



# Enhanced Air Quality Monitoring in Pima County, AZ

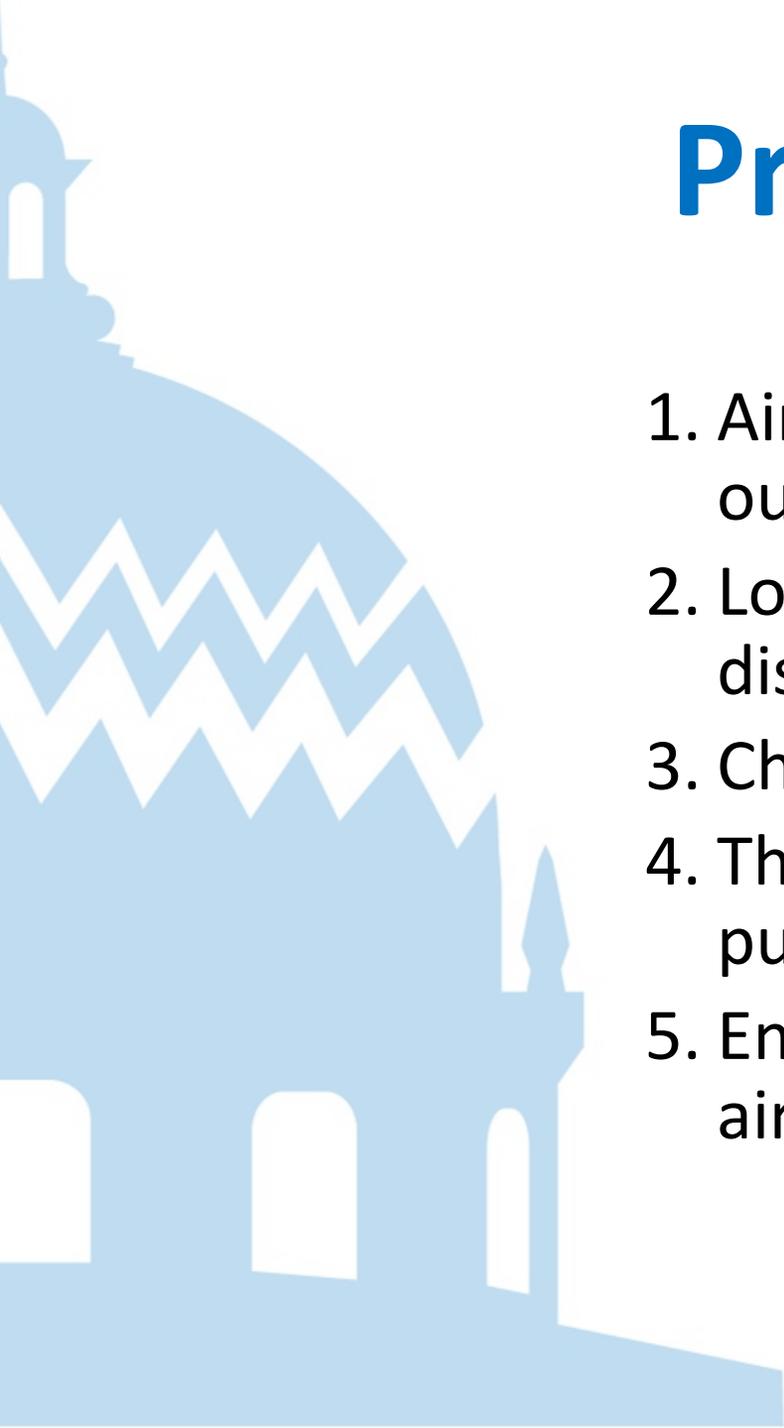
Natalie Shepp, MPH

Climate & Community Engagement Manager

Pima County Department of Environmental Quality

AAPCA 2025 Spring Meeting

May 2, 2025



# Project Motivation

1. Air pollution exposures are associated with poor health outcomes
2. Low-income and minority populations are disproportionately impacted
3. Children are especially vulnerable
4. The current monitoring system is for regulatory purposes and cannot capture more localized variability
5. Engaging community is needed to better understand air pollution sources and impacts



# EPA Environmental Justice Air Monitoring Grant (ARPA)

In July 2023, our team was funded to expand localized air quality monitoring at Pima County schools.

## **Goals:**

1. Establish a network of low-cost sensors measuring air pollutants at Pima County schools (PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, Ozone, NO, NO<sub>2</sub>, CO)
2. Construct website to visualize air pollution data
3. Develop community science curriculum to implement at schools

# Our Team



Natalie Shepp, MPH



Ashley A. Lowe, PhD, MSPH



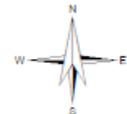
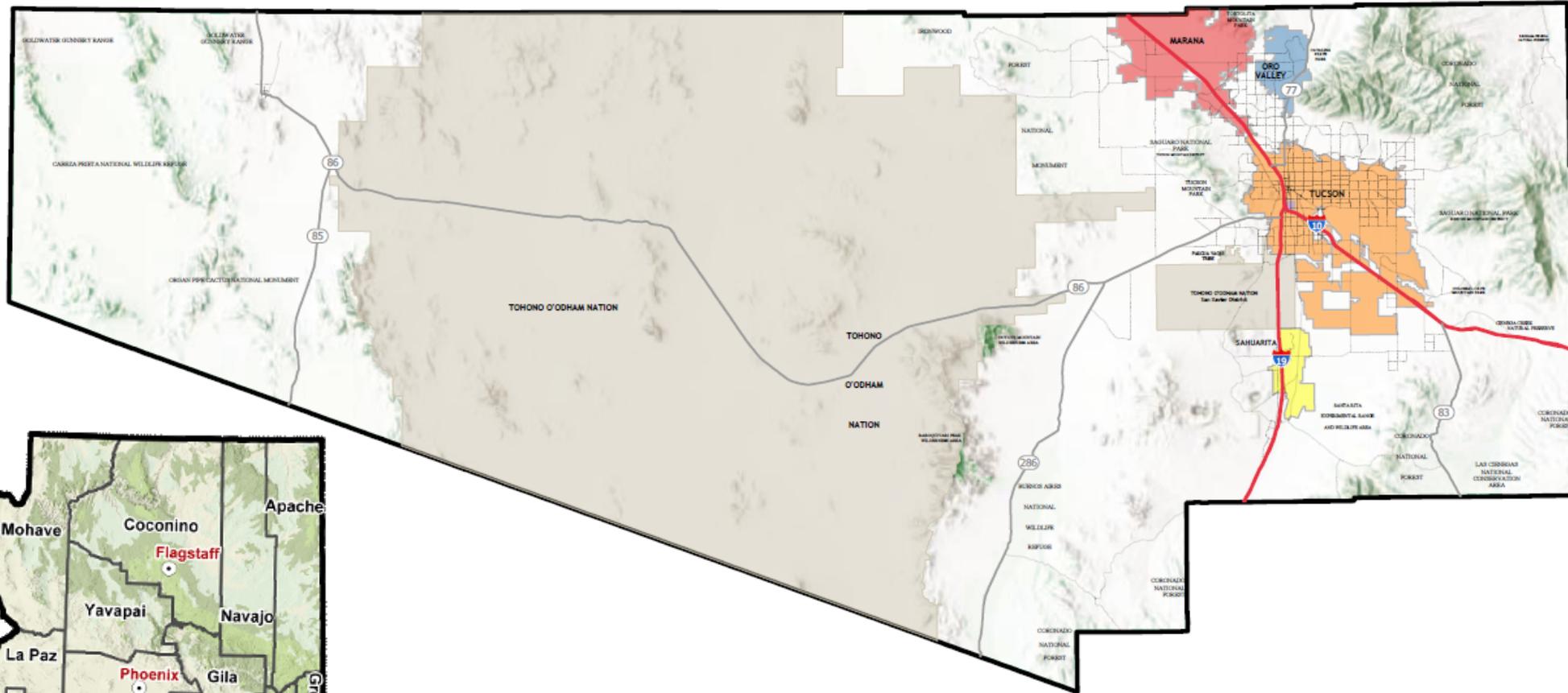
Chris Lim, PhD



# Local Situation Tucson, AZ

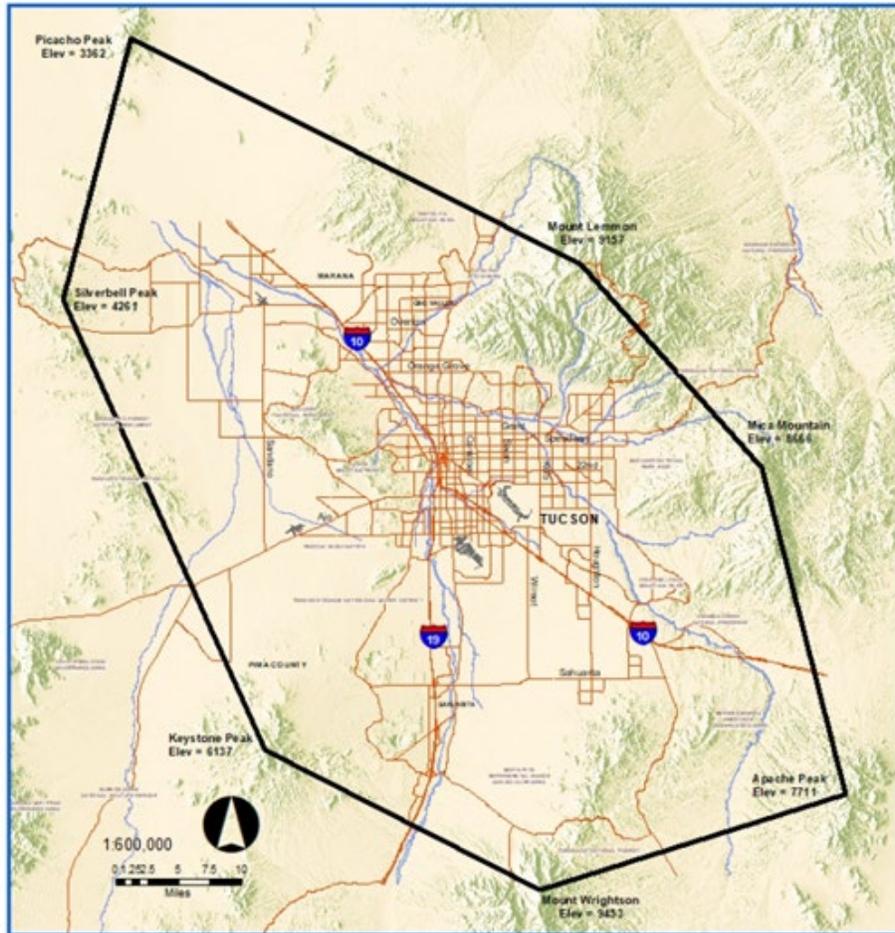


# P I M A C O U N T Y

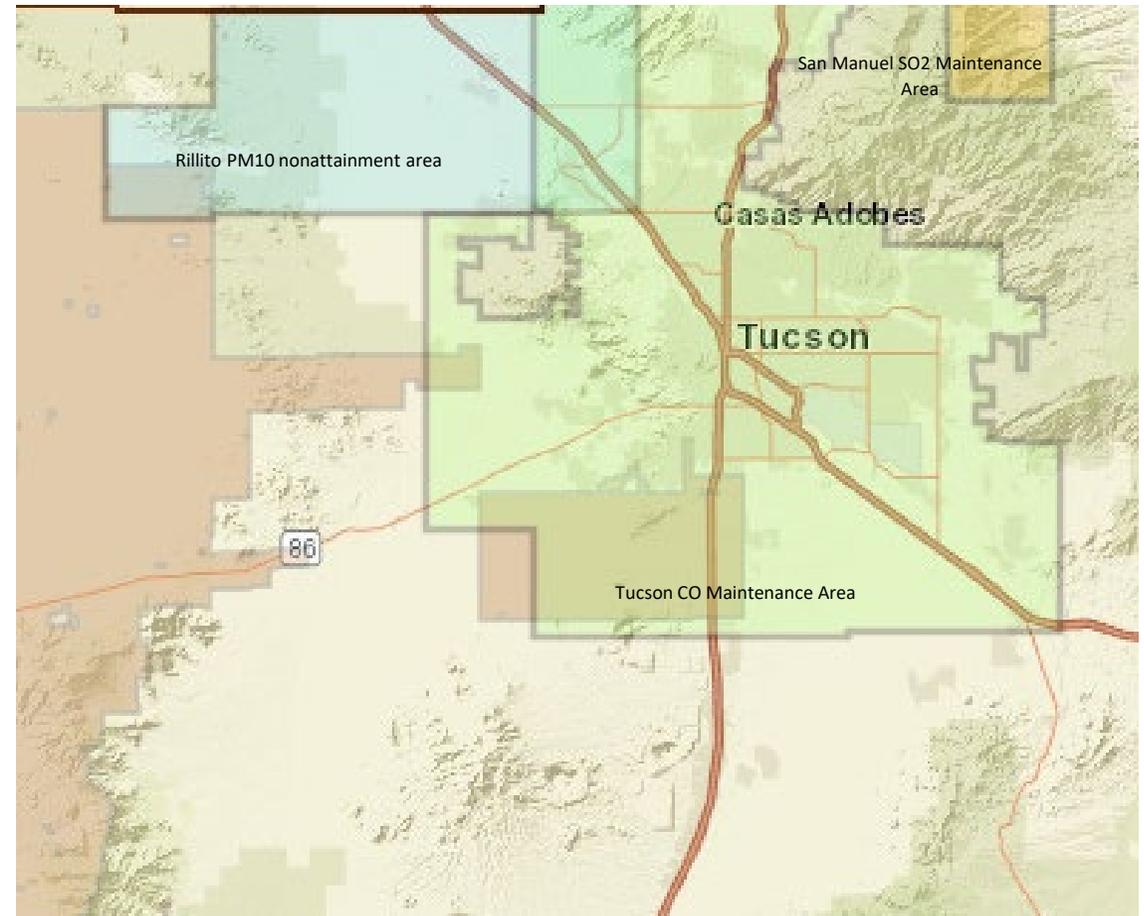


# Air Quality in Pima County

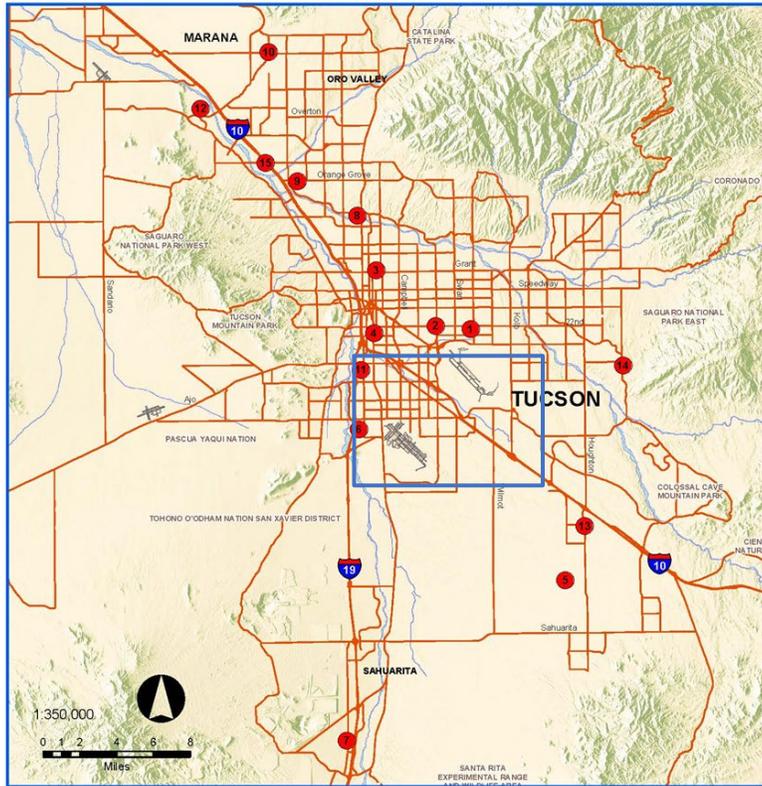
Tucson Air Planning Area (TAPA)



Nonattainment & Maintenance Areas



## Existing Regulatory Air Monitoring Network



### Pima County Monitoring Sites

- 1- 22nd & Craycroft
- 2- 22nd & Alvernon
- 3- Geronimo
- 4- South Tucson
- 5- Corona de Tucson
- 6- Santa Clara
- 7- Green Valley
- 8- Children's Park NCore
- 9- Orange Grove
- 10- Tangerine
- 11- Rose Elementary
- 12- Coachline
- 13- Fairgrounds
- 14- Saguaro National Park East
- 15- Ted Walker Park

- Monitoring Sites
- Major Streets
- Washes

Revised: March 2023

Comments  
All information is provided as is, with all faults, and without warranty of any kind, expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

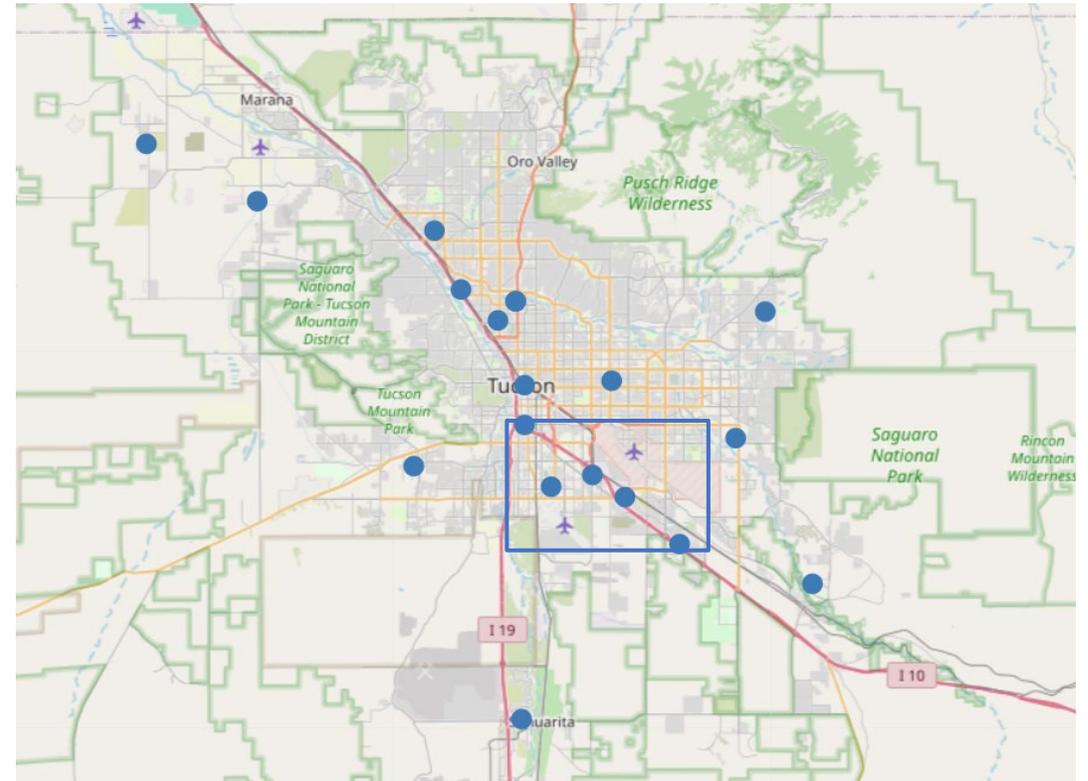


Prepared By  
Pima County Department  
of  
Environmental Quality



Pima County Monitoring Sites 2022

## New Air Quality Sensors at Pima County Schools



# Permitted Class I Air Pollution Sources

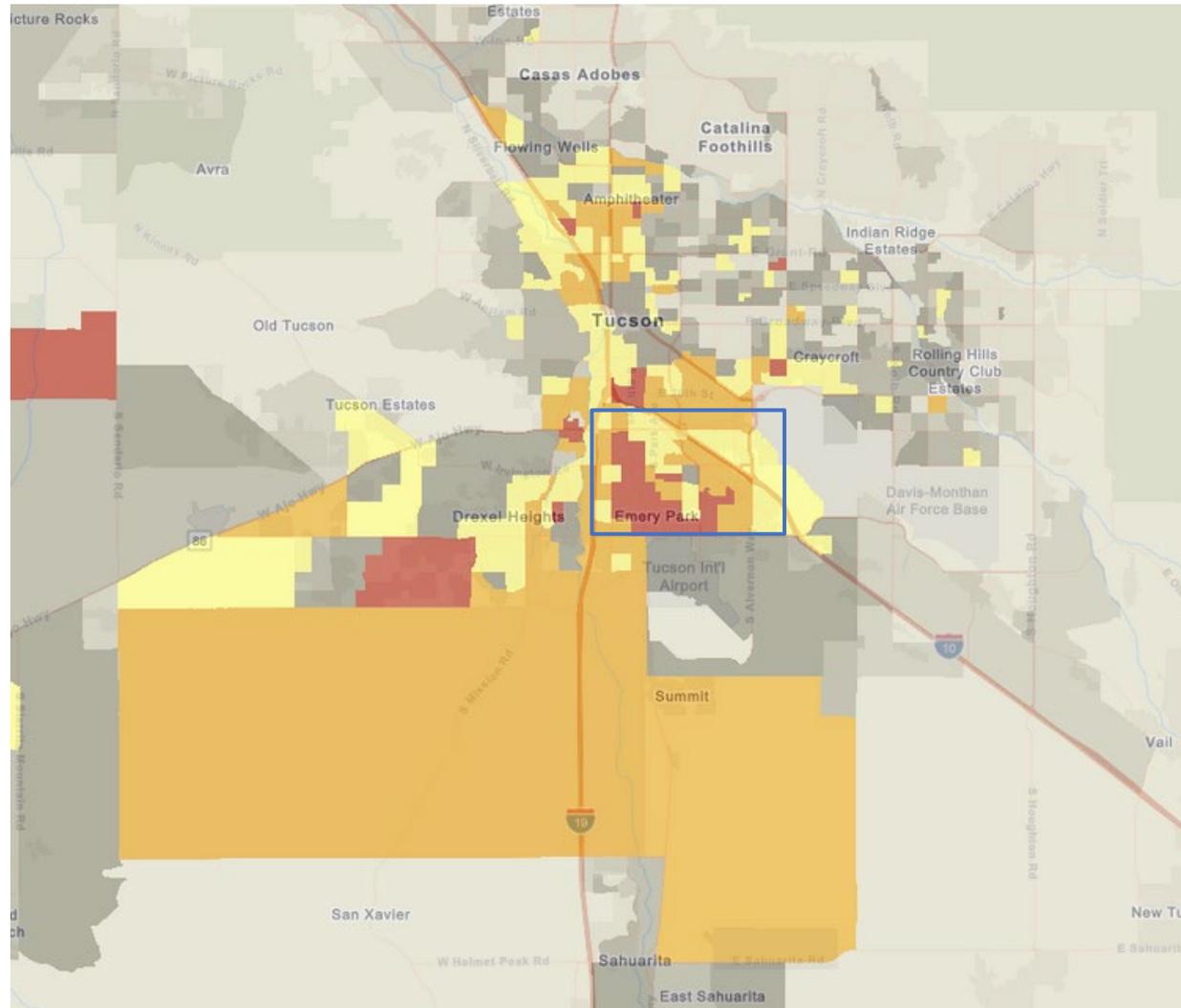


# Disproportionate Burdens



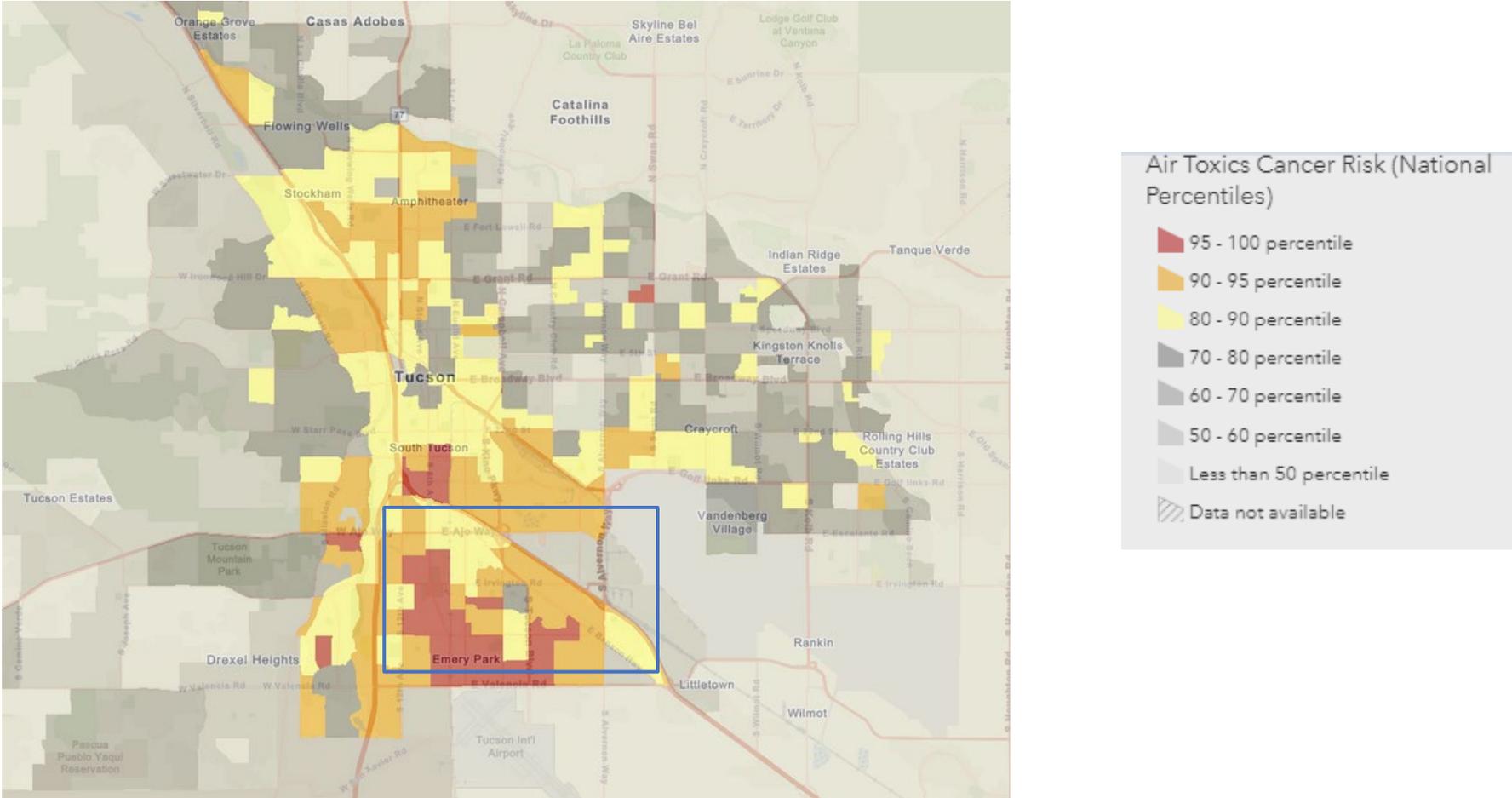
# Socioeconomic Indicators

Demographic Index (based on low-income & people of color)



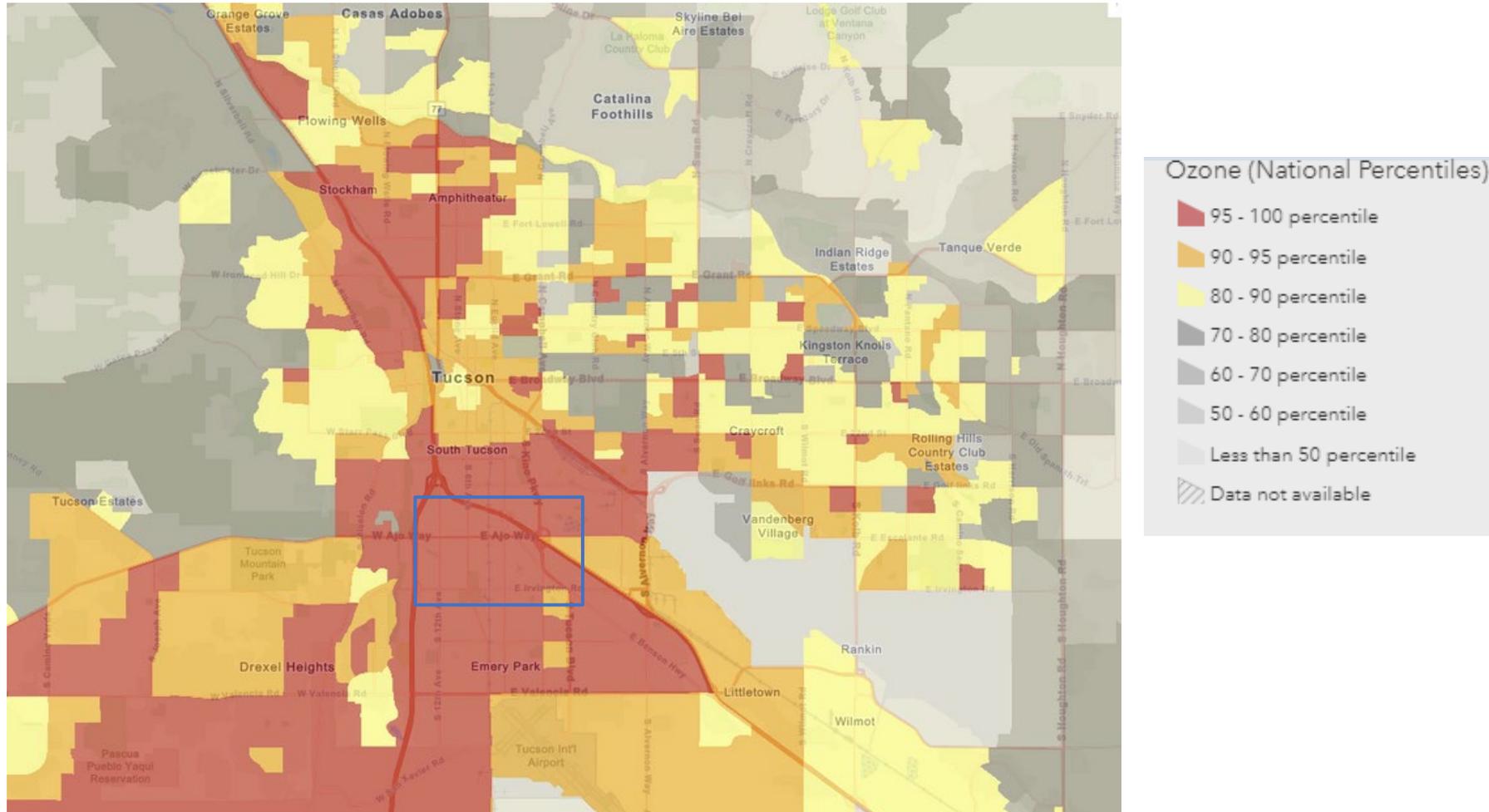
# Environmental Indicators

## Air Toxics Cancer Risk



# Environmental Indicators

## Ozone



# Historical EJ Issues in Tucson

- Trichloroethylene (TCE), an industrial solvent, was dumped in areas of south Tucson during the 1950s. Cancer among residents in this area has been linked to groundwater & soil contamination. In 1982, EPA designated the Tucson International Airport area as a Superfund site. The total settlements for claims since then have exceeded \$130 million.
- 1,4 Dioxane contamination has also been found in the same area
- Per- & polyfluoroalkyl (PFAS) substances have also been found in water wells in the same vicinity. Tucson Water has been testing for PFAS since 2009. Wells where PFAS has been detected have been turned off.
- TCE, 1,4 Dioxane, & PFAS contamination has been linked to sources on or around Davis Monthan Air Force Base.

## Toxic PFAS levels spike in south-side Tucson well-testing area

Tony Davis Dec 2, 2018 Updated Jun 11, 2021



## Why PFAS chemical levels are rapidly rising in Tucson groundwater

Tony Davis Jun 12, 2021 Updated Jul 19, 2022

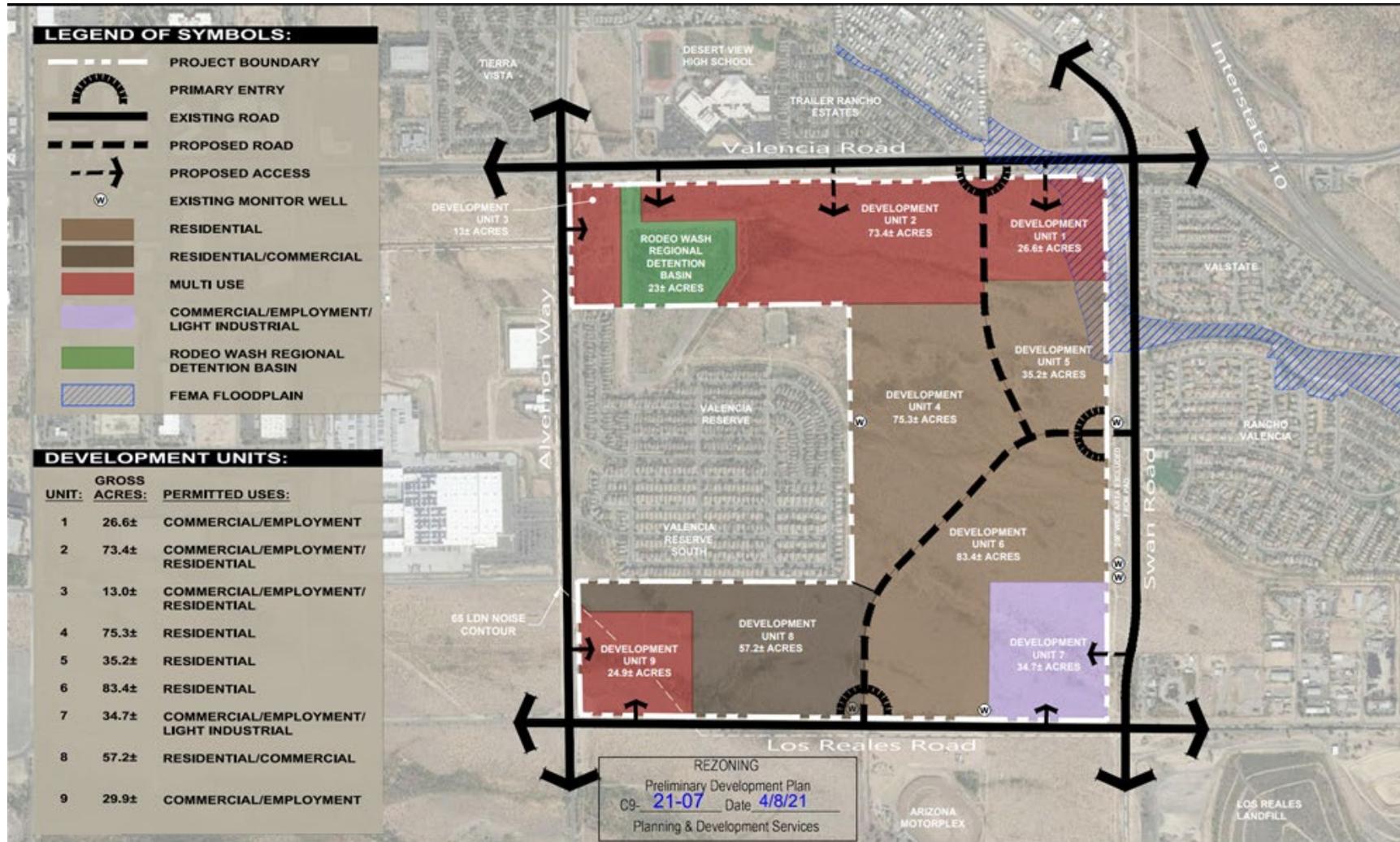


## Pollution still making us sick, Tucson south-siders tell Air Force

Tony Davis Mar 18, 2018 Updated Jun 8, 2019



# ...while further development plans continue



# Pima County Schools



# Pollution sources around schools



# Goal 1: Air Quality Sensors

- 19 QuantAQ sensors, 1 control will stay at a regulatory site
- School Installations Completed

## Tanque Verde Unified

Agua Caliente Elementary

## Sunnyside Unified

Los Niños Elementary

Billy Lane Lauffer Middle

Desert View High

Sunnyside High

## Tucson Unified

Vesey Elementary

Mission View Elementary

Secrist Middle

Rincon/University High

## Flowing Wells Unified

Laguna Elementary

Flowing Wells High

## Marana Unified

MUSD Early Learning

Roadrunner Elementary

Marana High

## Sahuarita

Sahuarita High

## Vail

Ocotillo Ridge Elementary

Vail Academy High

## Other

Joel D. Valdez Main Library

- 1 sensor will also be installed at Ajo High School



# Goal 2: Air Quality Data Website

**Map Controls**

**Data Selection**

Select Indicator:

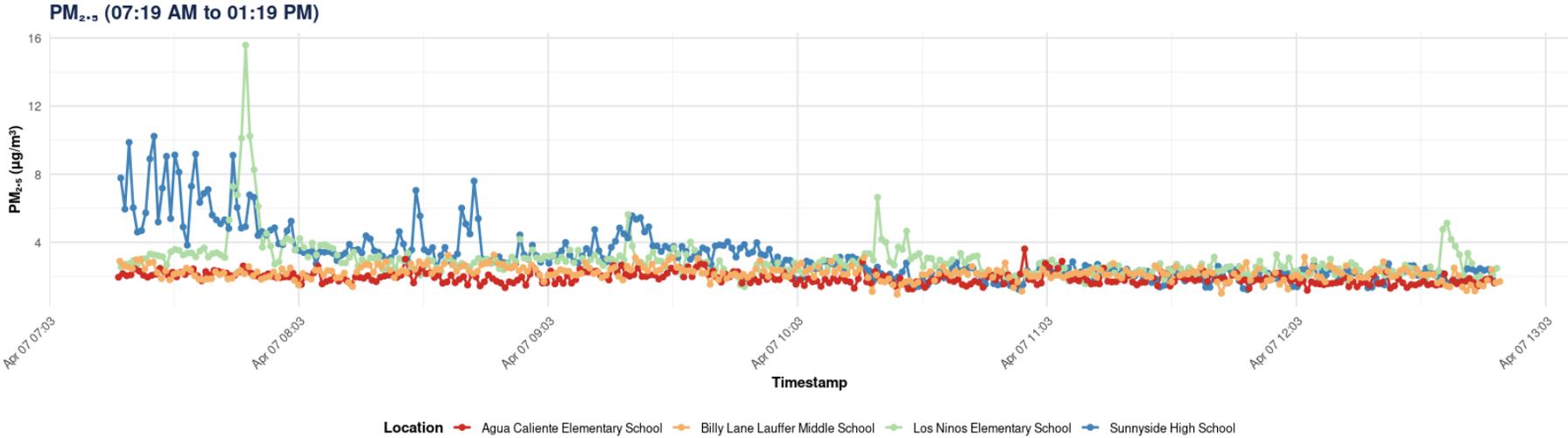
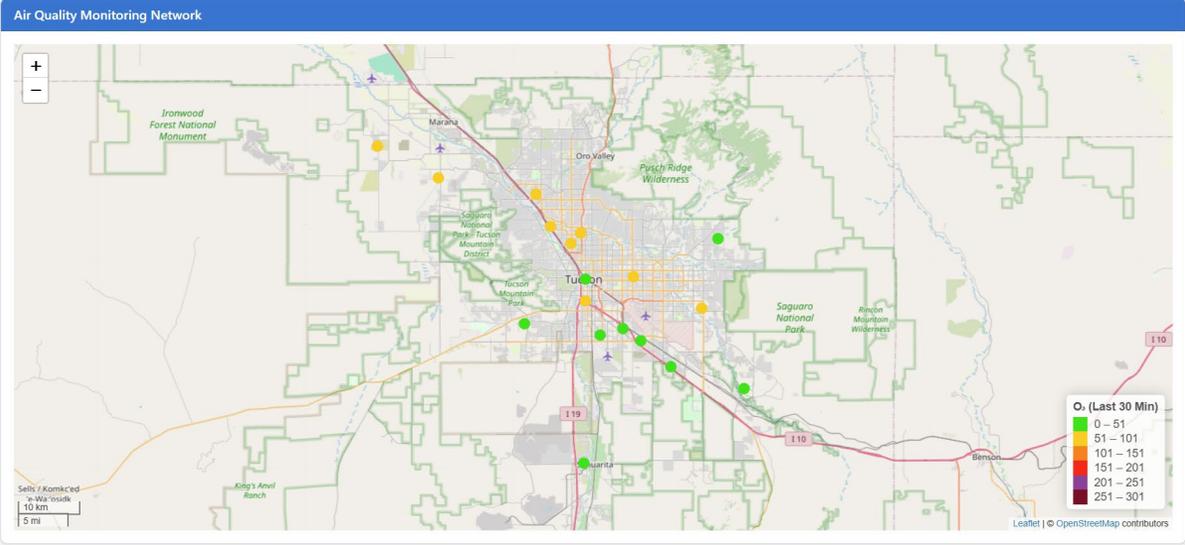
Time Period:

**Map Options**

Map Background:

Legend Style:

Color Palette:  
 Standard  Colorblind-friendly



# Goal 3: School Curriculum

- Developed PDEQ/UA working group for development
- Proposed Modules
  1. Understanding air quality in Pima County
  2. Using scientific methods to measure air quality
  3. A student-led approach to understanding air quality at their school
  4. Data, data, data!
  5. Environmental Justice in Pima County
  6. Leveraging community capacity to ensure better air quality for all people in Pima County
- Expected completion is summer 2025 for use in 2025-26 school year

# Questions?

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**PIMA COUNTY**  
ENVIRONMENTAL QUALITY