top right corner. Below the navigation bar, there is a section for 'LOCAL AIR QUALITY CONDITIONS AND FORECASTS' with a search form for Zip Code and State (Alabama is selected). The main content area is divided into several sections:

- Forecast**: Includes tabs for 'Current AQI', 'AQI Animation', 'Current Ozone', and 'Current PM_{2.5}'. The 'Current AQI' tab is active, displaying a map of the United States with color-coded regions indicating air quality levels. The map is titled 'Today's AQI Forecast Tuesday, May 07, 2013'. Below the map are color-coded buttons for 'Good', 'Moderate', 'Unhealthy', 'Very Unhealthy', and 'Hazardous', along with an 'Action Day' icon.
- Highest 5:** A table showing the top five highest AQI forecasts for the day. The table has columns for 'Today's Forecasts', 'Tomorrow's Forecasts', and 'Current AQI'. The entries are: Houston-Galveston-Brazoria, TX (Unhealthy); Cowtown, AZ (110); Austin, TX (Mod); Beaumont-Port Arthur, TX (Mod); and Brigham City, UT (Mod).
- Wildfire Smoke Advisories and Forecasts**: A section with a red header and a link for 'For more information'.
- Announcements**: A section with a green header containing several news items, including 'South Coast AQMD issues smoke advisory for the Banning area due to smoke from the Summit Fire' and 'Ventura County APCD issues Air Quality Advisory for Blowing Dust, Smoke, and Ash'.
- E-Mail Notification**: A section with a blue header and a link for 'Sign-Up'.
- AQI in Google Earth**: A section with a blue header and a link for 'Download'.
- AirCompare**: A section with a blue header and a link for 'Download'.
- Publications | Publicaciones (en español)**: A section with a blue header and a link for 'Download'.
- AIR QUALITY BASICS**: A section with a blue header and links for 'Air Quality Index', 'Ozone', 'Particle Pollution', 'UV', 'Smoke from Fires', and 'What You Can Do'.
- HEALTH**: A section with a blue header and links for 'Your Health', 'Health Providers', and 'Wildfire Smoke'.
- LEARNING CENTER**: A section with a blue header and links for 'Health Providers', 'Kids', 'Students', 'Teachers', 'Older Adults', 'Weathercasters', 'School Flag Program', and 'Picture Book'. This section is highlighted with a red border.
- QUICK LINKS**: A section with a blue header and links for 'Air Quality Action Days / Alerts', 'NAQ Conferences', 'Teacher's Workshop Resources', and 'NOAA'.

- Thank you for your participation.

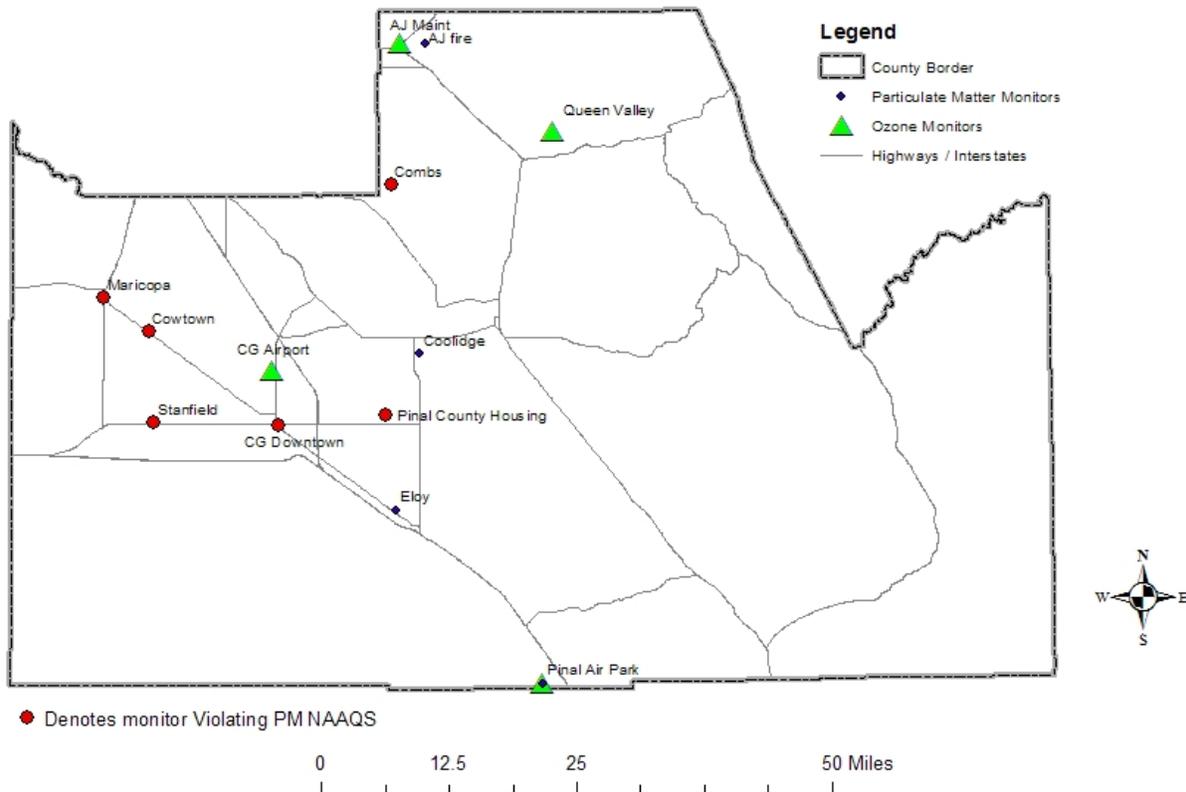
Why do we need an AQI Flag Program?

The Pinal County Air Quality Department has a monitoring network which monitors the air for several of the criteria air pollutants. The monitoring data shows that several Pinal County monitors violate the federal health standards for PM₁₀ (particulates 10 microns and smaller in diameter size, to put into context, human hair is about 70 microns in diameter).

In addition, there are a couple of ozone monitors in Pinal County that violate the federal health standard for ground-level ozone.

See map below for monitors that violate the PM₁₀ federal health standards (red circles denote violating monitors). In addition, the Apache Junction and Queen Valley monitors exceed the federal health standard for ground-level ozone.

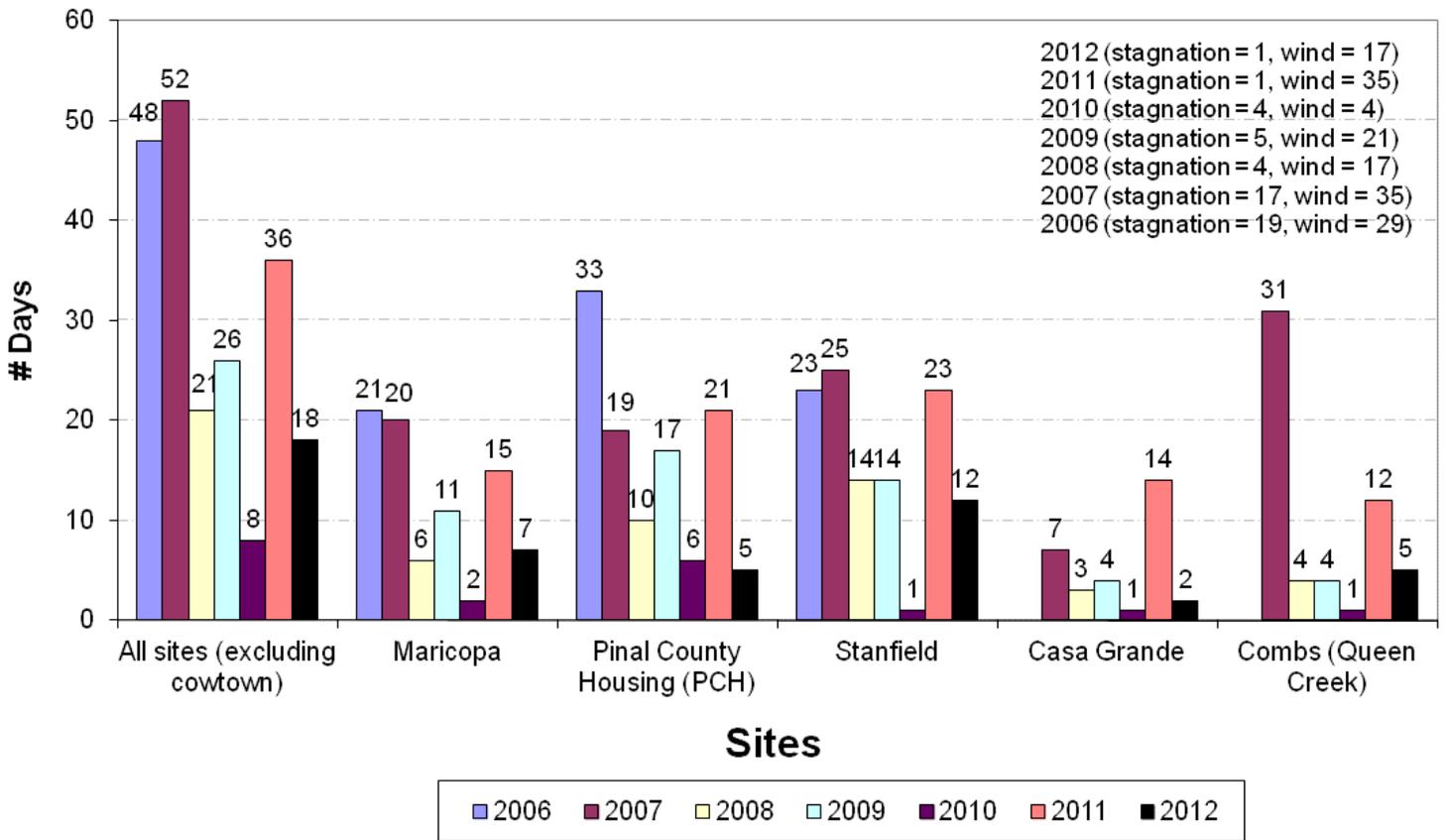
Pinal County Air Quality Monitors



Why do we need an AQI Flag Program? (Continued)

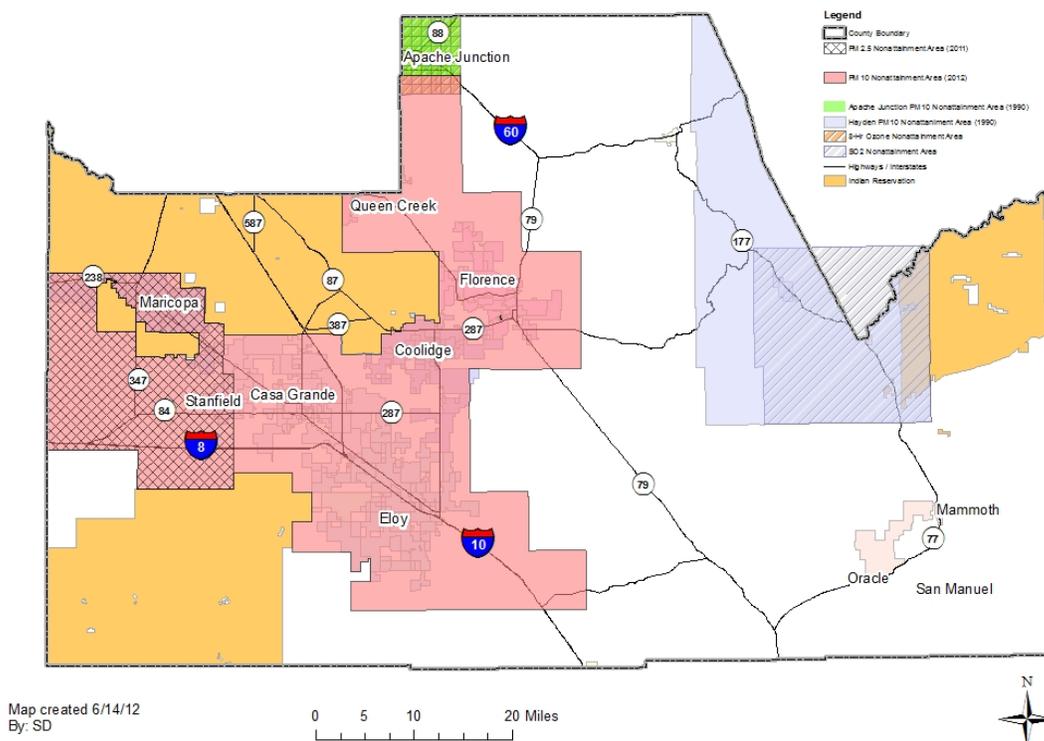
The bar graph below shows the number of daily PM10 exceedances (of the federal health standard) for the period 2006-2012 by monitoring location. Keep in mind, the standard is only allowed to be exceeded on average once per year.

**Pinal County PM₁₀ Exceedances
2006-2012**



The Environmental Protection Agency (EPA) designated portions of Pinal County nonattainment for PM2.5 and PM10 in 2011 and 2012 respectively. The map below shows the locations of the nonattainment areas in Pinal County.

Pinal County Nonattainment Areas



According to the American Lung Association, there are 8,404 cases of pediatric asthma in Pinal County; 15,708 cases of COPD and 27,145 cases of adult asthma in Pinal County.¹

Particle pollution contains microscopic solids and/or liquid droplets that are small enough to get deep into the lungs and can cause serious health problems. Small particles (less than 10 microns in diameter) pose the greatest problems since they can get deep into the lungs and some may even reach the bloodstream.

¹ Source: Estimated Prevalence and Incidence of Lung Disease. American Lung Association. April 2013, online: <http://www.lung.org/finding-cures/our-research/trend-reports/estimated-prevalence.pdf>

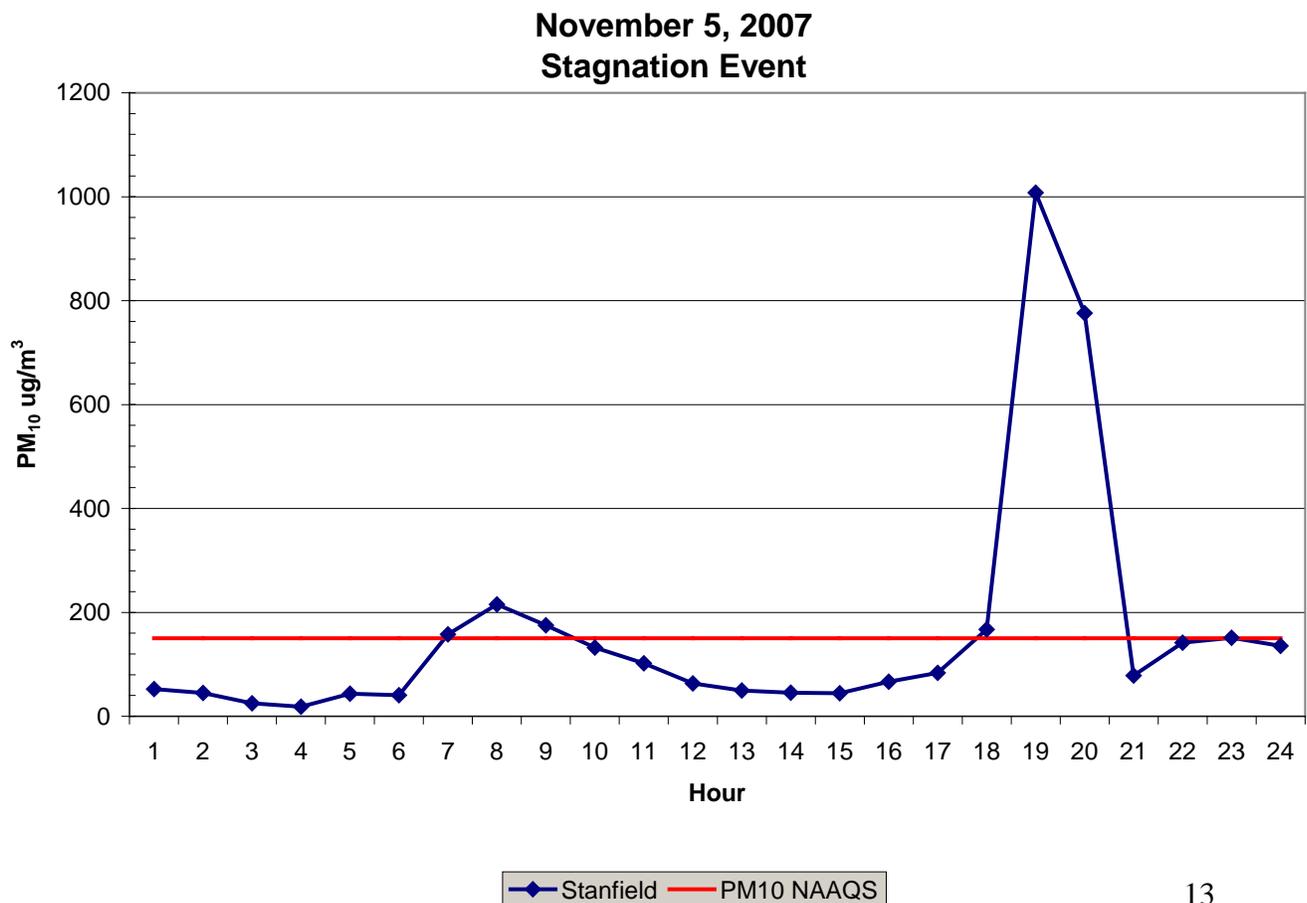
Pollutants of Concern For Pinal County

The two pollutants of concern for Pinal County are PM₁₀ and ground-level ozone.

Typically PM₁₀ has two distinct meteorological (i.e. weather) conditions that aid in exceedances of the federal health standard.

1. Stagnation (i.e. no or very light winds) – Typically occurs in the fall, winter and early spring when high pressure is over the local area. It results in warm air aloft during the overnight period which places a “lid” on top of the cool air at the ground. There is little air movement and whatever dust causing activities take place result in suspended particulates close to the ground and higher PM₁₀ concentrations. Typically there is a peak in the early morning and also in the evening hours. A typical daily PM₁₀ concentration graph during a stagnation event is shown in the graph below.

So, basically this means, light winds in the early morning and evening, increased dust causing activities (more traffic on dirt roads, agricultural activity, etc.) and the inversion keep the air pollution close to the ground (instead of dispersing the particulates higher in the atmosphere) which increases the air pollution concentrations. Higher pollution concentrations are bad for people to breathe.

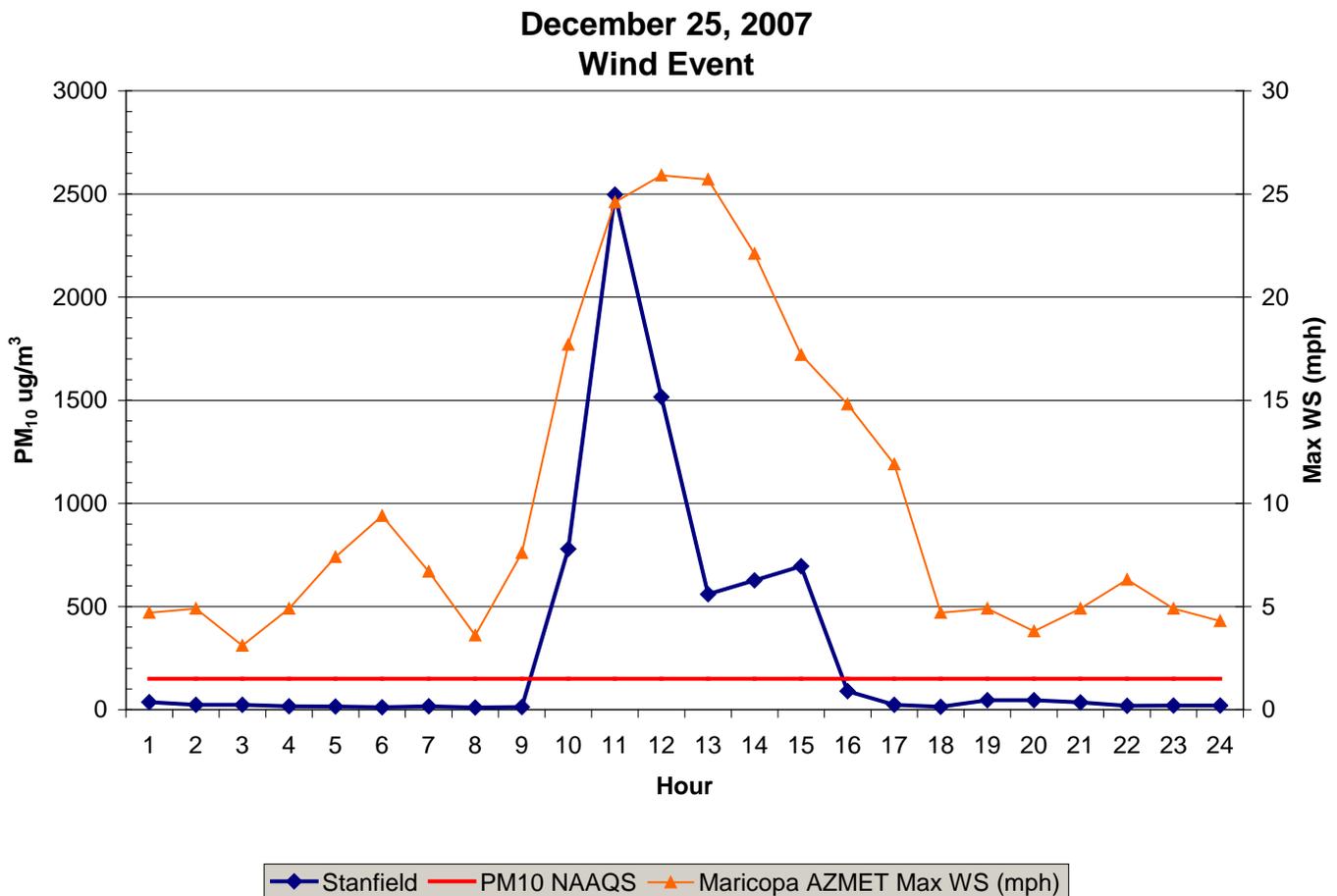


Pollutants of Concern For Pinal County (Continued)

2. Wind events – Typically the wind events occur in the spring when frontal passages move through the area. Wind events also occur during the monsoon season during the summer when locally (and some times regionally) strong monsoon storms with strong winds cause areas of blowing dust.

Wind events typically result in several hours of high PM₁₀ concentrations and can vary by time of day depending on the specific wind event. Frontal passages can occur at any time of day while monsoon storms are typically during the afternoon and evening hours. See graph below for an example of a wind event.

So, basically this means, the stronger the wind blows, the higher the PM₁₀ concentrations, the worse the air is for all of us to breathe.



Pollutants of Concern For Pinal County (Continued)

Ozone concentrations are typically the highest during the late spring and summer months. Ozone forms with the combination of strong sunlight, high temperatures and ozone “precursors” which include volatile organic compounds (VOCs) and nitrogen oxides (NOx). The daily peak for ozone levels is typically in the late afternoon/early evening timeframe.

The typical wind pattern for central Arizona is easterly (winds from the east) winds during the morning hours switching to westerly (winds from the west) winds in the afternoon and evening hours. This typical wind pattern aids in the influence of the metropolitan Phoenix area’s contribution of ozone precursors and subsequent ozone formation into portions of Pinal County.

The ozone monitors that have the highest ozone levels (on average) are in Apache Junction and Queen Valley. That said, any of the ozone monitors in Pinal County can reach moderate and even unhealthy for sensitive groups on the AQI scale for a given day depending on the weather setup. That’s why the AQI Flag Program is such an important tool. It gives schools in Pinal County the opportunity to inform students, teachers and general public about the quality of the air we all breathe and the knowledge to make informed choices about our level of exposure to unhealthy air.

Other sources for the daily AQI Forecast

The Pinal County AQI forecast report is also located on the Air Quality Website at,

<http://pinalcountyz.gov/Legacy/AirQual/pdf/Forecast/aqforecast.pdf>

and also at the AIRNOW website,

<http://airnow.gov/index.cfm?action=airnow.showlocal&cityid=450>

If you have any questions about the AQI Forecast, call Scott DiBiase with Pinal County Air Quality at (520)866-6929 or via email scott.dibiase@pinalcountyz.gov

AQI Flag Program Summary Paragraph (for possible use in school, PTO or other types of newsletters).

The Air Quality Index (AQI) Flag Program that <insert school name here> is participating in is a voluntary information and outreach program. The AQI is an easy to understand index that tells people how clean or polluted the air is. The AQI focuses on health effects people may experience from air pollution. There are four AQI flags provided to the school, good (green), moderate (yellow), unhealthy for sensitive groups (orange) and unhealthy (red).

Each school day an AQI Flag Coordinator will raise the appropriate colored AQI flag that represents the AQI level that Pinal County Air Quality has forecasted.

The goal of the AQI Flag Program is to give schools the information necessary to take appropriate measures to protect students during days with poor air quality. In addition, the AQI Flag Program also provides a visual informational tool for the general public to see how good (or bad) the local air quality is for a particular day.

The AQI flags were provided by the Arizona Department of Environmental Quality (ADEQ) through an EPA grant.