

**Air Quality Update**  
**Deer Park**  
**Community Advisory Committee**

***August 26, 2024***

***Steve Smith***  
***Chairman Technical Advisory Committee***  
***Houston Regional Monitoring***

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Houston Regional Monitoring

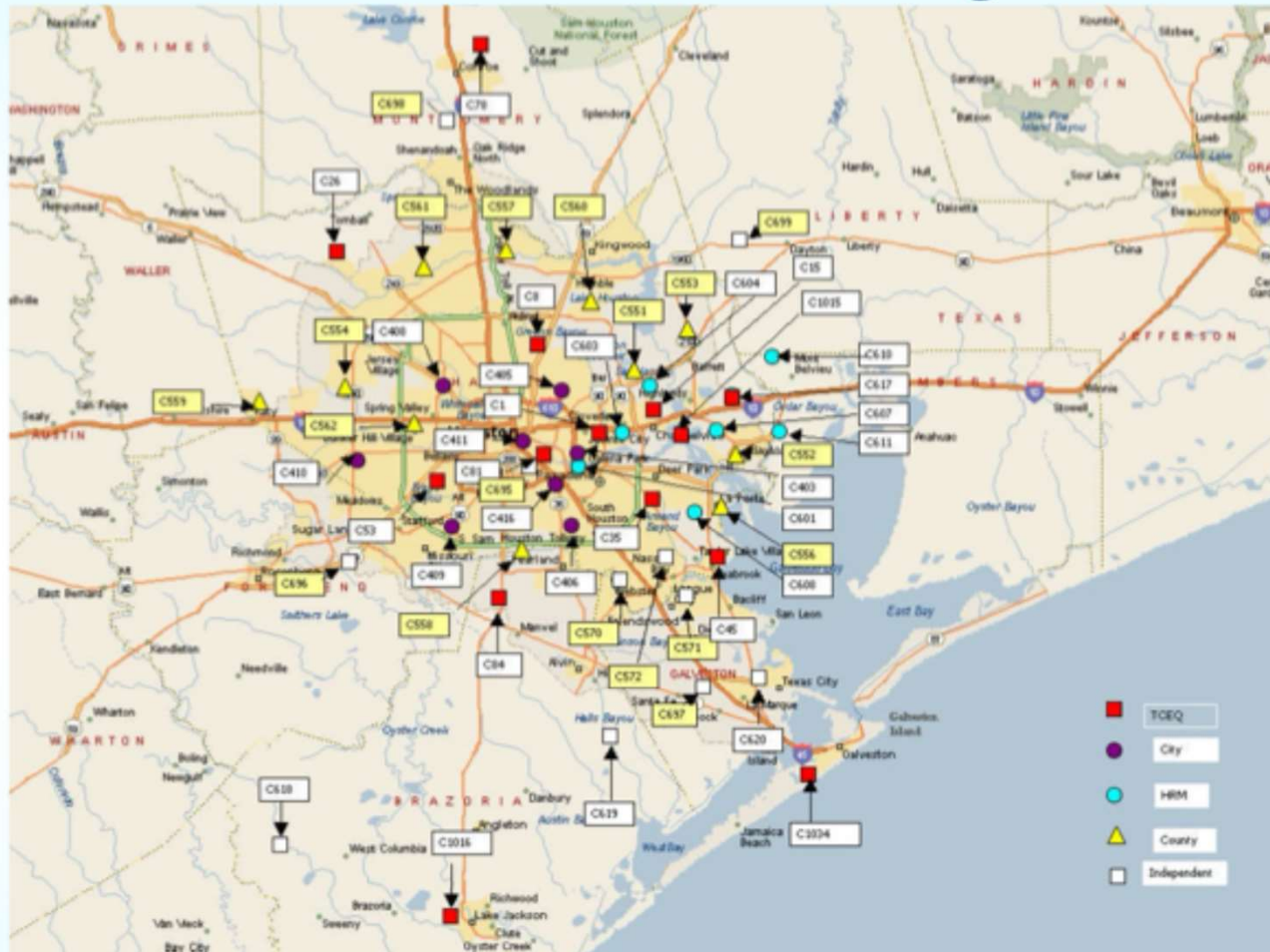


## ***Discussion Topics***

- ❑ Ambient Air Monitoring Sites
- ❑ What is Monitored?
- ❑ Ambient Air Analyzers
- ❑ Ambient Air Monitoring Sensor
- ❑ Industrial Monitoring
- ❑ Air Quality Key Messages



# Houston-Area Ozone Monitoring Stations



Note: Monitors with text box highlighted in yellow are non-FRM monitors

Houston Regional Monitoring



# HRM Monitoring Sites and Select TCEQ Sites



Houston Regional Monitoring



## *What is monitored?*

- ◆ **Ozone**
  - Regional concern
  - Not emitted, formed in the atmosphere
  - Reaction between VOC and NO<sub>x</sub> during the daylight hours
- ◆ **NO<sub>x</sub> – Nitrogen oxides**
  - Regional concern
  - Combustion emissions, mobile and point sources
  - Monitors near high volume roadways tend to be higher
- ◆ **CO – Carbon monoxide**
  - Regional concern
  - Combustion emissions, mobile and point sources
- ◆ **PM – Particulate Matter**
  - Local (primary particulate) – diesel emissions (heavy duty trucks, locomotives, construction equipment), concrete batch plants, metals recycling
  - Regional concern (secondary particulate) – formed in the atmosphere)



# *Ambient Air Analyzers*





## ***Criteria Pollutant Measurements***

- *Carbon Monoxide*
- *Nitrogen Oxides*
- *Ozone*
- *Sulfur Dioxide*

# *VOC Canister Sampler*





## ***PAMS Gas Chromatograph***



42 Volatile Organic  
Compound Species

# ***Ambient Air Monitoring Sensors***



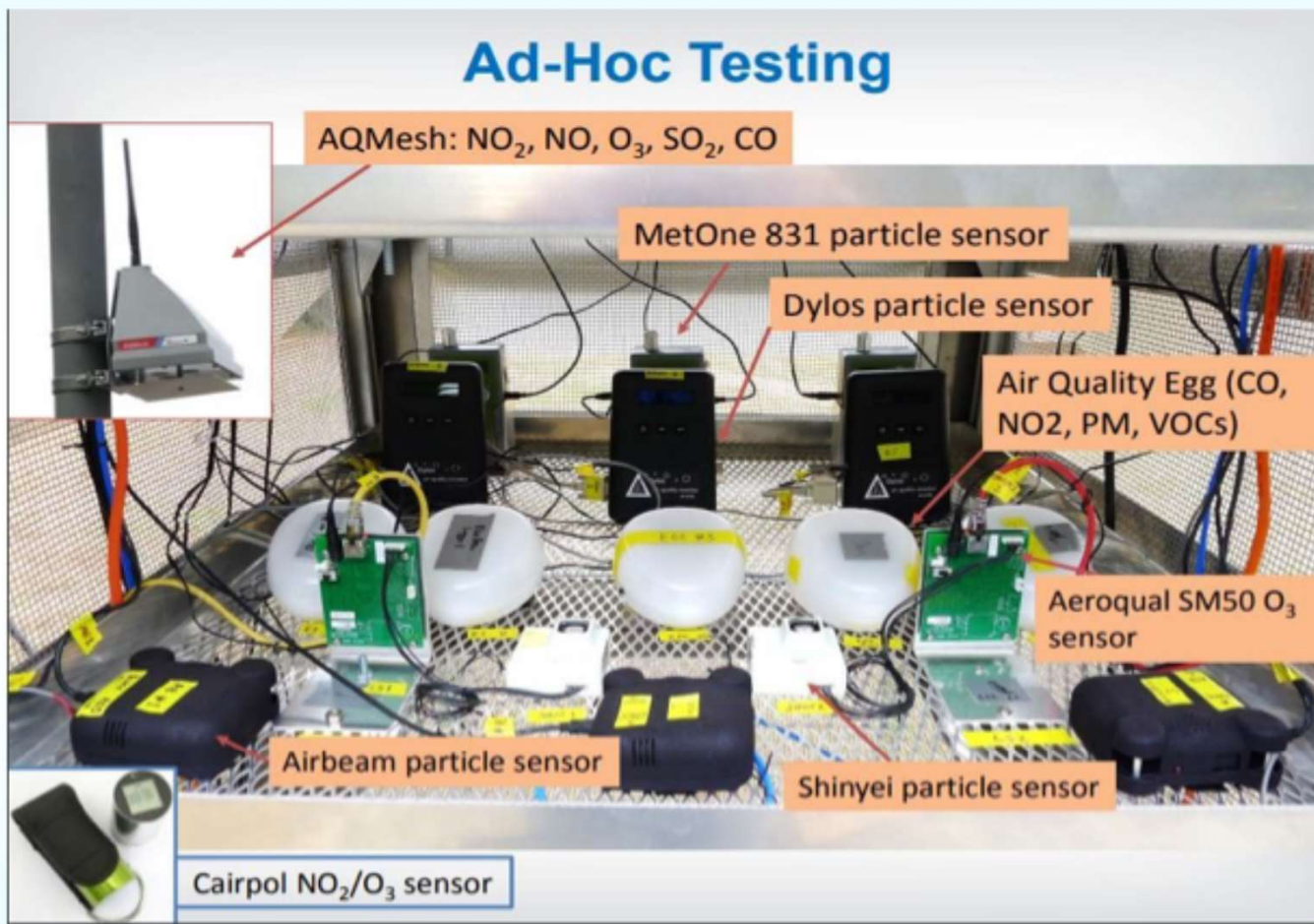
## ***Citizen Science Sensors***

- ◆ Mounted on a structure, your back porch, roof at the school
- ◆ Handheld, maybe worn, maybe linked to your smart phone
- ◆ Wide range of costs, few hundred dollars to several thousand dollars
- ◆ Wide range of capabilities have been observed
- ◆ Generally, ozone sensors perform the best, followed by particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide
- ◆ Fewer options available for specific VOCs
- ◆ Continuous ongoing development of new sensors and improving existing sensor performance
- ◆ What does the data mean?
- ◆ Online resource
  - <https://www.epa.gov/air-sensor-toolbox/how-use-air-sensors-air-sensor-guidebook>



# EPA Sensor Study

## Ad-Hoc Testing



# *Ambient Air Monitoring Sensors*



# ***Industrial Monitoring***



# Personnel Monitoring

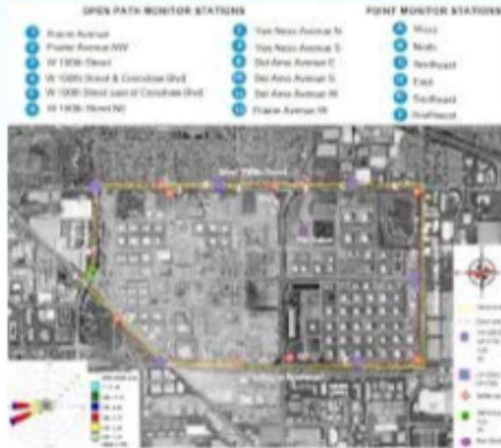


# *Continuous Emission Monitoring*





# Fence Line Monitoring



## ***Conclusions***

- ◆ **Houston has the most extensive air monitoring network in the country**
- ◆ **HRM has a key role in monitoring air quality in Houston**
  - **HRM continues to evaluate new monitoring technology**
  - **HRM modernized the monitoring network to maintain and improve performance**

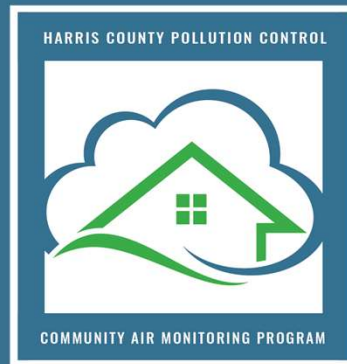


***Questions?***

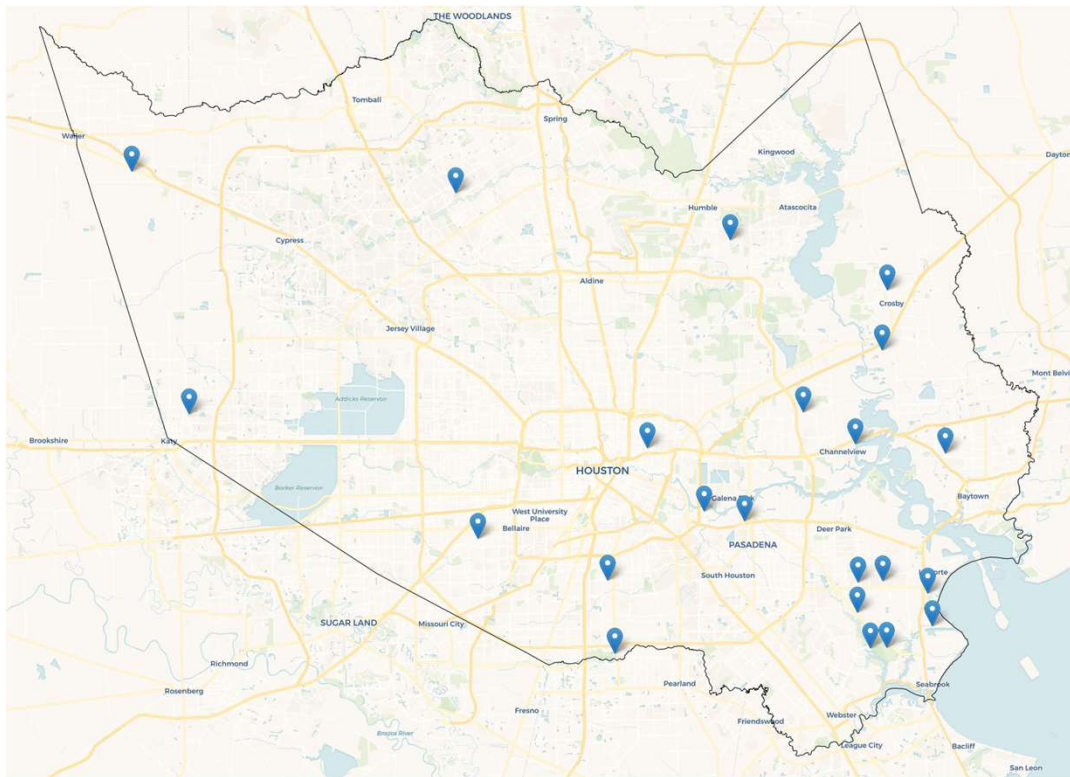


**Community Air Monitoring Program  
DPCAC  
August 26, 2024**

**Matt Van Vleck  
Air Monitoring Section Manager**



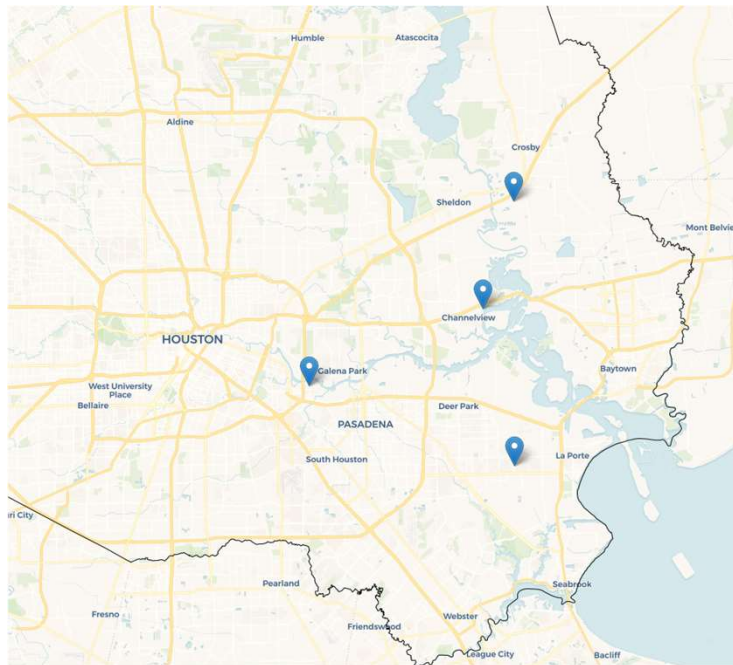
# CAMP Monitoring Locations



- Hockley Park
- Katy Park
- Meyer Park
- Bayland Park
- Reed Road
- Tom Bass Park
- Boyce-Dorian Park
- Lindsay Lyons Park
- Hartman Park
- John Phelps Courthouse
- North Channel Library
- Crosby Park
- Riley Chambers Park
- River Terrace Park
- Baytown Park
- Pecan Park
- Fairmont Park
- Little Cedar Bayou Park
- San Jacinto Maritime Campus
- Armand Bayou Nature Center
- Bay Area Park
- CWA Bayport Pump Station

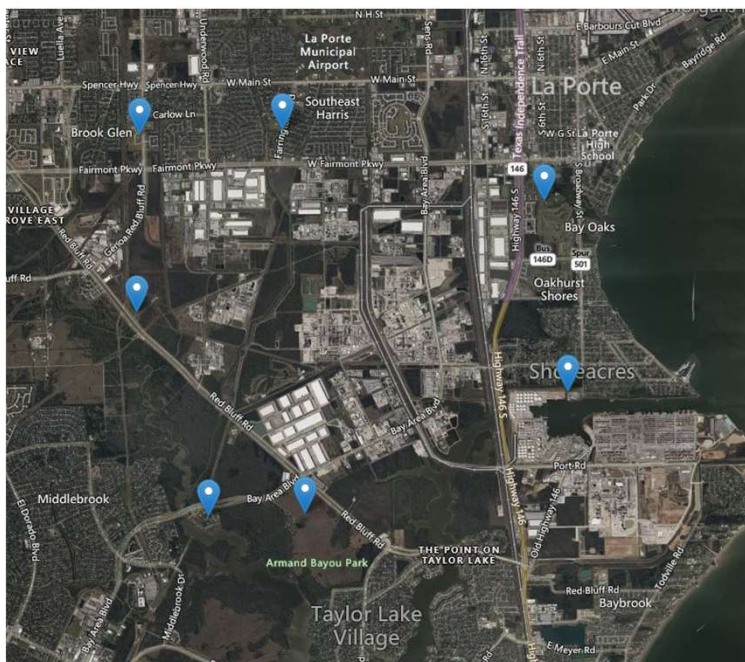
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## CAMP Grant Funded Locations



- 4 sites funded by American Chemistry Council Foundation
- City of Houston Hartman Park and Community Center
- Riley Chambers Park
- River Terrace Park
- City of La Porte Fairmont Park

## CAMP Grant Funded Locations



Bayport Monitoring

- **Collective Impact Project**
  - Bayport monitoring as part of a joint project between EDF, Harris County, and the City of Houston
- Pecan Park
- Little Cedar Bayou Park
- San Jacinto Maritime Campus
- Armand Bayou Nature Center
- Bay Area Park
- CWA Bayport Pump Station

# Sensit SPOD sensor



**Sensit SPOD**

- Volatile organic compounds (VOC)
  - IonScience MiniPID 2 HS
- Particulate Matter (PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>)
  - Honeywell HPM Particulate Sensor
  - Planttower PM
- Wind Speed, Wind Direction, Temperature, Humidity
- Canister Samples



# Sensit SPOD

- **Low-cost sensor benefits**

- Initial set up price is much lower.
- Larger area of coverage in local communities.
- Near real time data available to the public.
- Units can be moved when necessary.
- Repair is simpler and quicker.

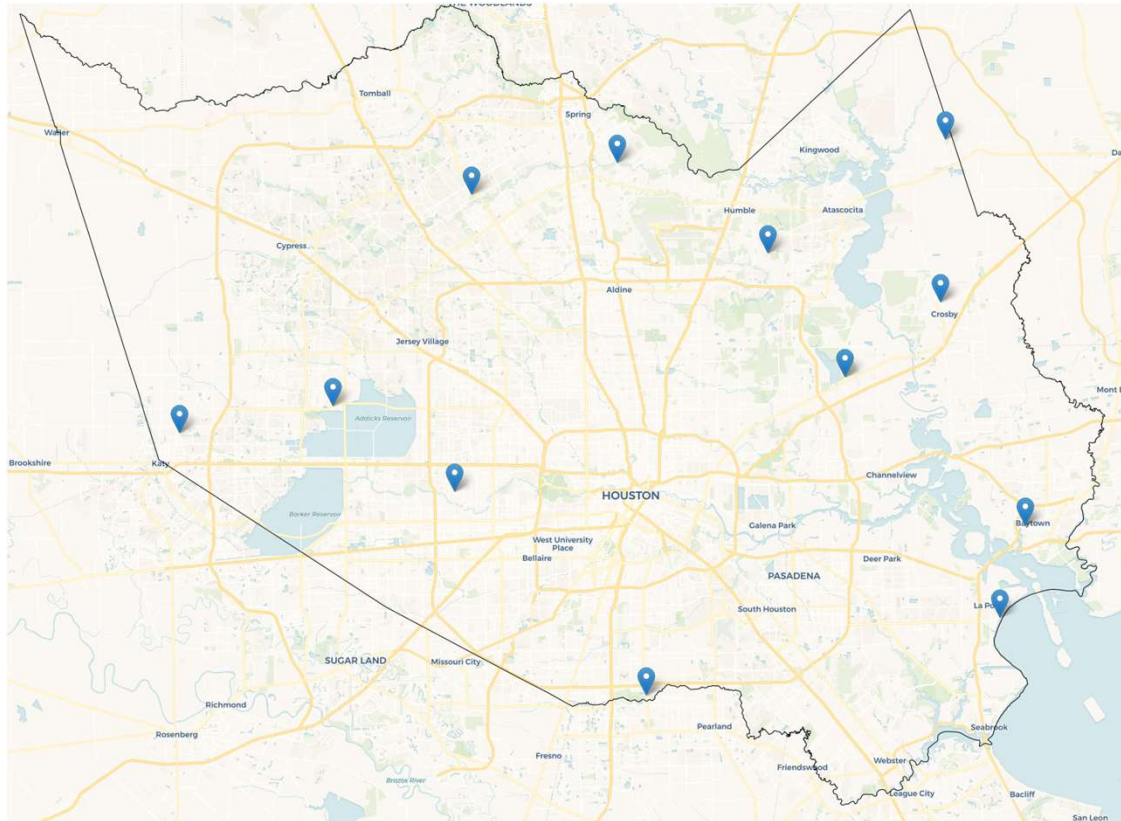


Tripod mounted in Hockley Park



Mounted to existing utility structure in Lindsay Lyons Park

# Ozone Monitoring



- PCS operates 12 ozone monitors that supplement TCEQ's ozone monitoring network

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# Rapid Ambient Air Monitoring (RAAM) Vehicle



## RAAM

- Investigation Support
- Emergency Response
- Severe Weather Response
- Harris County Background Surveys



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# RAAM Instrumentation

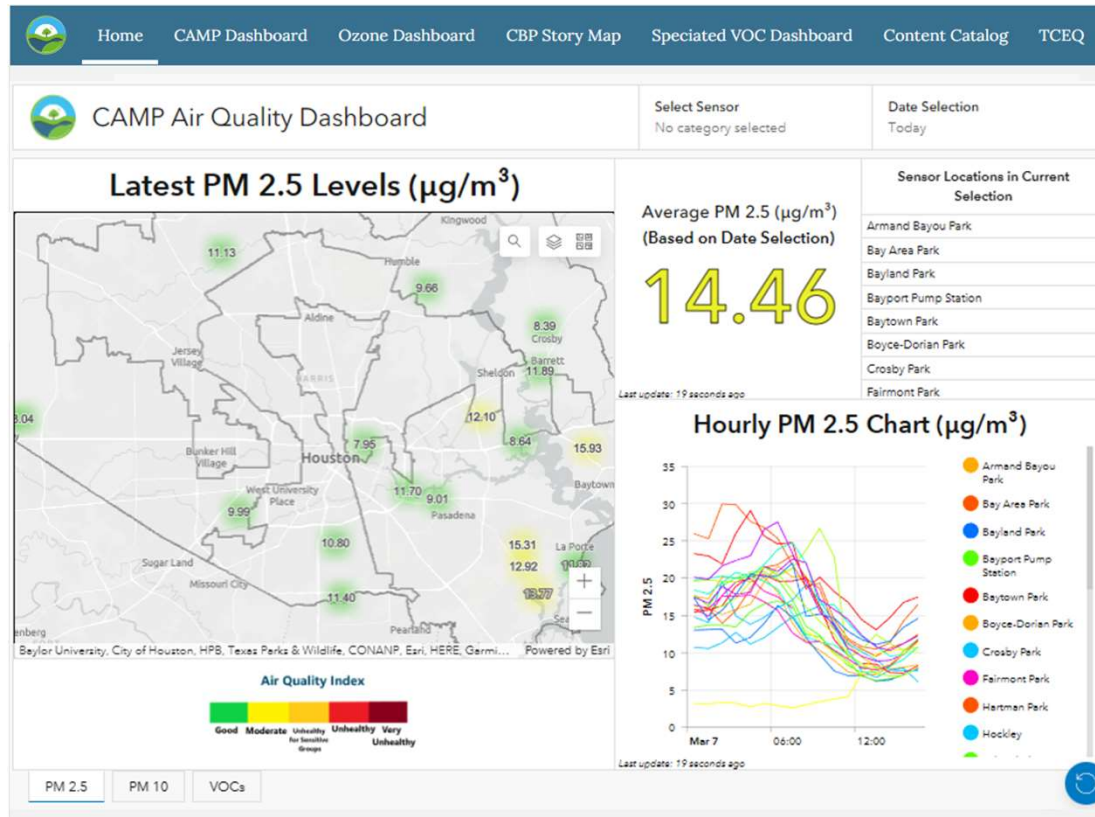
## AROMA TOX

- Dual CRDS (Cavity Ring Down Spectroscopy)
- RapidScan identifies 6 classes of compounds
- LabScan mode speciates 12 compounds
- Minimum Detection Limit sub ppb levels



# HCPCS Air Monitoring Data Portal

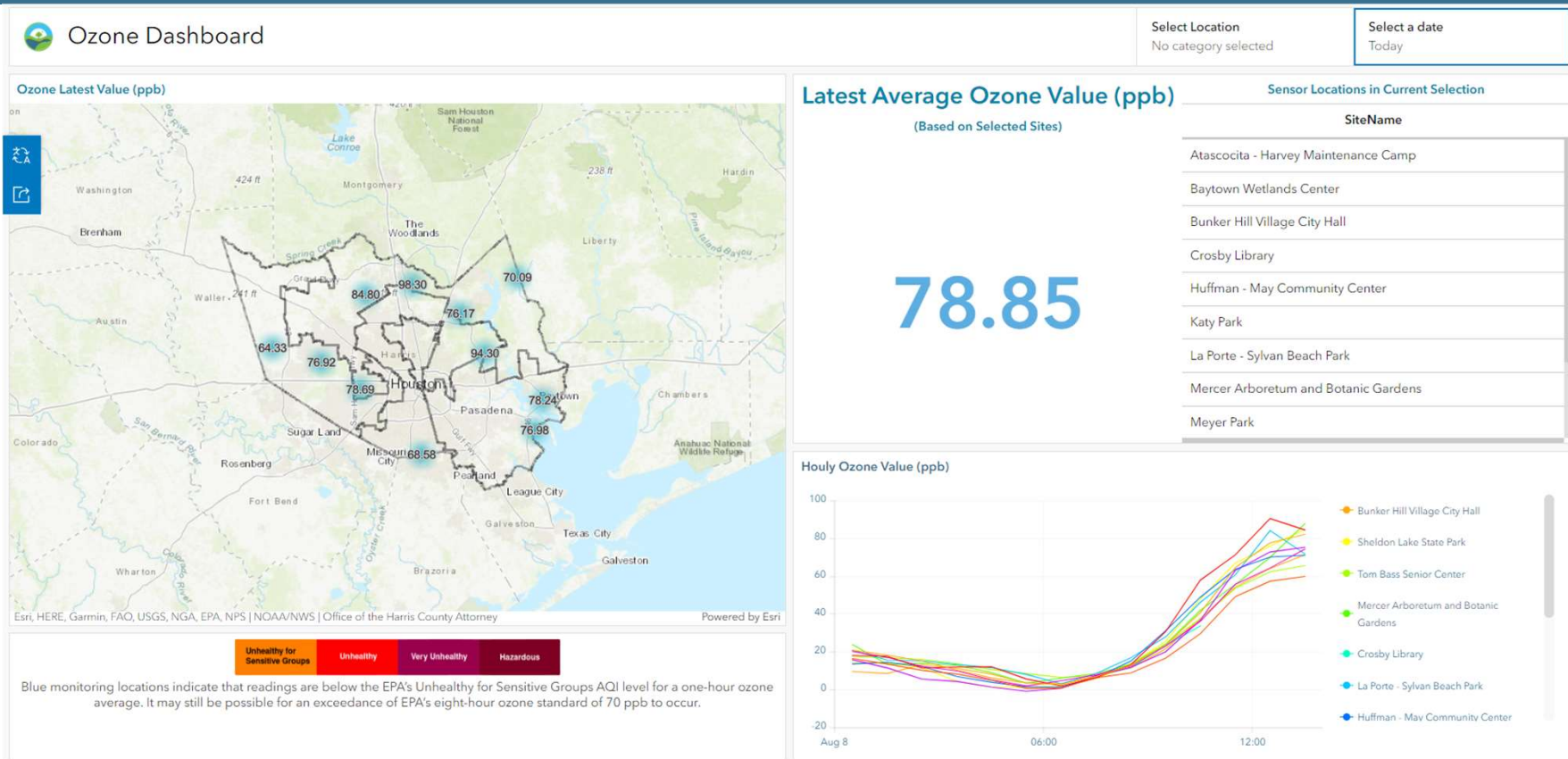
<https://pcs-harriscounty.hub.arcgis.com>



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# HCPCS Ozone Monitoring Dashboard

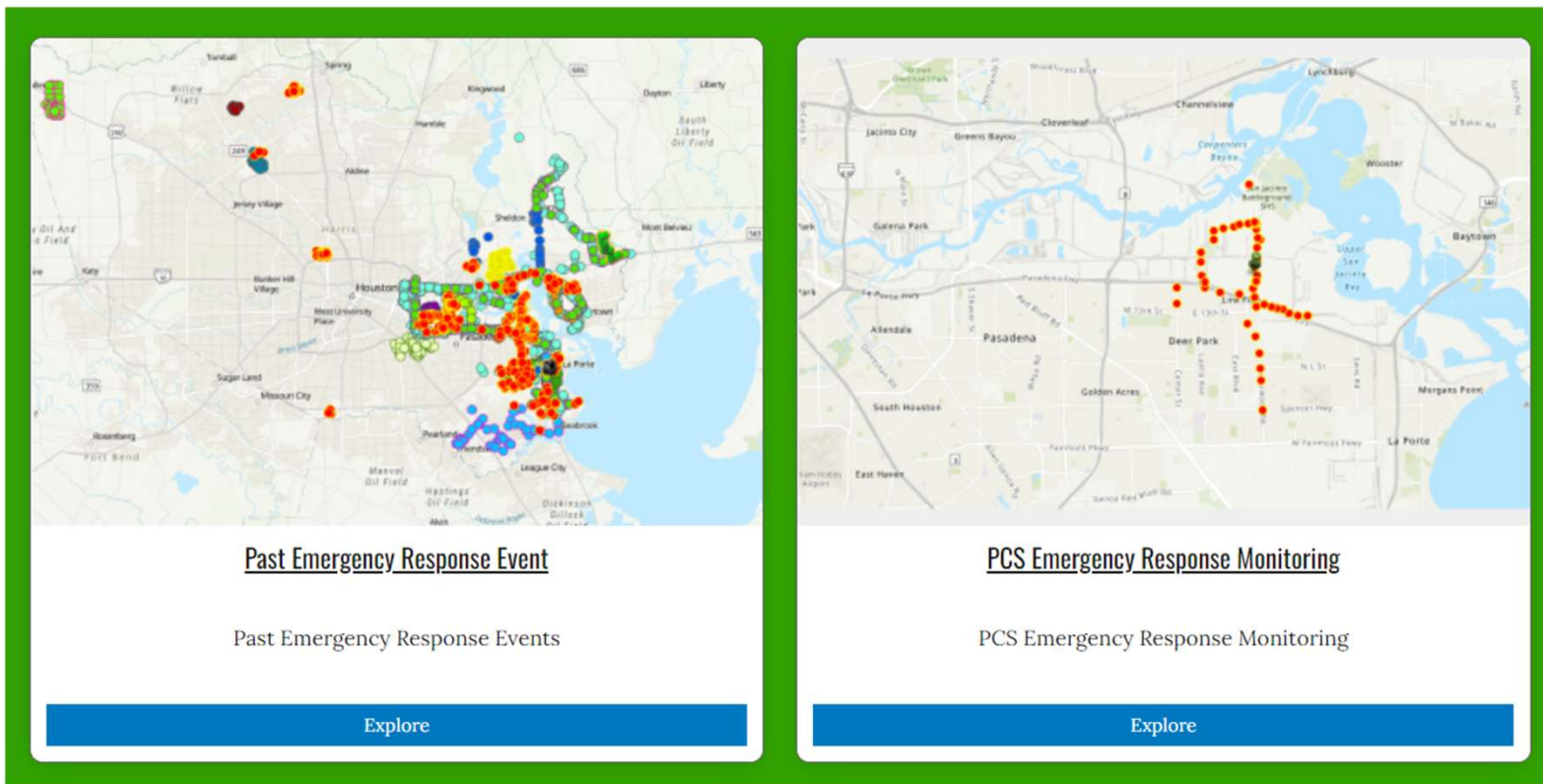
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# Emergency Response Monitoring

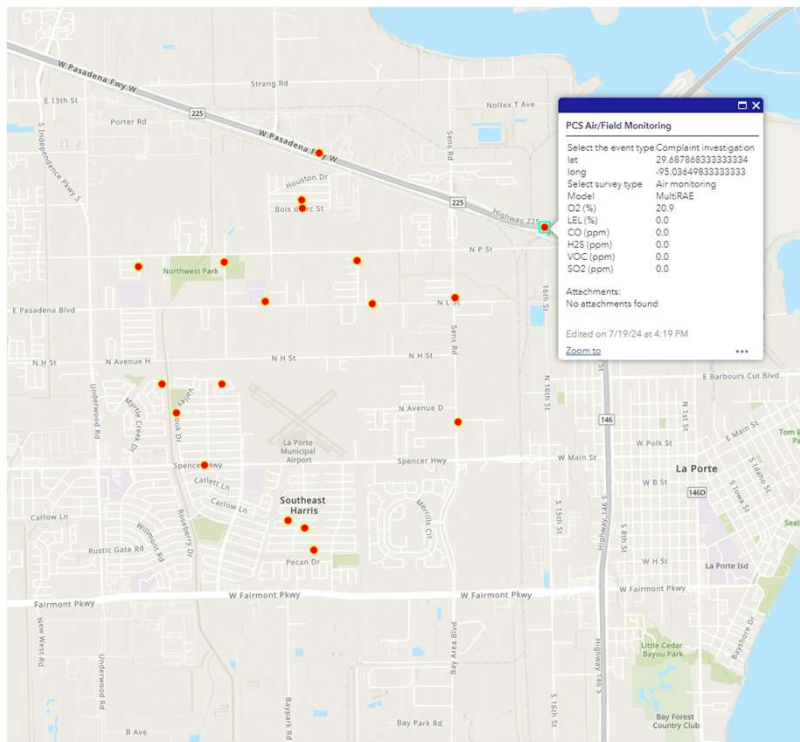
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# Emergency Response Monitoring

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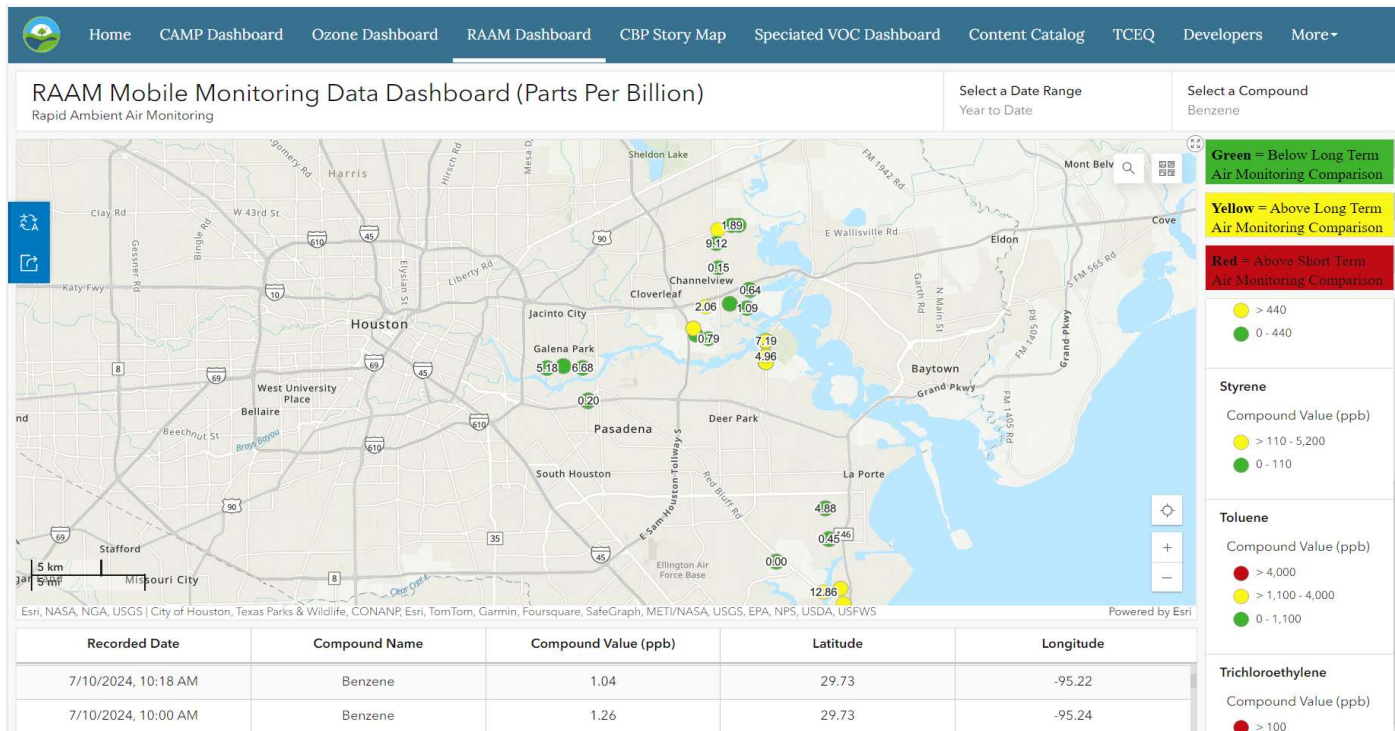


- PCS Emergency Response Section conducts air monitoring with handheld devices:
  - Hazmat incidents
  - Severe weather response
  - Investigation support
- The map displays the locations where PCS Emergency Response personnel stopped to collect data
- The data can be viewed by clicking on the locations on the map.



# RAAM Air Quality Dashboard

<https://pcs-harriscounty.hub.arcgis.com>



- The date range and compounds can be selected for viewing at the top right
- The map will display the selected compound along with readings color coded according to TCEQ's Air Monitoring Comparison Values.

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**QUESTIONS? COMMENTS?**

**LET US KNOW!**

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