From:	Grace Lewis
To:	tceqamnp
Subject:	16 Letters of Support for placement or air monitors in 5th Ward and Pleasantville
Date:	Friday, May 21, 2021 4:12:11 PM
Attachments:	16 letters from 5th Ward Residents 05 21 2021.pdf

Dear Holly,

Please find attached a scanned pdf document containing 16 letters from residents of Houston's 5th Ward submitted as comments in support of placing a reference grade monitor in their community and in Pleasantville.

Additionally, as a senior scientist at the Environmental Defense Fund and a resident of Houston, I also urge the TCEQ to place air monitors in these overburdened port communities that have lived with environmental hazards and health inequities for decades. Not only do they content with mobile source emissions on a daily basis, they live with industrial facilities in and surrounding their neighborhoods. The cumulative impacts of environmental hazards, social stressors, climate change, health, education, economic, transportation, technology and infrastructure disparities are evident in their census tracts ranking in the top 2% most disadvantaged in our region (www.hgbenviroscreen.org).

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Grace Tee Lewis

P. Grace Tee Lewis, PhD (she/her)
Senior Health Scientist
Environmental Health

Environmental Defense Fund
301 Congress Avenue, Suite 1300
Austin, TX 78701
T 512 691 3434
GLewis@edf.org
C 832 540 7488

See our blog: http://blogs.edf.org/texascleanairmatters

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To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Dolores Allen

Address 4313 Stonewall St.
Houston, TX

Houston, Texas 77020

Dear TCEQ,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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Dolores Allen

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Phillip FLAKes

Address 4313 STONeWall ST.
HOUSTO, TX.

Houston, Texas 77020

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Sincerely,

Phillip Flakes

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Clinton M Straughter
Address 4218 Stonewall St
Houston Texas
Houston, Texas 77020

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Sincerely,

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Mary Wicker-Straughter

Address 4218 Stonewall St.
Hou. TX.

Houston, Texas 77020

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Sincerely,

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Mary Hutchins

Address 2913 Lavender

Houston, Texas 77026

Dear TCEQ,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

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Sincerely,

Mary Hutchins

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Sharon Elliott

Address 2934 Lavender

Houston, Texas 77026

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Sincerely, Sharon Elliott

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Jerry Strolger

Address 2510 Kirk St.

Houston, Texas 77026

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Sincerely,

Jerry Strolger

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Eliot EDWARDS

Address 2934 LAVENDER

Houston, Texas 77026

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Sincerely,

Eliot Edwards

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Dwayne Baisey

Address 4308 Stone Wall St

Houston, Texas 77020

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To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Marcus Flakes
Address 4313 Stonewall St.

Houston, Texas 77020

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To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Mary Johnson

Address 7450 N. Shepherd Dr.

Houston, Texas 77091

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Sincerely,

Mary Johnson

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Lacy E. Vann

Address 5450 Mahalia

Houston, Texas 77076

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Sincerely,

Lacy E. Vann

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Henry Manning

Address 2104 Hailey

Houston, Texas 77026

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Henry Manning

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Rodney Rushing

Address 4511 Apache Point Dr.

Houston, Texas 77396

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Sincerely, Rodney Rushing

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Darilyn Johnson
Address 3810 Cavalcade

Houston, Texas 77026

Dear TCEQ,

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Sincerely,

Darilyn Johnson
Heavenly Choices

To: Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

From: Shirley Johnson

Address 4219 Stonewall St
Houston Tx
Houston, Texas 77020

Dear TCEQ,

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Sincerely,

Shirley Johnson

From:	Bridgette Murray
To:	tceqamnp
Subject:	2021 Air Monitoring Network Plan Comments
Date:	Friday, May 21, 2021 8:32:57 AM
Attachments:	2021 AMNP v2.pdf

Hello Ms. Landuyt

I am submitting comments related to the proposed network expansion in support of two of the identified locations - Greater Fifth Ward and Pleasantville

I hope that your office and the EPA will approve the expansion into those two areas

Thank you
Bridgette Murray
Pleasantville Resident
713 553-1907

To: **Texas Commission on Environmental Quality**
Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087
Or sent via email to: **tceqamnp@tceq.texas.gov**

From: Bridgette Murray
1403 Laurentide Street
Houston, TX 77029
blmacts4@gmail.com

I am writing in response to the draft 2021 Annual Monitoring Network Plan (AMNP).

Please deploy the proposed new monitoring sites in Houston's Greater Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions and protect the public health.

Each of these communities have unique exposures placing them at risk for high levels of particulate matter (soot). The Texas State Department of State Health Services has already documented contamination by creosote in the Greater Fifth Ward Area[1], a cancer cluster in the area, and other adverse health impacts. Components of creosote are known to volatilize into the air[2], and this community does not have any state reference grade air monitors to collect adequate information regarding this.

The Pleasantville community initiated a community-led air monitoring program with low-cost sensors in November 2019 in response to resident's interests and concerns with the quality of the air and impacts to health. The analyst for the nonprofit community based organization, Achieving Community Tasks Successfully dba ACTS, will provide details on measurements so far. Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers, concrete facilities, and diesel trucks. After the 2019 Intercontinental Terminal Company (ITC) Fire in Deer Park, Texas; both Harris County and the City of Houston had to respond to the lack of reference grade monitors in the area. The Pleasantville community is part of the Pleasantville Area Super Neighborhood Council #57 (PASNC) which has grown into a very industrial and commercial area over time. The distribution of facilities reporting to the Toxic Release Inventory is provided**. See Figure 1**. With the cumulative burden of industrial and transportation sector sources near Pleasantville, the state (FRM) monitor located two miles away in Clinton Park is likely unable to

[1] https://www.houstontx.gov/health/Environmental/bcceh/documents/fwkgcc/20200323/november-14-15-2019-assessment-of-the-occurence-of-cancer-houston-2000-2016-report.pdf
[2] https://www.tceq.texas.gov/assets/public/comm_exec/pubs/gi/gi-285.pdf

capture the full magnitude and frequency of high readings observed within residential areas of the Pleasantville community.

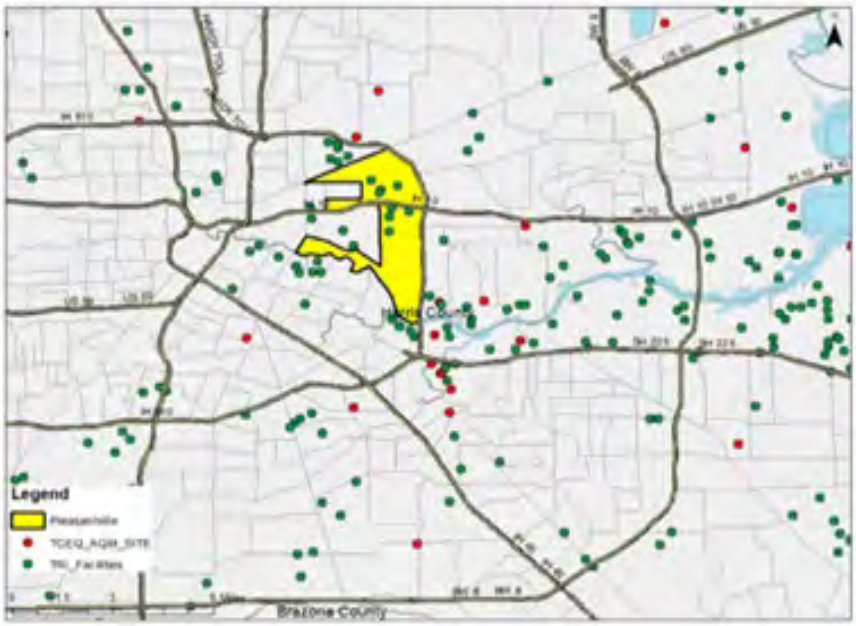


Figure 1 - The yellow area is the Pleasantville Area Super Neighborhood #57 (PASNC) boundaries. As the legend states the green dots reflect known toxic releases and red location of state monitors.

Our communities have a right to know what they are breathing. They have a right to breathe clean air. It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it. Communities in the City of Houston area can report to the City Health Air Pollution Control Division for follow up of dust, odors or smells; but the response is delayed. Data should be captured in a timely manner for priority in decision-making and protection of public health.

Again, please deploy the proposed new monitoring sites.

Thank you

Bridgette Murray

Bridgette Murray
Pleasantville Resident
Founder/Executive Director Achieving Community Tasks Successfully dba ACTS
President, PASNC #57

From:	Bridgette
To:	tceqamnp
Subject:	2021 Air Monitoring Network Plan Comments
Date:	Friday, May 21, 2021 4:31:09 PM
Attachments:	lottie AMNP.pdf

Please accept these comments regarding the AMNP

Thank you
Lottie Murray-Cummings
713 675-3331

Sent from Mail for Windows 10

To: **Texas Commission on Environmental Quality**
Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087
Or sent via email to: **tceqamnp@tceq.texas.gov**

From: Lottie Murray-Cummings
1403 Laurentide Street
Houston, TX 77029
bmurray4@sbcglobal.net

I am resident of the Pleasantville community. I am sharing my thoughts regarding the draft 2021 Annual Monitoring Network Plan (AMNP).

It is my opinion that the proposed monitors for both Houston's Greater Fifth Ward and Pleasantville areas should be added to the state air monitoring network. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions and protect the public health.

I am glad to see that both PM2.5 and VOC monitoring is being proposed for Fifth Ward. It is my suggestion that both communities should receive that level of monitoring.

Recent information brought to my attention regarding pollution in Pleasantville – BASED ON EPA DATA

Pleasantville air monitor should include: Air Toxics VOC, PM2.5, CO, SO2, H2S, TNMOC, and chromium

- 93rd percentile in the country for Air Toxic Cancer Risk
- 90th percentile in the US for PM2.5
- 94th percentile NATA Diesel PM
- 91st for Traffic Proximity and Volume
- 91st for Respiratory Hazard Index

EPA United States Environmental Protection Agency

EJSCREEN Report (Version 2020)

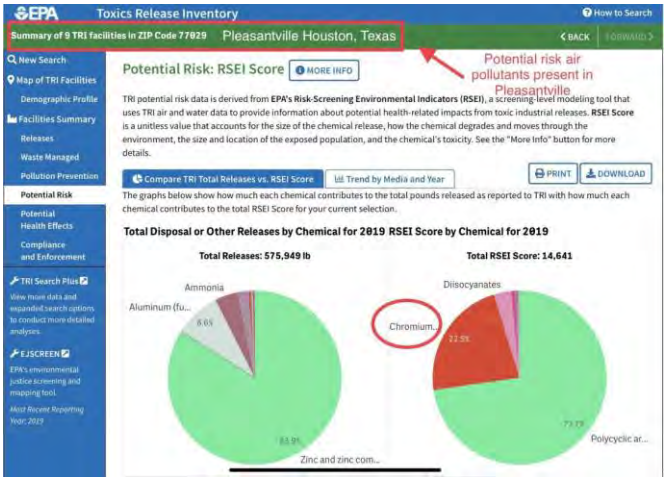
the User Specified Area, TEXAS, EPA Region 6

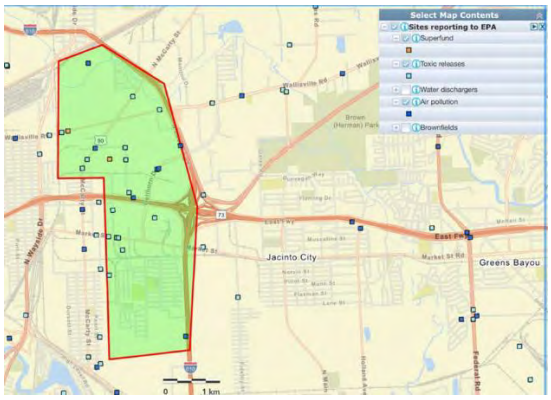
Approximate Population: 3,096

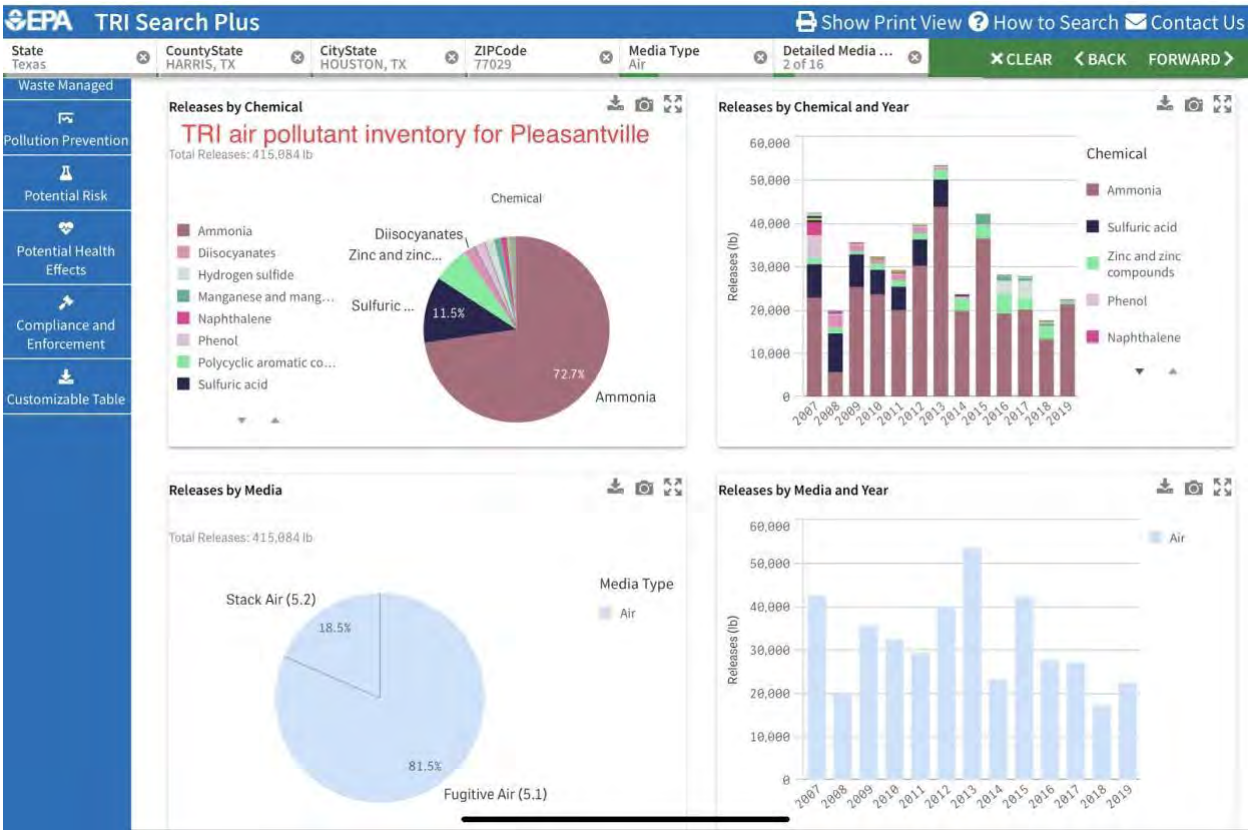
Input Area (sq. miles): 3.51

Pleasantville

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	77	83	90
EJ Index for Ozone	73	78	86
EJ Index for NATA* Diesel PM	91	94	94
EJ Index for NATA* Air Toxics Cancer Risk	83	87	93
EJ Index for NATA* Respiratory Hazard Index	84	87	91
EJ Index for Traffic Proximity and Volume	91	93	91
EJ Index for Lead Paint Indicator	98	98	97
EJ Index for Superfund Proximity	89	91	93
EJ Index for RMP Proximity	93	95	97
EJ Index for Hazardous Waste Proximity	92	93	86
EJ Index for Wastewater Discharge Indicator	94	95	95


EPA Toxics Release Inventory
How to Search
Summary of 9 TRI facilities in ZIP Code 77029
Pleasantville Houston, Texas
BACK
FORWARD
New Search
Map of TRI Facilities
Demographic Profile
Facilities Summary
Releases
Waste Managed
Pollution Prevention
Potential Risk
Potential Health Effects
Compliance and Enforcement
TRI Search Plus
View more data and expanded search options to conduct more detailed analyses.
EJSCREEN
EPA's environmental justice screening and mapping tool.
Most Recent Reporting Year: 2019
Potential Risk: RSEI Score
MORE INFO
Potential risk air pollutants present in Pleasantville
TRI potential risk data is derived from EPA's Risk-Screening Environmental Indicators (RSEI), a screening-level modeling tool that uses TRI air and water data to provide information about potential health-related impacts from toxic industrial releases. RSEI Score is a unitless value that accounts for the size of the chemical release, how the chemical degrades and moves through the environment, the size and location of the exposed population, and the chemical's toxicity. See the "More Info" button for more details.
Compare TRI Total Releases vs. RSEI Score
Trend by Media and Year
PRINT
DOWNLOAD
The graphs below show how much each chemical contributes to the total pounds released as reported to TRI with how much each chemical contributes to the total RSEI Score for your current selection.
Total Disposal or Other Releases by Chemical for 2019 RSEI Score by Chemical for 2019
Total Releases: 575,949 lb
Total RSEI Score: 14,641
Ammonia
Aluminum (fu...
8.6%
83.9%
Zinc and zinc com...
Diisocyanates
Chromium...
12.5%
72.7%
Polycyclic ar...


Select Map Contents
Sites reporting to EPA
Superfund
Toxic releases
Water dischargers
Air pollution
Brownfields
Jacinto City
Greens Bayou
East Fwy
Market St Rd
Federal Rd
N McCarty St
Brown (Herman) Park
0
1 km


EPA TRI Search Plus
Show Print View
How to Search
Contact Us
State Texas
CountyState HARRIS, TX
CityState HOUSTON, TX
ZIPCode 77029
Media Type Air
Detailed Media ... 2 of 16
CLEAR
BACK
FORWARD
Waste Managed
Pollution Prevention
Potential Risk
Potential Health Effects
Compliance and Enforcement
Customizable Table
Releases by Chemical
TRI air pollutant inventory for Pleasantville
Total Releases: 415,084 lb
Chemical
Ammonia
Diisocyanates
Hydrogen sulfide
Manganese and mang...
Naphthalene
Phenol
Polycyclic aromatic co...
Sulfuric acid
Diisocyanates
Zinc and zinc...
Sulfuric ...
11.5%
72.7%
Ammonia
Releases by Chemical and Year
Chemical
Ammonia
Sulfuric acid
Zinc and zinc compounds
Phenol
Naphthalene
Releases (lb)
60,000
50,000
40,000
30,000
20,000
10,000
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Releases by Media
Total Releases: 415,084 lb
Media Type
Air
Stack Air (5.2)
18.5%
81.5%
Fugitive Air (5.1)
Releases by Media and Year
Air
Releases (lb)
60,000
50,000
40,000
30,000
20,000
10,000
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019

Unfortunately, our communities and the residents are at high risk for exposure. Our request is to have real-time monitoring to inform for public health policy decisions and protect public health.

Thank you in advance for considering these comments.

Sincerely,

Lottie Murray-Cummings
Pleasantville Resident

From:	Cleophus Sharp
To:	tceqamnp
Subject:	2021 Annual Monitoring Network Plan (AMNP)
Date:	Thursday, May 20, 2021 4:27:13 PM
Attachments:	ACTS BLM Comments 2021 AMNP GTL RW(1).docx

I am in full support of installing air monitoring equipment in the Pleasantville & 5th Ward Communities of Houston, Tx. Please open attached letter of support:

Cleophus Sharp
sharpvalue@gmail.com
713.489.4118

To: **Texas Commission on Environmental Quality**
Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087
Or sent via email to: **tceqamnp@tceq.texas.gov**

From: Cleophus Sharp, MS (Community Development)
15210 Ember Glen Court, Houston, Tx 77095

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

Each of these communities have unique exposures placing them at risk for high levels of particulate matter (soot). The Texas State Department of State Health Services has already documented contamination by creosote in the Greater Fifth Ward Area[1], a cancer cluster in the area, and other adverse health impacts. Components of creosote are known to volatilize into the air[2], and this community does not have any state reference grade air monitors to collect adequate information regarding this.

The Pleasantville community initiated a community-led air monitoring program with low cost sensors in November 2019 in response to resident's interest in their air quality and impacts to health. Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers, concrete facilities, and diesel trucks. In addition to these exposures, See **map figure 1** of the Pleasantville Area Super Neighborhood Council #57 (PASNC) and distribution of facilities reporting to the Toxic Release Inventory. With the cumulative burden of industrial and transportation sector sources near Pleasantville, the state (FRM) monitor located two miles away in Clinton Park is likely unable to capture the full magnitude and frequency of high readings observed within residential areas of the Pleasantville community.

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[1] https://www.houstontx.gov/health/Environmental/bcceh/documents/fwkgcc/20200323/november-14-15-2019-assessment-of-the-occurence-of-cancer-houston-2000-2016-report.pdf
[2] https://www.tceq.texas.gov/assets/public/comm_exec/pubs/gi/gi-285.pdf

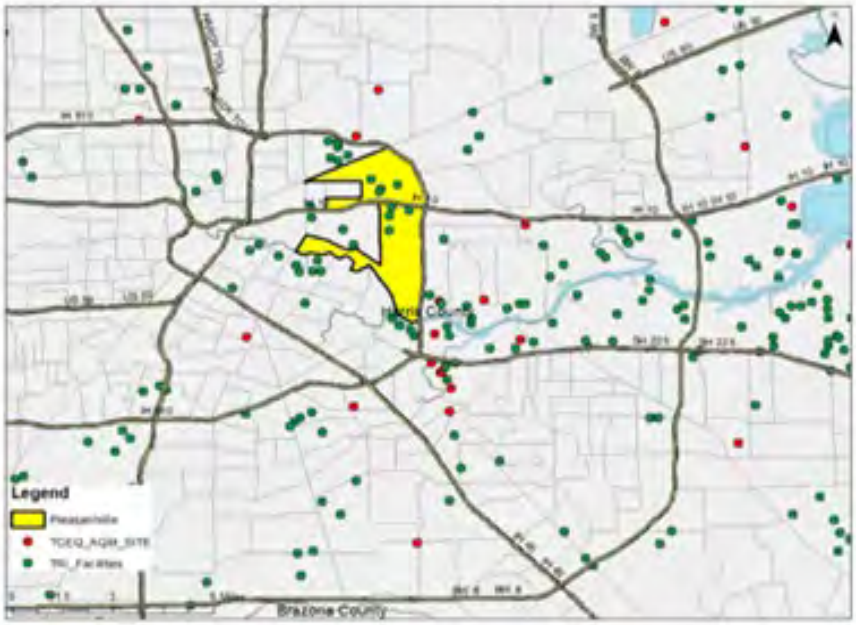

Figure 1 - The yellow area is the Pleasantville Area Super Neighborhood #57 (PASNC) boundaries. As the legend states the green dots reflect known toxic releases and red location of state monitors.

I think you would want to know what you & your children are breathing daily. Likewise, our communities have a right to know what they & their children are breathing. They have a right to breathe clean air. It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

I grew up in Pleasantville during the 1950's – 1970's at 8635 Fannette Street. During my childhood days, I recalled trying to hold my breath for minutes whenever we travel over the ship channel because the air was so polluted it was a struggle to just catch my breath. During the mid '50s, the air quality was so bad that I had to be rush to the Emergency Ward of the St Elizabeth Hospital (no longer in existence) because I couldn't breathe the air. During this time, I was confined in the hospital under an oxygen tent for two weeks because no matter how hard I tried, I just could not breathe in enough oxygen from the bad air quality that engulfed the entire east end (Pleasantville, 5th Ward, Clinton Park, Fidelity, Manchester, Jacinto City, & Galena Park communities). This led to me contracting asthma that subjected me with breathing issues for the next 13 – 14 years until I moved away from Pleasantville. Here we are 50, 60, 70 years later and the air quality is still of major concern! It is alarming that we continue to allow more and more businesses to collectively pollute the air with much more variety of pollutants in areas next to where people live, and there is not a requirement of them to plant more trees which produce oxygen to offset some of the pollutants when they locate next to these communities. This is not the future we want for the residents, especially children, of Pleasantville or Houston. We need to protect their health and placing a monitor in Pleasantville gives us accurate, timely data to understand whether the health protective standards set in the Clean Air Act are indeed being met.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it. Communities in Houston area are able to report to the City Health Air Pollution Control Division, but the response is delayed. Data should be captured in a timely manner for priority in decision-making and protection of public health.

Again, please deploy the proposed new monitoring sites.

Thank you

Cleophus Sharp
Ex-Pleasantville Resident / Parent & Sisters Currently live in Pleasantville
Board Member/Program Director - Achieving Community Tasks Successfully, dba ACTS

From:	Castillo, Antonio
To:	tceqamnp
Subject:	Advocacy for Air Monitoring on Behalf of YES Prep Fifth Ward
Date:	Thursday, May 13, 2021 12:22:36 PM

To Whom It May Concern:

I am writing to formally advocate for air monitoring for the Fifth Ward neighborhood. I serve as Principal of YES Prep Fifth Ward and have lived in Houston all my life. I aspire for YES Prep Fifth Ward to be more than a school but a part of the community. Being a part of the community means supporting initiatives. Please see the points below:

1. According to the EPA's Environmental Justice dashboard, Fifth Ward's historical particulate matter (pm 2.5) index value average is valued at 10 versus the national EPA average of 8.55. Exposure to such particulates can negatively affect our lungs. Numerous scientific studies have linked particulate pollution exposure to a variety of problems, including decreased lung function. increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing and lung cancer.
2. According to the EPA's Environmental Justice dashboard, the diesel particulate matter for our area is 1.15 versus the state's average which is 0.42. Our diesel particulate matter is 168% above the state's average. We are inundated with vehicle emissions from I-10 and 59. The future I-45/59 expansion that impacts our area will certainly exacerbate this making the urgency for monitoring all the more critical to our health.
3. According to the EPA's Environmental Justice dashboard, our air toxic cancer risk is 43 versus the state's average which is 35. That's 18% above the state's average. Another clear sign our air quality must be monitored and helps explain the City of Houston's Health Department website, indicated in 2020 that Fifth Ward is apart of a lung and bronchial cancer cluster. (map on the link below) https://www.houstontx.gov/health/Environmental/bcceh/documents/fwkgcc/cancer-cluster-map-20200518-v2.pdf
4. According to the EPA's Environmental Justice dashboard, our traffic volume and proximity index is 1700 versus the state's rate of 470, 262% above the state's average, another negative health statistic.
5. Texas Department of Health & Human Services published in March of 2021 that Fifth Ward had slightly higher incidents of birth defects than Harris County. https://dshs.texas.gov/epitox/CancerClusters/Supplemental-Assessment-of-the-Occurrence-of-Cancer-Houston-Texas-2000-2016.pdf

I hope this form of advocacy falls on ears that can lead to change and the betterment of Fifth Ward.

Tony

Antonio "Tony" Castillo
Principal
YES Prep Fifth Ward
346-351-8761
yesprep.org

From:	Beverly Parker
To:	tceqamnp
Subject:	Air Filter in the 5th Ward
Date:	Friday, May 21, 2021 3:14:12 PM

Between being in the middle of the intersection of I10 and I69 AND RIGHT ALONG SIDE of the Union Pacific railroad switching yard we have serious air quality concerns and issues. Then when we add in the creosote plume, we need your help to monitor our air. Lots of people are moving in of all races it is turning into a diverse neighborhood. I have lived here since 2004 snd watched it move forward. Yet it is still relatively affordable.

Please, please give us air monitors to make it even better.

Thank you for your consideration.

Beverly Parker
4601 Noble Street
Sent from my iPhone

From:	Alex Nikolay
To:	tceqamnp
Subject:	Air Monitoring 77020
Date:	Tuesday, May 18, 2021 9:20:09 PM

From

Alexandra Nokolay Taschuk

1804 Schweikhardt St

Houston, Tc 77020

To

Texas Commission on Environmental Quality

P.O. Box 13087

Attention: Holly Landuyt, MC-165

Austin, Texas 78711-3087

Dear TCEQ,

I understand your organization reviews its ambient air quality monitoring network annually and created this AMNP (Annual Monitoring Network Plan) to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. I am aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

TCEQ is considering the following proposed air monitor based on previously received AMNP comments. These monitoring proposals are under consideration and are subject to change. Details regarding the potential monitors under consideration are included in this plan and summarized in Appendix M to solicit further public comment.

• Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.

I fully support the installation of an air monitor in Fifth Ward for the following reasons.

- I just bought a new house in this area and the strange chemical smell is constantly lingering in the air .
- There are recent studies completed from the City of Houston & State of Texas exposing negative health effects from air pollution in the Fifth Ward area.

Warm Regards

Alexandra Nikolay

From:	Danielle Getsinger
To:	tceqamnp
Subject:	Air Monitors - Fifth Ward, Houston
Date:	Tuesday, May 18, 2021 9:32:05 PM
Attachments:	image001.png

Dear TCEQ,

I am responding to a public comment period to document my support for TCEQ to establish a new air monitor (or monitors!) to continuously measure VOCs, particulate matter (2.5 and greater), and meteorological conditions in Houston's Fifth Ward. My company is located at 4300 Lyons Avenue (Suite 300), Houston, TX 77077. We specializes in brownfields redevelopment and environmental justice strategies to advance community revitalization. For the past six years, I've been working very closely with the Fifth Ward community, as well as with public entities (including EPA and the City), on studies to identify sources of environmental contamination in Fifth Ward. Through public planning processes, I've also been collaborating with residents and community stakeholders to support their vision for building a healthy and thriving neighborhood. Based on my experience and professional opinion, air quality in Fifth Ward needs to be better understood to make informed decisions about land use, community planning, and public health.

It is **shocking** that Fifth Ward does not have a network of air monitors to help residents, scientist, and officials responsible for the protection of human health understand what kinds of pollutants people are being exposed to. In 2019, the Texas Department of State Health Services (TDSHS) conducted a study on census tracts in Fifth Ward. The study found that **liver, esophagus, larynx, liver, and lung and bronchus cancers** were statistically significantly greater than expected in adults compared to state data. The Houston Health Department (HHD) follow-up health surveys in the area in 2020 reported that **93% of households interviewed were very concerned about the environmental contamination in and around their neighborhood.** The discovery of a "cancer cluster" of types related to inhalation in an area directly downwind of a former wood treatment operation and ACTIVE railyard with daily diesel emissions from trains and heavy vehicles should be enough to warrant immediate installation of air monitor**s** in Fifth Ward. We also know that the HHD has identified Fifth Ward with higher rates of asthma than the rest of the city. With underlying respiratory health disparities related to environmental pollution, it is no surprise that ABC 13 News reported in November 2020 that the Fifth Ward *"neighborhood alone has a death rate higher than 90 percent of counties in our country."*

Air monitors are long overdue in Fifth Ward. I appreciate your acceptance of my comments and encourage you to contact me should you have any questions.

Sincerely,
Danielle
Fifth Ward Business Owner

COMMUNITY LATTICE

Danielle Getsinger, PG, MBA
Cofounder and CEO
401-339-3997
www.communitylattice.com

From: sandra Flowers
To: tceqamnp
Subject: Air monitors 5th Ward Houston
Date: Friday, May 21, 2021 8:17:47 AM

This response is addressed to Air Quality Monitoring decision makers:
we are long overdue for this vital service-- most of us have lived through the worst environmental injustice- unknown to most.
The Northside- East areas of Houston is/was highly industrial and have many superfund sites.
We have needed relief for decades-- many have died or left the community.
How much longer will we have to endure these discriminatory environmental atrocities?
Sandra Flowers- Founder-
The Greater Fifth Ward Stakeholder Partnerships
4712 Coke St
Houston, Tx 77020

From:	Dani Flanny
To:	tceqamnp
Cc:	Janet Broussard
Subject:	AIR MONITORS FIFTH WARD
Date:	Wednesday, May 19, 2021 2:26:26 PM

DANIELLA FLANAGAN

2424 SAKOWITZ ST D104

HOUSTON, TX 77020

JANET BROUSSARD

2424 SAKOWITZ ST D107

HOUSTON, TX 77020

19 May 2021

Texas Commission on Environmental Quality

P.O. Box 13087

Attention: Holly Landuyt, MC-165

Austin, Texas 78711-3087

Dear TCEQ,

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Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. We are aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

TCEQ is considering the following proposed air monitor based on previously received AMNP comments. These monitoring proposals are under consideration and are subject to change. Details regarding the potential monitors under consideration are

included in this plan and summarized in Appendix M to solicit further public comment.

• **Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.**

We fully support the installation of an air monitor in Fifth Ward for the following reasons:

The smell of Diesel fuel filling and the black dust all over our apartments off Sakowitz. The putrid smell of open sewage pits. Metal recycling plants in the area have been known to emit hazardous air pollutants and noise pollution. Batch concrete plants in the area have been known to emit hazardous air pollutants. To reinforce our complaints, there are recent studies completed from the City of Houston & State of Texas, EDF, TSU, Baylor, and TAMU exposing negative health effects from air pollution in the Fifth Ward area.

Thank you!

Sincerely,
Daniella Flanagan and Janet Broussard

Pic credit: J. Proler Iron & Steel Company, 4401 Clinton Dr., Houston, TX 77020 (Fifth Ward neighborhood)

From: Erin D
To: tceqamnp
Subject: Air quality
Date: Friday, May 21, 2021 9:18:47 PM

Erin DiNardo

1507 Cage St, Houston, TX 77020

Texas Commission on Environmental Quality

P.O. Box 13087

Attention: Holly Landuyt, MC-165

Austin, Texas 78711-3087

Dear TCEQ,

I understand your organization reviews its ambient air quality monitoring network annually and created this AMNP (Annual Monitoring Network Plan) to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. I am aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

TCEQ is considering the following proposed air monitor based on previously received AMNP comments. These monitoring proposals are under consideration and are subject to change. Details regarding the potential monitors under consideration are included in this plan and summarized in Appendix M to solicit further public comment.

• Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.

I fully support the installation of an air monitor in Fifth Ward for the following reasons.

- Sometimes there are strange smells in the neighborhood
- I-10 is very close by
- There are recent studies completed from the City of Houston & State of Texas exposing negative health effects from air pollution in the Fifth Ward area.

From:	White, Rachel C
To:	tceqamnp
Subject:	Attention: Holly Landuyt, MC-165, Response to 2021 Annual Monitoring Network Plan
Date:	Thursday, May 20, 2021 11:40:59 AM
Attachments:	White, Rachel_Letter.docx

Good afternoon,

Please see attached letter in response to the 2021 Annual Monitoring Network Plan.

Thank you!

Rachel C. White, MPH
The University of Texas School of Public Health
1200 Pressler Dr.
Houston, TX 77030
(e): rachel.c.white@uth.tmc.edu

To: Texas Commission on Environmental Quality
Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087
Or sent via email to: **tceqamnp@tceq.texas.gov**

From: Rachel White, MPH
426 Yale Oaks Lane
Houston Tx, 77091

I am a PhD candidate in Epidemiology at The University of Texas School of Public Health. An aim of my dissertation is to explore how air pollution is distributed in Harris County and how this pollution is affecting vulnerable communities of color. I am passionate about environmental injustice in my research and in my personal life partly because of personal experience and ties to the two communities this letter is referencing, Pleasantville and Fifth Ward. My grandmother and grandfather migrated to Pleasantville from Louisiana as young adults, established a pharmacy in 5th ward, and for 30 years it served as a beacon for the 5th ward community and to Texas Southern University students. The first experience I had with environmental exposures occurred when I was a baby and a fire at a nearby facility in Pleasantville exposed myself, my grandparents, and the community to harmful chemicals. All of these experiences led me to work with Achieving Community Tasks Successfully (ACTS), a resident led organization in Pleasantville, and to assist them with analyzing air quality data from the low-cost monitoring network established. I write in response to the draft of the 2021 Annual Monitoring Network Plan because I not only have the scientific knowledge and professional experience, but also have seen and experienced first-hand what these communities are facing today.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

In 2019, residents of Pleasantville, with the leadership of the resident-led organization Achieving Community Tasks Successfully (ACTS), designed and deployed a community-owned network of lower-cost air pollution monitors (Clarity Nodes) (see Figure 1 below for locations of the Clarity Network nodes in Pleasantville). Aims of the Pleasantville Clarity network included collecting data on variability in air pollution exposure across Pleasantville, since the current TCEQ regulatory network does enable

understanding of pollution patterns in Pleasantville. The Clarity Nodes were selected for the Pleasantville network in part because they showed strong correlations with regulatory grade PM2.5 instruments in field and laboratory evaluations conducted by the Air Quality Sensor Performance Evaluation Center (AQ-SPEC) at California's South Coast Air Quality Management District.[1] To enable ongoing, dynamic calibration of the Pleasantville Clarity network with TCEQ regulatory instruments, one Clarity Node was co-located at the Clinton Park TCEQ regulatory monitor. Since the Pleasantville network was deployed, Clarity has provided continuous calibration and quality control of the network PM2.5 data based on the Federal Reference Method PM2.5 mass readings from Clinton Park.

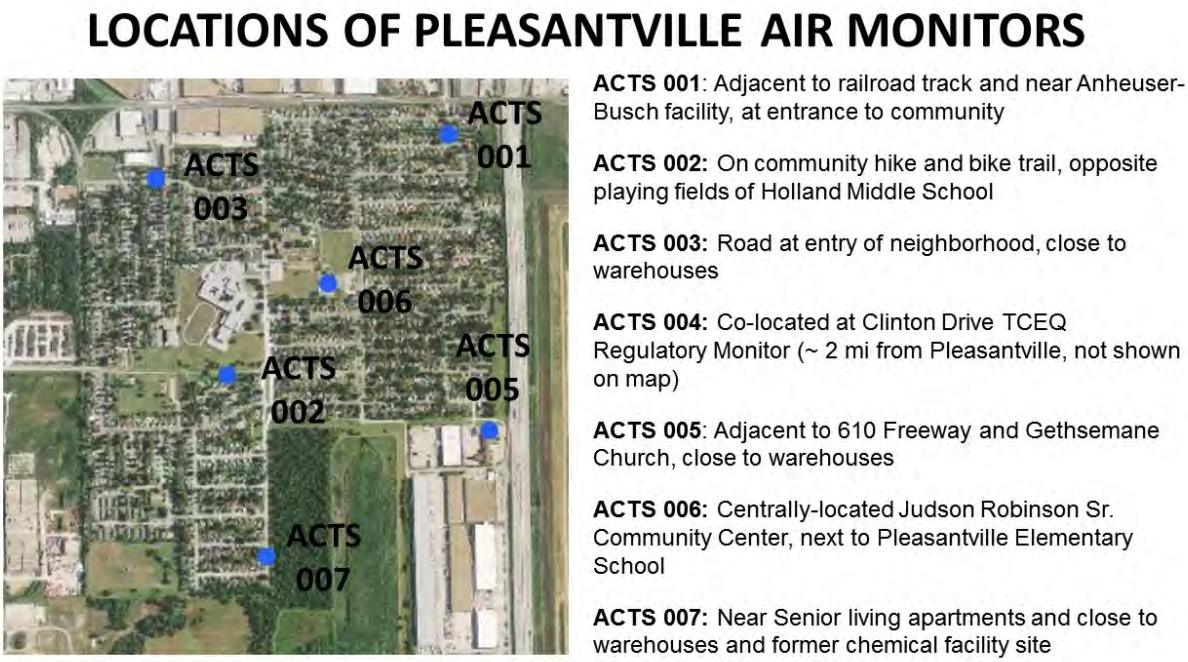

Figure 1: Locations of Clarity Network in Pleasantville

Data from the Pleasantville Clarity Network clearly demonstrates the need for a regulatory grade monitoring site in Pleasantville as opposed to relying on the monitor 2 miles away in Clinton Park. Please see the time series below in Figure 2 which shows that ACTS004, the Clarity monitor that is collocated with the Clinton Park TCEQ regulatory monitor, has consistently lower readings than ACTS006, a Clarity monitor

[1] See AQ-SPEC Summary report for Clarity Node sensor: http://www.aqmd.gov/docs/default-source/aq-spec/summary/clarity-node---summary-report.pdf?sfvrsn=18.
"For PM2.5 mass conc., the Clarity Node sensors showed strong correlations with the FEM BAM from the field (R2 ~ 0.73-0.76) and very strong correlations from the laboratory studies (R2 > 0.99 with the FEM GRIMM). "

near Holland Middle School. Children are more sensitive to pollution than adults[2,3,4], therefore it is imperative that we are able to more accurately capture pollution affecting the children in Pleasantville.

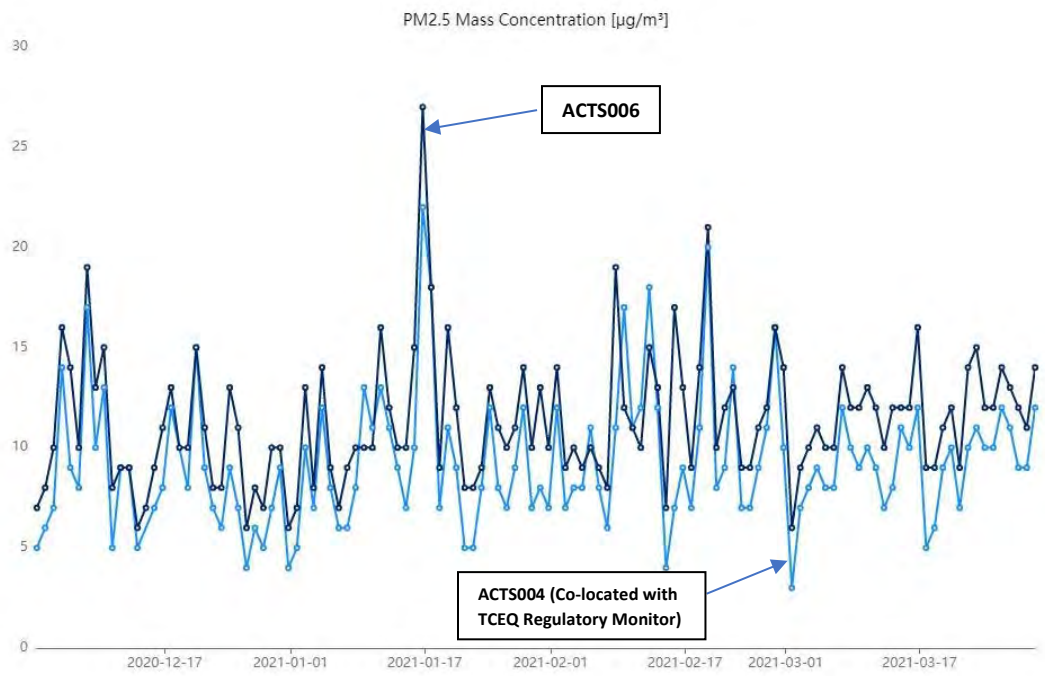

Figure 2: Calibrated PM2.5 Daily Average Readings from Clarity Monitors ACTS004 and ACTS006 from December 1, 2020 – March 31, 2021

Residents of the Pleasantville and Fifth Ward communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks. In addition to these exposures, Pleasantville is also at risk for exposures to releases from the nearby Anheuser-Busch facility. The regulatory monitor two miles away in Clinton Park is unable to capture the high readings near this facility. Figure 3 below shows a

---

[2]Q. Deng, C. Ou, J. Chen, Y. Xiang "Particle deposition in tracheobronchial airways of an infant, child and adult" Sci. Total Environ., 612 (2018), pp. 339-346, 10.1016/j.scitotenv.2017.08.240
Jan 15

[3] Fine particles, a major threat to children Int. J. Hyg. Environ. Health, 210 (2007), pp. 617-622, 10.1016/j.ijheh.2007.07.012

[4] Sugiyama, T., Ueda, K., Seposo, X. T., Nakashima, A., Kinoshita, M., Matsumoto, H., Ikemori, F., Honda, A., Takano, H., Michikawa, T., & Nitta, H. (2020). Health effects of PM2.5 sources on children's allergic and respiratory symptoms in Fukuoka, Japan. Science of the Total Environment, 709, 136023. https://doi.org/10.1016/j.scitotenv.2019.136023

time series for ACTS001, a Clarity monitor in Pleasantville near the Anheuser-Busch facility and adjacent to the railroad track, and ACTS004 (co-located at the Clinton Park TCEQ monitor), demonstrating that the ACTS 001 monitor in Pleasantville consistently measures higher PM2.5 than the Clarity Node at the Clinton Park regulatory monitor. The pollution near this facility is likely affecting residents in the Pleasantville community. From 2019 when the Clarity monitors were first set up until May 2021, ACTS001 has had the most occurrence of hourly readings over 35 µg/m3 (47 occurrences, 33% of all occurrences across the Pleasantville network). A regulatory monitor is needed in Pleasantville to accurately capture these potential exposures.

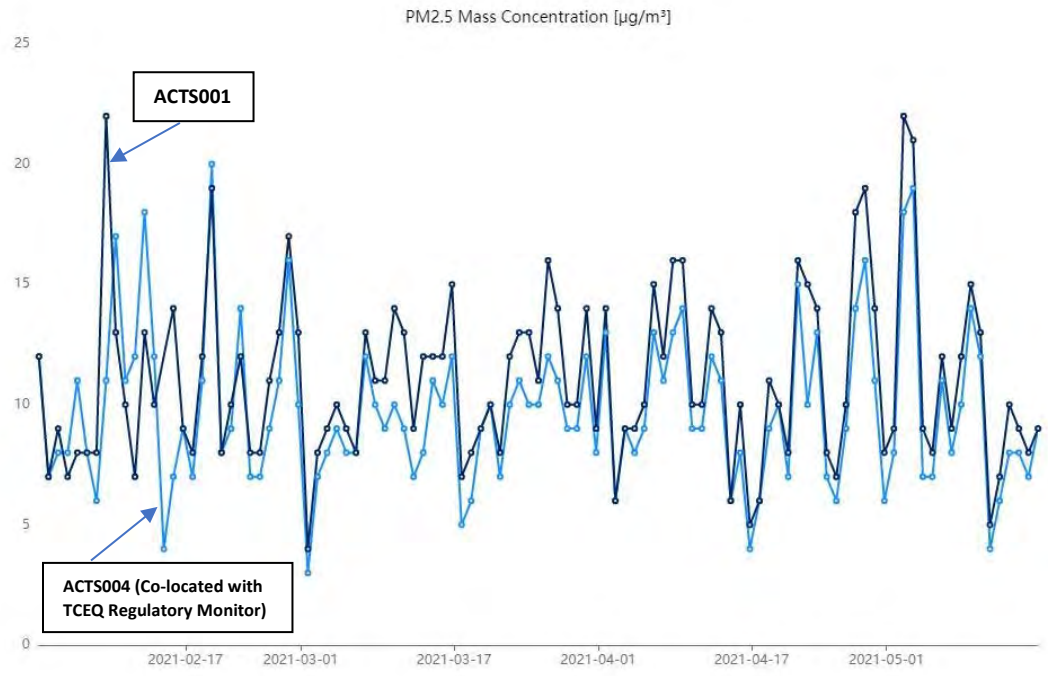

Figure 3: Calibrated PM2.5 Daily Average Readings from Clarity Monitors ACTS004 and ACTS001 from February 1, 2021 – May 18, 2021

In addition, Figure 4 displays the yearly average PM2.5 concentrations from each Clarity Node compared with PM2.5 measured at the regulatory monitor (labelled "Clinton Park AQM."). We see that the Clarity monitor collocated with the regulatory monitor have nearly the same measurements for the year, which speaks to the accuracy of the Clarity network; however, we see that these readings are lower than most of the other Clarity network monitors deployed across Pleasantville. Because enforcement and compliance cannot be based on data from these low-cost monitors, this demonstrates the need for a regulatory monitor in Pleasantville so that we can accurately capture the true exposure that is not being captured by the regulatory monitor in Clinton Park.

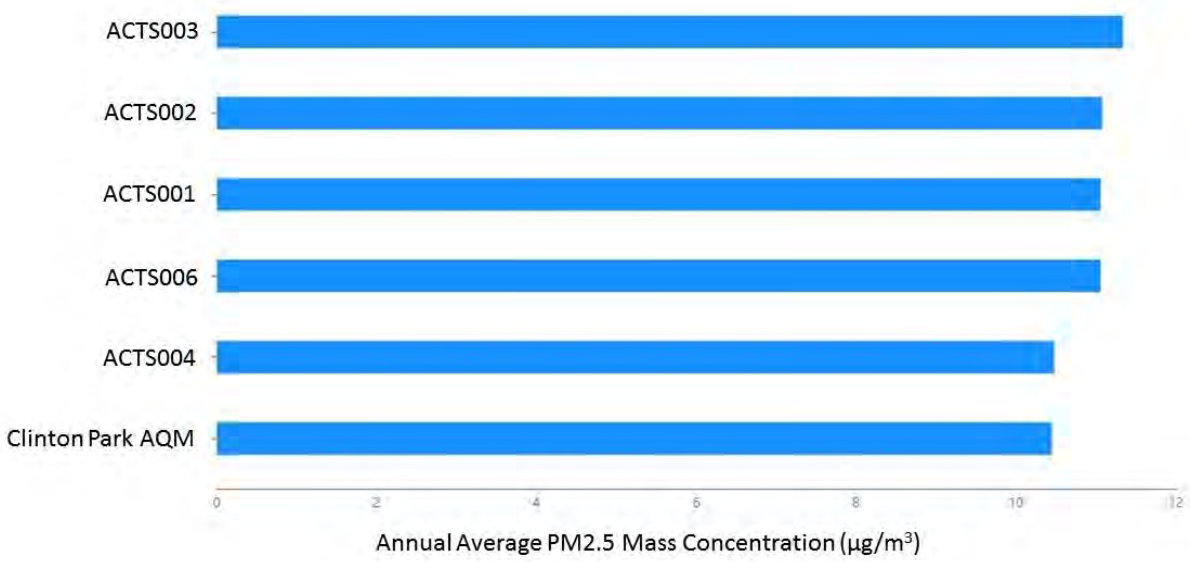

Figure 4: Calibrated PM2.5 Yearly Average Readings from Pleasantville Clarity Monitors compared to Clinton Park regulatory site in 2020

This is an issue of environmental justice. These additional regulatory monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from the Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards recommended by scientists.[5]

We need to be able to protect ourselves. The best tool is better information. Deploying new regulatory monitoring sites in Fifth Ward and Pleasantville would help provide it.

Thank you for your time!

Rachel White, MPH

[5]"[A]lmost all of [Houston] is exposed to fine particulate matter above 10 micrograms per meter cubed [µg/m3] (most scientists say that the new EPA standard should be between 8-10 µg/m3), and large portions in the west and southwest of the city are even above the current standard (12 µg/m3)." http://blogs.edf.org/health/2020/05/11/pm-standards-houston-analysis/

From:	Jackson, Tarsha - CNL
To:	tceqamnp
Cc:	Moreno, Mary - CNL; Eatmon, Rain - CNL
Subject:	ATTN: 2021 AMNP Letter of Support
Date:	Friday, May 21, 2021 3:07:27 PM
Attachments:	Support Letter for Air Monitors in Fifth Ward and Plesantville.pdf

---

To Whom It May Concern,

Please see my letter of support attached to this email. If you have any questions or concerns, please contact Mary Moreno mary.moreno@houstontx.gov

Sincerely,

Tarsha R. Jackson, City of Houston Council Member, District B
832-837-3284
tarsha.jackson@houstontx.gov

TARSHA JACKSON
Houston City Council District B

Tarsha R. Jackson
Houston City Council Member, District B
City Hall Annex
900 Bagby St, 1st Floor
Houston, TX 77002

Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

To Whom It May Concern,

I am writing this letter to express my support for installing new air monitors in Houston's Fifth Ward and Pleasantville areas. These monitors are needed to comply fully with the EPA regulatory requirements, and to ensure that local officials and residents have access to critical air pollution data that will inform public health policy decisions.

I have worked with organizations like Air Alliance and Community Lattice to address the unique health concerns in each of these communities, and it is imperative that they both have access to the most accurate data to monitor the high levels of particulate matter in the surrounding community.

These communities have a right to know what is in their air, and they have the right to breathe clean air. I fully support the installation of air monitors in the Greater Fifth Ward and Pleasantville Communities.

Sincerely,

Tarsha Jackson

Tarsha R. Jackson
Houston City Council Member, District B

From:	Hopkins, Loren - HHD
To:	tceqamnp
Cc:	Key, Patrick - HHD; Colbert, Win - LGL; Desouza, Isaac - HHD; Ly, Nguyen - HHD
Subject:	comment letter regarding 2021 draft Annual Monitoring Network Plan
Date:	Wednesday, May 19, 2021 1:48:52 PM
Attachments:	image001.png HHD Supportive Comments for Propose New Air Monitoring Site in Houston Fifth Ward 051821.pdf

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The attached letter addresses comments from the City of Houston regarding TCEQ's 2021 draft Annual Monitoring Network Plan.

Loren Hopkins (formerly Raun), PhD
Chief Environmental Science Officer
Bureau Chief
Office 832-393-5155
Bureau of Community and Children's Environmental Health
HOUSTON HEALTH DEPARTMENT

Professor in the Practice of Statistics
Department of Statistics
Rice University

CITY OF HOUSTON

Houston Health Department

Sylvester Turner

Mayor

Stephen L. Williams, M.Ed., MPA
Director
Houston Health Department
8000 N. Stadium Drive
Houston, Texas 77054-1823

T. 832-393-5169
F. 832-393-5259
www.houstontx.gov
www.houstonhealth.org

May 14, 2021

Laurie Gharis, Chief Clerk
Office of Chief Clerk
TCEQ, Mail Code MC-105
P.O. Box 13807
Austin, Texas 78711 - 3087

Re: Texas Commission on Environmental Quality Draft Annual Monitoring Network Plan 2021 - Proposal to Establish New Air Monitoring Site for the Houston Fifth Ward Area Supportive Comments.

Thank you for the opportunity to submit comments on the Texas Commission on Environmental Quality (TCEQ) Draft Annual Monitoring Network Plan 2021. The plan proposes to establish a new air monitoring site in the Houston Fifth Ward to Measure VOCs, PM2.5, and meteorological parameters (page 25, Additional Monitoring Considerations). The city of Houston fully supports the proposed new monitor.

The Houston Health Department (HHD), Bureau of Pollution Control and Prevention (BPCP) has received numerous dust nuisance complaints from the Fifth Ward, including citizens expressing concerns about dust-related health effects during public meetings held in the area**.** One of the primary emissions sources for PM2.5 is a cluster of facilities located right next to the Fifth Ward area. These facilities consist of a concrete batch plant, a rock crusher, and an asphalt paving plant (i.e., EMEX Concrete Batch Plant, Century Asphalt – Paving Asphalt, Crushed Concrete and Sand and Gravel, and Southern Rock Crusher). Particulate matter from metal recycling facilities in the Fifth Ward is also a public health concern for residents in the area.

In addition, the community is very concerned about emissions from a groundwater plume of creosote DNAPL and other dissolved VOC contaminants that extends under homes off-site of the Union Pacific Railroad Former Houston Wood Preserving Works Site. The Texas Department of State Health Services reported elevated rates of cancers in the area surrounding the site and the elevated cancers are those EPA reports as linked to exposure to some of the chemicals of concern at the site. The proposed air monitor would provide needed continued surveillance of VOC contamination and information that can be used to understand air pollution exposure.

Due to the risk of potential acute and chronic health effects associated with high particulate levels originating from a cluster of plants generating PM2.5 and area VOC contamination, a new air monitoring site is greatly needed to measure the levels of VOCs and PM2.5 air pollution. Currently, there are no

Council Members: Amy Peck Tarsha Jackson Abbie Kamin Carolyn Evans-Shabazz Dave Martin Tiffany Thomas Greg Travis Karla Cisneros Robert Gallegos Edward Pollard Martha Castex-Tatum Mike Knox David Robinson Michael Kubosh Letitia Plummer Sallie Alcorn Controller: Chris Brown

monitors to measure the level of air pollutants in the Fifth Ward area. The closest VOC monitor is 5.3 miles away at Clinton Drive and the closest PM2.5 monitor is 4.3 miles away at Houston North Loop.

The HHD supports this Proposal to Establish New Air Monitoring Site for the Houston Fifth Ward Area. Thank you again for the opportunity to submit our comments. Should you or other TCEQ staff have any questions, please contact Isaac Desouza at 832-393-5627.

Sincerely,

Loren Hopkins, PhD
Chief Environmental Science Officer
Houston Health Department

cc: Winfred Colbert, Senior Assistant City Attorney, City of Houston Legal Department
Patrick Key, Assistant Director, Houston Department of Health & Human Services

From:	Jaclyn Wolfe
To:	tceqamnp
Subject:	Comment on the 2021 Draft Annual Network Monitoring Plan
Date:	Tuesday, May 11, 2021 10:52:59 AM

Hello,

I am a resident of Houston's Fifth Ward and I would like to voice my support of the establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters. This neighborhood is long overdue for environmental monitoring as is evidenced by the discovery of a creosote contamination to the groundwater that happened over 20 years ago. One can literally only imagine what the air quality is in this area due to the lack of environmental oversight in this neighborhood, this city, and the entire state of Texas. Please take the first step in ending environmental racism by placing an air monitoring site in this predominantly POC neighborhood. Thank you for your time and consideration.

--

Jaclyn Wolfe
4411 Heshe ST #A
Houston, TX 77020

Please consider the environment before printing this email.

From:	King, Denae
To:	tceqamnp
Subject:	Comments for Pleasantville and Fifth Ward Air Monitors
Date:	Friday, May 21, 2021 9:45:00 AM
Attachments:	image001.png DKing Air Monitor Support Letter.pdf

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Dear Ms. Landuyt,

Please see attached comments regarding deployment of air monitors in the Pleasantville and Fifth Ward communities. Thank you and wishing for success!

Denae W. King, PhD (she/her/hers)
Research Program Manager

signature_1771256352

Office: 713-313-4804
E.O. Bell Building, Rm. B12
3100 Cleburne Street, Houston, TX 77004
Denae.king@tsu.edu

May 19, 2021

Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

To: Texas Commission on Environmental Quality
From: Denae King, PhD

This letter is in response to the draft of the 2021 Annual Monitoring Network Plan.

I ask that you strongly consider deploying the proposed new monitoring sites in the Fifth Ward and Pleasantville communities. These communities are truly in need of air monitors to begin to obtain the air quality data needed to assist policy makers and elected officials with making informed decisions about public health concerns.

Every human being deserves the right to breathe clean air. Fifth Ward and Pleasantville residents are faced with cumulative exposures from various sources ranging from the petrochemical industry, goods movement (railroads/diesel trucks), highway traffic, concrete crushing and metal recycling facilities, as well as, legacy pollution from long standing contaminated sites. Pleasantville is located approximately 2 miles from the Clinton Drive regulatory monitor; however, the Pleasantville community's sources of exposure may be different from the exposure profile near the monitor. Additionally, the Fifth Ward community is void of a regulatory monitor. Therefore, critical air quality data is needed to begin to truly understand the risk of environmental exposure in these communities.

The Fifth Ward and Pleasantville communities both rank in the 80th-95th percentile on the EPA's EJ Screen NATA air toxics respiratory hazard index when compared to other areas in the state of Texas. The Fifth Ward community also has both an adult and childhood cancer cluster confirmed by the Texas Department of State Health Services. I spent a significant amount of my childhood in the Fifth Ward community, and I have watched numerous family members that were longtime residents of Fifth Ward succumb to lung cancer.

The placement of air monitors in these communities is a first step to enhancing the quality of life for these communities. The deployment of the new monitoring sites will surely provide air quality data needed to assess particulate matter and VOC concentrations!

Respectfully,

Denae King

Denae King, PhD
Environmental Justice Researcher
denae.king@tsu.edu

From:	James Caldwell
To:	tceqamnp
Subject:	Fifth Ward Air Monitor(s)
Date:	Wednesday, May 19, 2021 2:34:12 PM

Texas Commission on Environmental Quality

P.O. Box 13087

Attention: Holly Landuyt, MC-165

Austin, Texas 78711-3087

RE: Fifth Ward Air Monitor(s)

Dear TCEQ Esteemed Members and Partners:

We greatly appreciate the work you have tried to do for communities who are undeserved and pray for more resources from you. I am responding to a public comment period to document my support for TCEQ to establish a new air monitor (or monitors!) to continuously measure VOCs, particulate matter (2.5 and greater), and meteorological conditions in Houston's Fifth Ward. My company is located at 4300 Lyons Avenue (Suite 300), Houston, TX 77077. We specializes in brownfields redevelopment and environmental justice strategies to advance community revitalization.

For the past sixty+ years, I've been living and working and ministering in Fifth Ward community on studies to identify sources of environmental contamination in Fifth Ward. Through public planning processes, I've also been collaborating with residents and community stakeholders to support their vision for building a healthy and thriving neighborhood. Based on my experience and professional opinion, air quality in Fifth Ward needs to be better understood to make informed decisions about land use, community planning, and public health.

It is **appalling** that Fifth Ward does not have a network of air monitors to help residents, scientist, and officials responsible for the protection of human health understand what kinds of pollutants people are being exposed to.

In 2019, the Texas Department of State Health Services (TDSHS) conducted a study on census tracts in Fifth Ward. The study found that **liver, esophagus, larynx, liver, and lung and bronchus cancers** were statistically significantly greater than expected in adults compared to state data.

The Houston Health Department (HHD) follow-up health surveys in the area in 2020 reported that **93% of households interviewed were very concerned about the environmental contamination in and around their neighborhood.**

The discovery of a **"cancer cluster"** of types related to inhalation in an area directly downwind of a former wood treatment operation and ACTIVE railyard with daily diesel emissions from trains and heavy vehicles should be enough to warrant immediate installation of air monitor**s** in Fifth Ward. We also know that the HHD has identified Fifth Ward with higher rates of asthma than the rest of the city. With underlying respiratory health disparities related to environmental pollution, it is no surprise that ABC 13 News reported in November 2020 that the Fifth Ward *"neighborhood alone has a death rate higher than 90 percent of counties in our country."*

Air monitors are long overdue in Fifth Ward as in April 2021, yes? Please also add our friends and family

in Pleasantville, Houston TX to the list as well.

I appreciate your acceptance of my comments and encourage you to contact me should you have any questions.

God Bless.

Sincerely,
Rev. James L Caldwell

Fifth Ward Resident, Business Owner and Faith Leader

From:	Belvia Tatum
To:	tceqamnp
Subject:	Fifth ward air monitoring plan
Date:	Friday, May 21, 2021 1:36:25 PM

We are stake holders in the area. Ellis Family. Grew up child hood 803 Press Houston TX 77020
Parents build the brick structure 4113 Hare, Houston TX 77020 1968. We were a family 6 siblings. 3 are deceased
Father , John Paul Ellis passed of cancer. Erastus Ellis passed of cancer. David Ellis has cancer in remission.
Belva Ellis Tatum has chronic lung disease. The air monitor plan would help.
Pauline Ellis Briscoe 9031 West willow. Houston TX 77064...832-264-4058
Belva Ellis Tatum 4113 Hare Street Houston TX 77020..832-755-6334
David Lee Ellis (owner of Hare Street) 10705 Lipan Drive , Ft Worth, TX 76108.....817-320-1834

Thanks,
Belva Ellis Tatum

From:	Brandy Flores
To:	tceqamnp
Cc:	Brandy Flores
Subject:	Fifth Ward needs more air monitors-Fifth ward resident!!!!!
Date:	Thursday, May 20, 2021 10:21:23 PM
Attachments:	Finding pollution—and who it impacts most—in Houston Environmental Defense Fund.pdf

---

BRANDY FLORES

3114 BAER STREET

HOUSTON, TX 77020

Texas Commission on Environmental Quality

P.O. Box 13087

Attention: Holly Landuyt, MC-165

Austin, Texas 78711-3087

Dear TCEQ,

I understand your organization reviews its ambient air quality monitoring network annually and created this AMNP (Annual Monitoring Network Plan) to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. I am aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

TCEQ is considering the following proposed air monitor based on previously received AMNP comments. These monitoring proposals are under consideration and are subject to change. Details regarding the potential monitors under consideration are included in this plan and summarized in Appendix M to solicit further public comment.

• **Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.**

I fully support the installation of an air monitor in Fifth Ward for the following reasons.

- Proximity to high volume interstate traffic increases your exposure to diesel particulates. Fifth ward is right in the middle of all major interstates, and with the forced freeway expansion the air quality will get even worse. Fifth ward is surrounded by I10 (which expands every year, the widest part already being right in the same area), as well as US Highway 59 (another one of the busiest highways in the entire United States).
- Metal recycling plants in the area have been known to emit hazardous air pollutants. There are currently 10 metal recycling plants just within the tiny area Fifth Ward area.
- Batch concrete plants in the area have been known to emit hazardous air pollutants. There are currently 4 batch concrete plants.
- There are recent studies completed from the City of Houston & State of Texas exposing negative health effects from air pollution in the Fifth Ward area. The link below outlines findings published in 2020 showing that a third of the areas batch concrete plants and metal recycling facilities are located within a half mile of a child care center or school in our tiny area of Houston. The zip code you live in can determine your health and currently we have no way of monitoring that! This study outlines that River Oaks, has air monitors yet no industrial factors, like batch concrete plants or metal recycling plants around every corner. The asthma rates are lower, COPD rates are lower, citizens actually live longer because they aren't dying from throat cancer, among other things caused by breathing in heavy particles.
- https://www.edf.org/airqualitymaps/houston/findings

There is no humane reason as to why these air monitors shouldn't be installed.

Sincerely,
34 year old female resident who hopes to live to 85

Finding pollution—and who it impacts most—in Houston

Date published: June 3, 2020

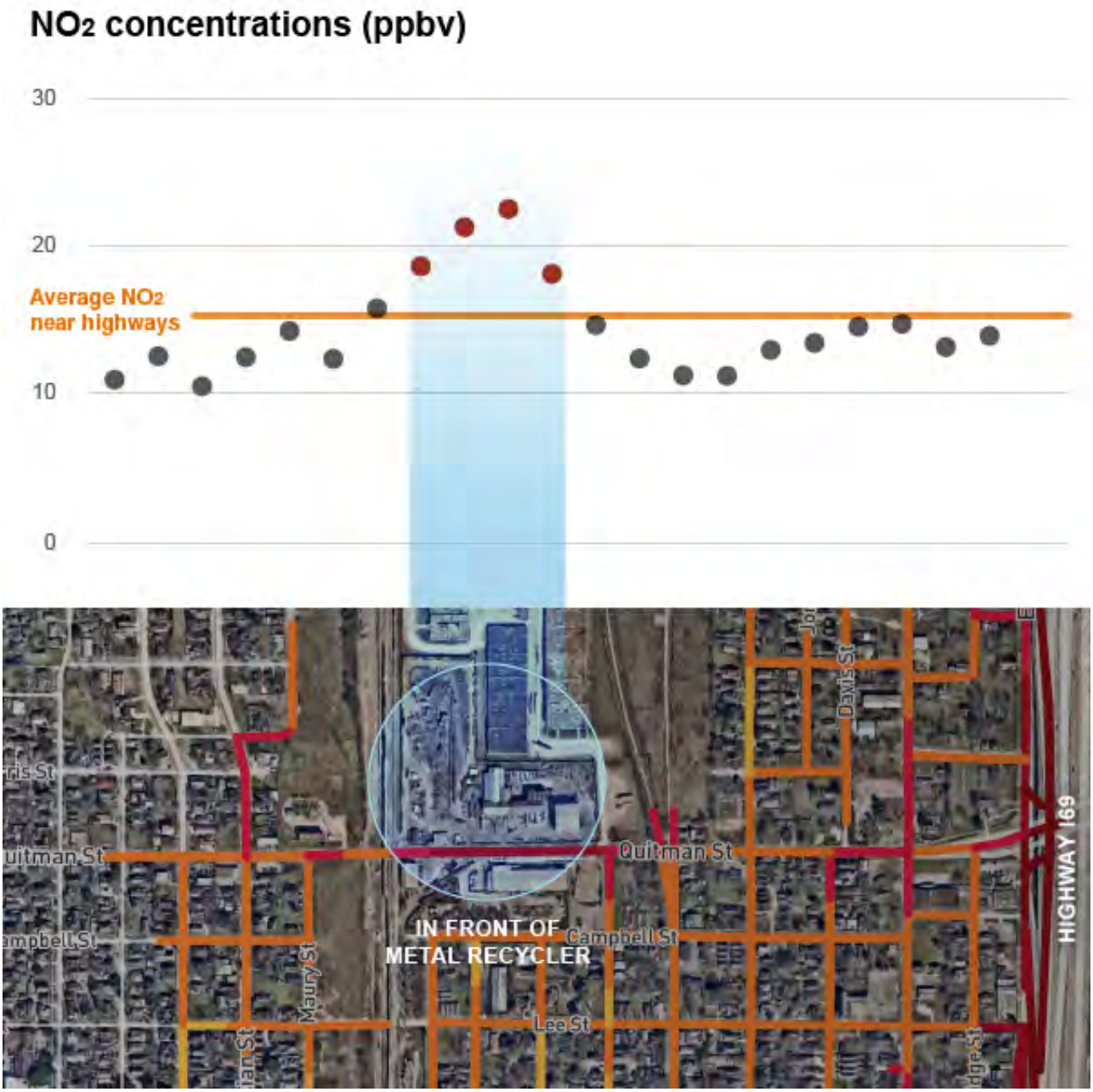
Houston's sprawling metro area is the energy capital of the United States. Its notorious lack of zoning allows industrial facilities to mix with residential neighborhoods, leaving many vulnerable to dangerous pollution.

Using Google Street View cars, EDF drove 32,000 miles, measuring air pollution and mapping its reach across neighborhoods throughout Houston.

Our maps of 22 neighborhoods paint a vivid picture of pollution, race, poverty and health in Texas' largest metro area.

Explore further | What we should do | How we did it | Our partners

Some neighborhood roads are as polluted as areas near major freeways



> "The pollution outside of 1/3 of the concrete batch plants and metal recyclers we surveyed was similar to that in the areas along major freeways."

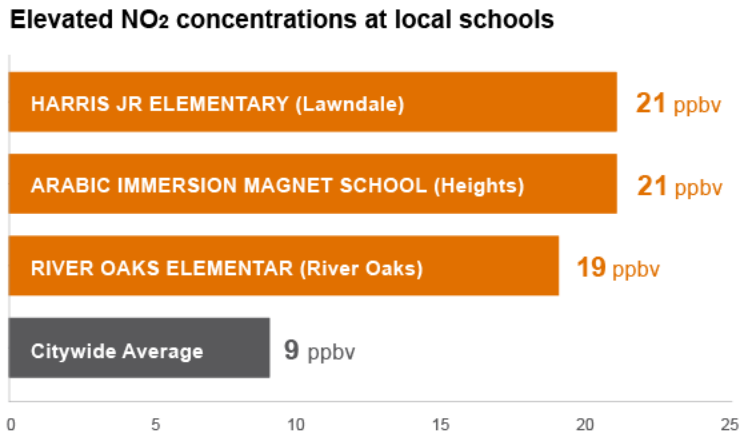
Ramon Alvarez, Associate Chief Scientist

Metal recycling and concrete batch plants--which produce cancer-causing particulate air toxics--are also magnets for heavy duty vehicles. Diesel-fueled vehicles within the heavy-duty fleet emit black carbon and NOx into many of Houston's residential neighborhoods.

Our researchers found pollution levels similar to the areas near highways at one third of these facilities within the neighborhoods we sampled.

These results demonstrate how the city's lack of zoning places some of Houston's most vulnerable people in the path of harmful pollution. In fact, nearly a third (29%) of the area's concrete batch plants and more than half (51%) of the area's metal recycling facilities are located within a half mile of at least one school or childcare center.

Nearly half of Houston's schools face elevated pollution



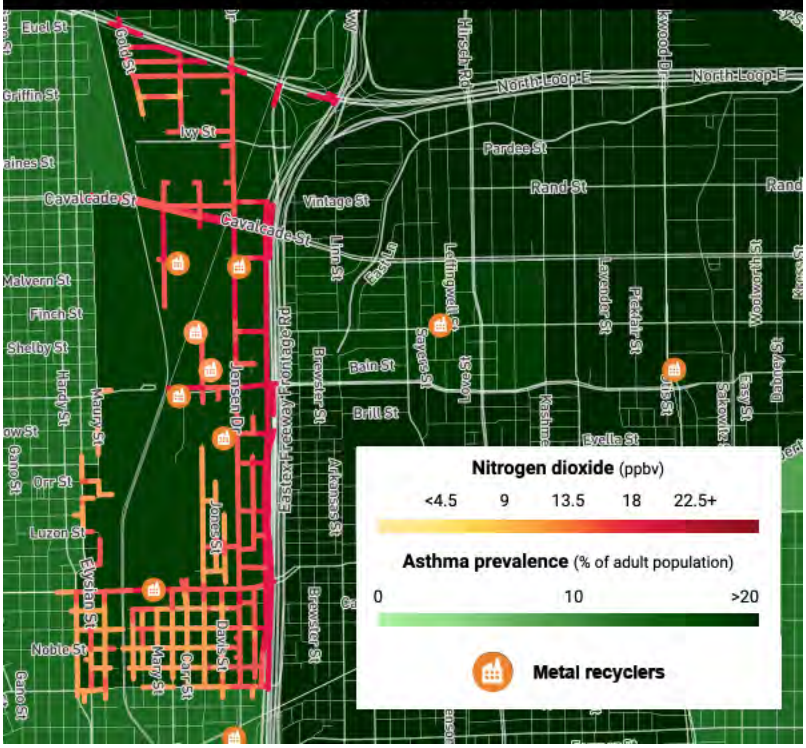
By mapping our air quality data alongside the locations of schools, local pollution sources, and sociodemographic information, we can better understand not only where pollution is at its worst but who that pollution impacts.

We found that even children whose schools aren't near major industrial facilities could face elevated pollution levels. Our researchers measured nitrogen dioxide (NO_2) levels above the typical citywide levels outside nearly half (46%) of the schools and childcare centers we monitored.

This can have a profound impact on children's health. Exposure to nitrogen oxides (NO and NO_2) can result in the development and exacerbations of asthma and bronchitis.

Your zip code can determine your health

FIFTH WARD



FIFTH WARD

Population

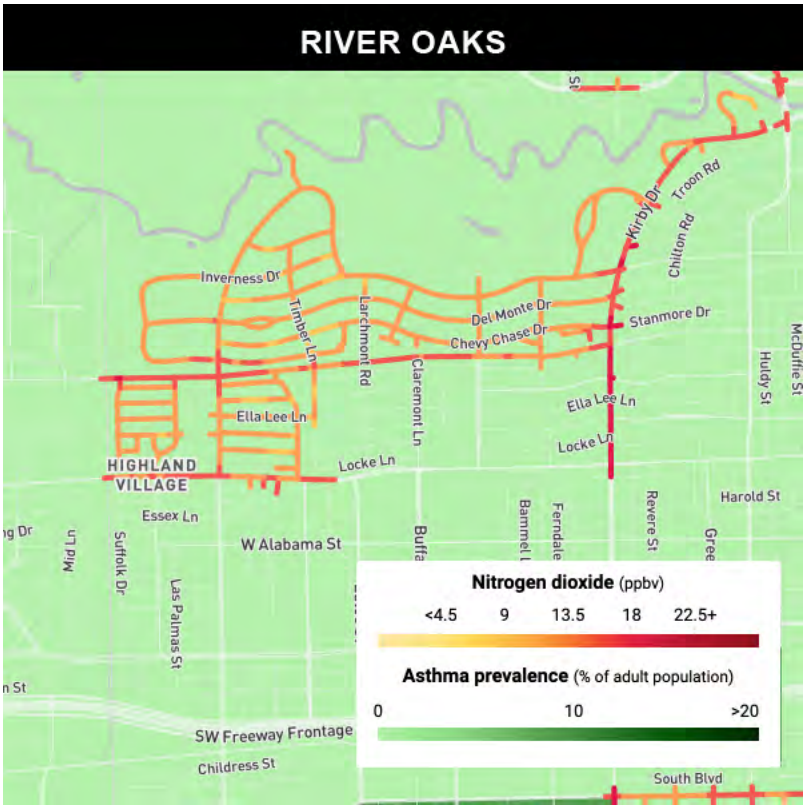
FIFTH WARD

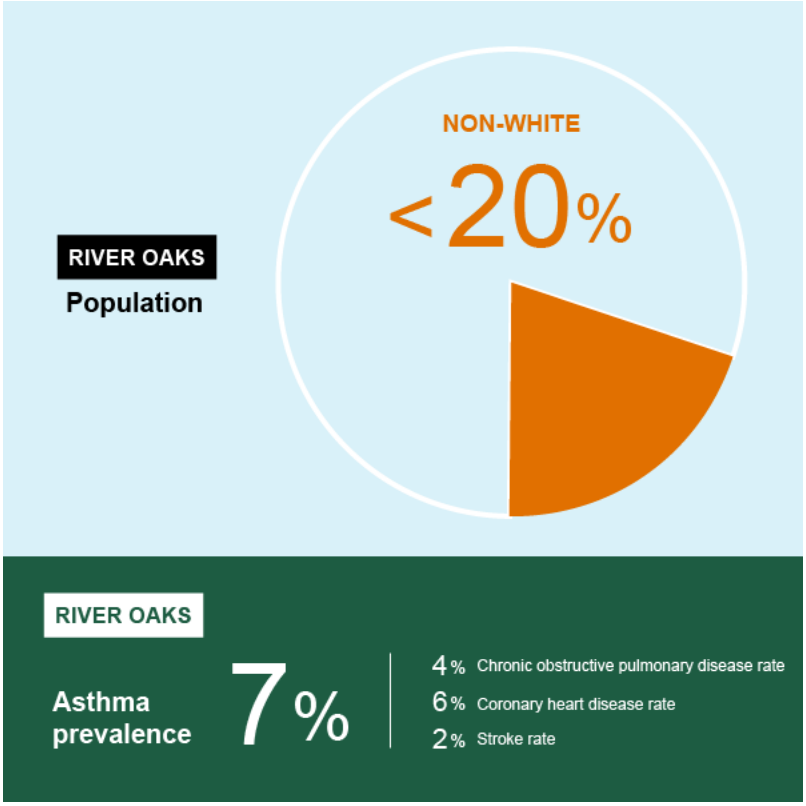
Asthma prevalence 11%

10% Chronic obstructive pulmonary disease rate

9% Coronary heart disease rate

6% Stroke rate





Many of the area communities that are home to people of color, individuals facing chronic illnesses and residents who struggle financially are also plagued by high pollution levels.

Houston's Fifth Ward is home to a cluster of metal recyclers and concrete processing plants. Our study found NO_2 levels here

were 48% higher than the rest of the city. Residents are largely people of color (more than 90% non-white); 40% live below the federal poverty line. They face higher rates of asthma (11%, compared to 9%), Chronic Obstructive Pulmonary Disease (COPD) (10%, compared to 6%), Coronary Heart Disease (9% compared to 5%) and stroke (6% compared to 3%). Life expectancy is almost a decade lower than the rest of the region (69 compared to 78 years).

River Oaks, by contrast, doesn't have any of these industrial sources and features lower levels of pollution. Its largely white population is one of the wealthiest in the area. Residents here have less asthma (7%), COPD (4%), and fewer strokes (2%) than the area average, and those who live there live longer (85 years) than their regional counterparts.

Using data to improve lives

By understanding where pollution is at its worst, who it impacts and what it means for their health, city planners, communities and public health officials can make smart decisions to improve the lives of some of their most vulnerable.

Much of this pollution is preventable. If cities and communities use this data to identify major polluters, they can prioritize targeted inspection and enforcement, deploying their resources when and where they're needed most.

Explore further | What we should do | How we did it | Our partners

Media contact

Anne Marie Borrego
(202) 572-3508 (office)
Email

Our air quality experts

Fern Uennatornwaranggoon
Manager, Air Quality Policy
Email

P. Grace Tee Lewis
Health Scientist
Email

See all health experts »

Blog post:
A breakthrough for mobile air quality data

From:	Paolo Micalizzi
To:	tceqamnp
Subject:	Letter in support of installing air quality monitors in Pleasantville
Date:	Wednesday, May 19, 2021 9:17:57 AM

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

This letter is to express my support to the initiative of installing one or more air quality monitors Houston's Fifth Ward and Pleasantville areas. I believe accurate knowledge of air quality in the area will inform action and improve the livelihood of the Pleasantville community.

Best regards,

Paolo Micalizzi

From:	Smith, Alexandra
To:	tceqamnp
Subject:	Letter of Support TCEQ
Date:	Friday, May 21, 2021 9:47:42 PM
Attachments:	image001.png Letter of Support TCEQ.pdf

Good evening,

Please see the attached letter of support. Please feel free to contact our office if you have any questions.

Thank you,

Alexandra Smith
District Caseworker/Field Representative
U.S. House of Representatives
Congresswoman Sheila Jackson Lee
18th Congressional District, Texas
1919 Smith Street, Suite 1180
Houston, TX 77002
Office: (713) 655-0050
Fax: (713) 655-1612

Please visit jacksonlee.house.gov to sign up for our newsletter, schedule a meeting, or open a constituent services request.

UNITED STATES HOUSE of REPRESENTATIVES

From:	Tim King
To:	tceqamnp
Subject:	new monitoring sites in Fifth Ward and Pleasantville
Date:	Friday, May 21, 2021 11:11:48 AM

Hello,

If there is an opportunity to install air monitors in any part of the city, this should be done. All citizens have a right to clean air.

Thank you,
Tim

From:	Cheryle Ross
To:	tceqamnp
Subject:	New Monitors Fifthward & Pleasantville Area
Date:	Tuesday, May 18, 2021 9:28:28 PM

Please forward me information for new monitors in my area Fifthward. Clean air monitor. Cheryle Ross, 507 Finnigan Park Place 77020, 8322837276. Thanks

Sent from Yahoo Mail on Android

From:	Kelly Day
To:	tceqamnp
Subject:	Proposed 2021 Draft Annual Monitoring Network Plan
Date:	Wednesday, May 19, 2021 11:04:19 AM
Attachments:	Port Houston Air Monitor Ltr of Support v20210517.pdf

---

Good morning,

Attached please find a letter from Roger Guenther, Executive Director, in support of the above-referenced plan. A hard copy of this letter has been sent via USPS.

Kind regards,

Kelly Day
Sr. Executive Assistant
To the Executive Director & Port Commission
PORT HOUSTON
O: +1.713.670.2482 F: +1.713.670.2429
E: kday@porthouston.com
www.porthouston.com
111 East Loop North, Houston, Texas 77029

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PORT HOUSTON
THE INTERNATIONAL PORT OF TEXAS

May 14, 2021

Texas Commission on Environmental Quality
Monitoring Operations Division
P.O. Box 13087
Austin, TX 78711-3087
tceqamnp@tceq.texas.gov

Attention: Holly Landuyt, MC-165

RE: Proposed 2021 Draft Annual Monitoring Network Plan

Port Houston appreciates the opportunity to provide comments on the Texas Commission on Environmental Quality (TCEQ) draft 2021 Annual Monitoring Network Plan (AMNP).

A data driven approach to reducing ground-level ozone, particulate matter, and other toxic air pollutants using a comprehensive air quality monitoring network plays a critical role in ensuring clean air for all communities in the Houston-Galveston-Brazoria region.

The 2021 AMPN states that TCEQ is considering the deployment of new air monitors in the Fifth Ward, and Pleasantville, and that TCEQ is requesting further public comment on this issue.

Port Houston fully supports the deployment of air monitors in these communities.

Thank you for your time and consideration.

Sincerely,

Roger Guenther
Executive Director

From:	Selena Samuel
To:	tceqamnp
Subject:	Public comment - AMNP
Date:	Friday, May 21, 2021 10:39:37 AM

Ms. Selena Dawson Samuel

4511 Hershe St.

Houston, TX 77020

Texas Commission on Environmental Quality

P.O. Box 13087

Attention: Holly Landuyt, MC-165

Austin, Texas 78711-3087

Dear TCEQ,

I understand your organization reviews its ambient air quality monitoring network annually and created this AMNP (Annual Monitoring Network Plan) to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. I am aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

TCEQ is considering the following proposed air monitor based on previously received AMNP comments. These monitoring proposals are under consideration and are subject to change. Details regarding the potential monitors under consideration are included in this plan and summarized in Appendix M to solicit further public comment.

• Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.

In our community we have consistent strong smells on Waco between

LIberty Road and Rawley St. and also on Waco and Clinton. As a life-long resident of Fifth Ward, our community has suffered greatly behind lack of oversight and concern about the bad air in our neighborhood. I have personally experienced 3 immediate family members that suffered from respiratory issues including cancer. My mother who lived in the area since 1940 died of Emphysema in 1985, my father who lived in the area since 1929 died of lung cancer in 1975 and my sister who previously lived in the area is suffering right now from lung cancer that morphed nd my brother who also lived in the area died of lung cancer in 1998. All of this supports Fifth ward being a cancer cluster for bronchial and lung cancer.

We need air monitors to ensure my quality of life for the next 25 years is safe not just for me but for the community as a whole.

Sincerely,
Selena D. Samuel

From:	Katelyn Phillips
To:	tceqamnp
Subject:	Public Comment AMNP - 5th Ward Houston
Date:	Thursday, May 20, 2021 6:29:21 PM

Katelyn Phillips
3222 Gillespie Street
Houston, TX 77020

Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

Dear TCEQ,
I understand your organization reviews its ambient air quality monitoring network annually and created this AMNP (Annual Monitoring Network Plan) to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. I am aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.
TCEQ is considering the following proposed air monitor based on previously received AMNP comments. These monitoring proposals are under consideration and are subject to change. Details regarding the potential monitors under consideration are included in this plan and summarized in Appendix M to solicit further public comment.
• **Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.**
I fully support the installation of an air monitor in Fifth Ward for the following reasons.

- General concern for my growing family as we live in a mixed use/ industrial area
- Proximity to high volume interstate traffic increases your exposure to diesel particulates
- Metal recycling plants in the area have been known to emit hazardous air pollutants
- Batch concrete plants in the area have been known to emit hazardous air pollutants
- There are recent studies completed from the City of Houston & State of Texas exposing negative health effects from air pollution in the Fifth Ward area.

From:	Katie Moore
To:	tceqamnp
Subject:	Public comment on the proposed 2021 Draft Annual Monitoring Network Plan
Date:	Friday, May 21, 2021 1:06:25 PM

Dear Ms. Landuyt,

I am emailing you to provide comment on TCEQ's draft of the 2021 Annual Network Monitoring Plan (AMNP). Specifically, I am writing in strong support of the proposed new air monitoring sites in Houston's Fifth Ward and Pleasantville communities, as outlined in Appendix M of the AMNP. Given the number of sources of concern within and surrounding these communities, I urge the inclusion of a lead, PM2.5 and VOC monitor within Fifth Ward, and continuous PM2.5 and VOC monitoring in the Pleasantville community. These monitoring sites are essential to fulfilling TCEQ's mission of providing air quality data to communities in a timely manner and to inform public health decision-making.

Both of these communities are overburdened by pollution. Pleasantville, established in 1948 as the first planned community for African-Americans in the city, now faces environmental pollution from all sides. In addition to being only a few short miles from the heavily industrial Houston Ship Channel, they are surrounded by metal recyclers, freeways, salvage yards. Heavy duty diesel trucks pass through the community going to and from the many warehouses so often that one community member had to install concrete pylons to prevent trucks driving through her yard. The extensive list of nearby sources alone indicate the community is being exposed to levels of particulate matter, diesel exhaust, nitrogen dioxide and VOCs at levels that are harmful to public health.

The Fifth Ward community is similarly overburdened, and in addition to myriad air pollution sources the community is also exposed to pollution from the Many Diversified Interests (MDI) Superfund site and creosote contamination from the former Union Pacific facility that is the cause of a recently identified cancer cluster within the community.

Despite these heavy air pollution burdens, there are no reference monitoring sites within either community. Because these areas have not had FEM/FRM monitors, it has been impossible to understand the true exposure these communities face as well as whether the areas are in attainment with National Ambient Air Quality Standards (NAAQS).

Both communities have organized to fill in the gaps, undertaking tremendous work to communicate air quality issues to the community and, in the case of Pleasantville, fund and operate a network of indicative monitors in the absence of a state-run reference site. Both communities have done an incredible job to understand and advocate for the health of their communities in the state's absence.

Especially in light of several recent environmental disasters, like the ITC and KMCO fires, it

is more important than ever for communities to have access to high-quality, real-time air monitoring data within their communities to allow them to make informed decisions about their health during air quality emergencies.

In addition to the environmental justice and community considerations, I also believe these two monitors would further add to the scientific understanding of PM2.5 transport in Houston as well as provide both communities with data that has been sorely lacking to understand their own air pollution exposure and health risk.

All communities deserve the right to clean air and to know what is in the air they're breathing. The Pleasantville and Fifth Ward communities understand well the pollution sources and air quality risks they take and both have undergone tremendous work to understand their own air quality. These communities know that they need additional air monitoring and I urge you to listen to them.

Thank you for considering this comment and please feel free to reach out with any questions.

Respectfully submitted,
Katie Moore, MPH (she/her)
Environmental Project Manager
Clarity Movement Co. | clarity.io

From:	Trevoir Hudson-Thomas
To:	tceqamnp
Subject:	Support of installation of air monitors in Fifth Ward
Date:	Wednesday, May 19, 2021 5:13:06 AM

Trévoir and Eric Hudson-Thomas
5021 Nichols Street
Houston, TX 77020

Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

Dear TCEQ,

I understand your organization reviews its ambient air quality monitoring network annually and created this AMNP (Annual Monitoring Network Plan) to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. I am aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

TCEQ is considering the following proposed air monitor based on previously received AMNP comments. These monitoring proposals are under consideration and are subject to change. Details regarding the potential monitors under consideration are included in this plan and summarized in Appendix M to solicit further public comment.

• Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.

There are recent studies completed from the City of Houston & State of Texas exposing negative health effects from air pollution in the Fifth Ward area. I fully support the installation of an air monitor in the Fifth Ward for the following reasons.

- On different occasions, I've smelled strange odors in the community.
- I am proximity 0.1 miles from Englewood Intermodal facility where I experience air and noise pollution.

- I am proximity 2.0 miles from Derichebourg Recycling plant on Wallisville Rd.
- I am proximity 0.7 miles from I-10; 1.5 miles from I-59 & I-69 that have high volumes of traffic. An increase in traffic volume is expected soon due to the widening of I-10 and merging of I-45, I-59/69.
- I am proximity 2.2 miles from the CMC Recycling plant, 2.25 miles from a Metal Scrape Yard on Turkey Bend; CEMEX Concrete on Navigation, and Southern Crush Concrete on Lockwood that emits hazardous air pollutants.

Thank you for your support on this matter and for hearing our cries for better air quality in the Fifth Ward.

Trévoir & Eric Hudson-Thomas
"Be Kind, Be Encouraged,
Be Mindful, Be Particular and Be Intentional"

From:	Michelle Cobb
To:	tceqamnp
Subject:	Request for Air Monitoring in the Fifth Ward
Date:	Friday, May 21, 2021 4:27:26 PM

Michelle Coleman

4711 Hershe

Houston, TX 77020

Texas Commission on Environmental Quality

P.O. Box 13087

Attention: Holly Landuyt, MC-165

Austin, Texas 78711-3087

Dear TCEQ,

I understand your organization reviews its ambient air quality monitoring network annually and created this AMNP (Annual Monitoring Network Plan) to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. I am aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

TCEQ is considering the following proposed air monitor based on previously received AMNP comments. These monitoring proposals are under consideration and are subject to change. Details regarding the potential monitors under consideration are included in this plan and summarized in Appendix M to solicit further public comment.

• Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.

I fully support the installation of an air monitor in Fifth Ward for the following reasons.

- Periodically, I smell strange smells in the air.
- We are near an industrial area with metal recycling plants and batch concrete plants that I am concerned are putting pollutants in the air.
- We are near an industrial area which causes an increase of 18 wheeler trucks in the area that contributes to a higher concentration of pollutants in this area.
- There are recent studies completed from the City of Houston & State of Texas exposing negative health effects from air pollution in the Fifth Ward area.

Thank you for your consideration in this matter.

Sincerely,
Michelle Coleman

From:	MEAGAN MCCURLEY
To:	tceqamnp
Subject:	Request for Fifth Ward Air Monitor - Meagan McCurley - 4514 Noble St, Houston TX 77020
Date:	Tuesday, May 18, 2021 7:01:07 PM

Texas Commission on Environmental Quality

P.O. Box 13087

Attention: Holly Landuyt, MC-165

Austin, Texas 78711-3087

TCEQ,

I understand your organization reviews its ambient air quality monitoring network annually and created the AMNP (Annual Monitoring Network Plan) to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. I am aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

I fully support the installation of an air monitor in Houston's Fifth Ward to measure VOCa, PM2.5 continuous, and meteorological parameters for the following reasons.

- There are often strange smells in my neighborhood
- Proximity to high volume interstate traffic increases my exposure to diesel particulates
- Metal recycling plants in the area have been known to emit hazardous air pollutants
- Batch concrete plants in the area have been known to emit hazardous air pollutants
- There are recent studies completed from the City of Houston & State of Texas exposing negative health effects from air pollution in the Fifth Ward area.

J. Proler Iron & Steel Company, 4401 Clinton Dr., Houston, TX 77020 (Fifth Ward neighborhood)

Regards,
Meagan McCurley
4514 Noble St, Houston TX 77020
Sent from my iPhone

From:	Debra Walker
To:	Debra Walker; tceqamnp; King, Denae
Subject:	SOLICITING AIR MONITORS FOR PLESANTVILLE AND FIFTH WARD COMMUNITIES!
Date:	Friday, May 21, 2021 8:09:08 PM

We all have the right to BREATHE!

The burden of air pollution is not evenly shared. Poorer people and some racial and ethnic groups are among those who often face higher exposure to pollutants and who may experience greater responses to air pollution.

The disadvantages for people of color in the Fifth Ward Area and the Pleasantville Community collectively **persist across 12 of 14 groups of emission sources that spew a particularly dangerous type of air pollution** fine particles with a diameter of 2.5 microns or smaller, known as PM2.5. They are small enough to carry hundreds of chemicals deep into the lungs, where they cause respiratory illnesses and premature death. Please let's tell TCEQ to add these two Communities Fifth Ward and Pleasantville to received air monitors to help with Public Health and Environmental Health in there communities and hope other communities like Sunnyside would be next to received an air Regulatory Monitor for there community.

Debra Walker, President, Sunnyside Community Redevelopment Organization

From: Zorayda Montemayor
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Friday, May 21, 2021 10:20:47 AM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.

It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Zorayda Montemayor
24806 Birdie Ridge
San Antonio, TX 78260

From:	Emma Li
To:	tceqamnp
Subject:	support AMNP monitors in Fifth Ward and Pleasantville
Date:	Friday, May 21, 2021 10:14:00 AM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.

It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Emma Li
2505 Longview Street
Austin, TX 78705

From:	Anna Chavez
To:	tceqamnp
Subject:	support AMNP monitors in Fifth Ward and Pleasantville
Date:	Friday, May 21, 2021 10:13:53 AM

Dear Holly Landuyt,

I, Anna Chavez, write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers, and diesel trucks.

It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Anna Chavez
25215 Estancia Circle
San Antonio, TX 78260

From: Joanne Byars
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Thursday, May 20, 2021 8:28:53 PM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.

It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Joanne Byars
3814 Linklea Dr
Houston, TX 77025

From: Judy Harris
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Thursday, May 20, 2021 10:41:50 AM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network (AMNP) Plan.

Please deploy the proposed two new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and that they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor to Pleasantville is two miles away.

Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.

This is an issue of environmental justice. The monitors represent a new tool for understanding the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Judy Harris
3226 Dandelion Dr
Richmond, TX 77469

From: Ann loera
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Thursday, May 20, 2021 8:53:27 AM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

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It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Ann loera
2170 Tree Ln
Kingwood, TX 77339

From:	Piero Rendoni
To:	tceqamnp
Subject:	support AMNP monitors in Fifth Ward and Pleasantville
Date:	Thursday, May 20, 2021 4:46:49 AM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

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We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Piero Rendoni
5903 Green Falls
Houston, TX 77088

From: Jill Robison
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Wednesday, May 19, 2021 9:10:21 PM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Jill Robison
11727 Riverview Dr
Houston, TX 77077

From: CHRISTINE LEMARIER
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Wednesday, May 19, 2021 9:01:06 PM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
CHRISTINE LEMARIER
27257 Paula Ln
Conroe, TX 77385

From: Martha Gorak
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Wednesday, May 19, 2021 8:10:23 PM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Martha Gorak
22502 Downdale Cir
Katy, TX 77450

From: Ashlyn Remmert
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Wednesday, May 19, 2021 7:27:15 PM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Ashlyn Remmert
29712 Sullivan Oaks Dr
Spring, TX 77386

From: renee n
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Wednesday, May 19, 2021 6:41:03 PM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.

It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
renee n
7243 Brook Stone Dr
Houston, TX 77040

From: Jim Rice
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Wednesday, May 19, 2021 6:23:34 PM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Jim Rice
1807 Kansas St
Baytown, TX 77520

From: Peter Micocci
To: tceqamnp
Subject: support AMNP monitors in Fifth Ward and Pleasantville
Date: Wednesday, May 19, 2021 5:50:44 PM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Peter Micocci
278 La Fonda Dr
Houston, TX 77060

From:	Virginia Manuel
To:	tceqamnp
Subject:	support AMNP monitors in Fifth Ward and Pleasantville
Date:	Wednesday, May 19, 2021 5:23:23 PM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Virginia Manuel
4734 Shetland Lane
Houston, TX 77027

From:	Diego Chavez
To:	tceqamnp
Subject:	support AMNP monitors in Fifth Ward and Pleasantville
Date:	Friday, May 21, 2021 10:26:54 AM

Dear Holly Landuyt,

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

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Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.

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We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Sincerely,
Diego Chavez
3607 S Lamar Blvd
Austin, TX 78704

From:	Trevoir Hudson-Thomas
To:	tceqamnp
Subject:	Support of installation of air monitors in Fifth Ward
Date:	Wednesday, May 19, 2021 5:13:06 AM

Trévoir and Eric Hudson-Thomas
5021 Nichols Street
Houston, TX 77020

Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

Dear TCEQ,

I understand your organization reviews its ambient air quality monitoring network annually and created this AMNP (Annual Monitoring Network Plan) to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. I am aware any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

TCEQ is considering the following proposed air monitor based on previously received AMNP comments. These monitoring proposals are under consideration and are subject to change. Details regarding the potential monitors under consideration are included in this plan and summarized in Appendix M to solicit further public comment.

• Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.

There are recent studies completed from the City of Houston & State of Texas exposing negative health effects from air pollution in the Fifth Ward area. I fully support the installation of an air monitor in the Fifth Ward for the following reasons.

- On different occasions, I've smelled strange odors in the community.
- I am proximity 0.1 miles from Englewood Intermodal facility where I experience air and noise pollution.

- I am proximity 2.0 miles from Derichebourg Recycling plant on Wallisville Rd.
- I am proximity 0.7 miles from I-10; 1.5 miles from I-59 & I-69 that have high volumes of traffic. An increase in traffic volume is expected soon due to the widening of I-10 and merging of I-45, I-59/69.
- I am proximity 2.2 miles from the CMC Recycling plant, 2.25 miles from a Metal Scrape Yard on Turkey Bend; CEMEX Concrete on Navigation, and Southern Crush Concrete on Lockwood that emits hazardous air pollutants.

Thank you for your support on this matter and for hearing our cries for better air quality in the Fifth Ward.

Trévoir & Eric Hudson-Thomas
"Be Kind, Be Encouraged,
Be Mindful, Be Particular and Be Intentional"

From:	Johnson, Glenn
To:	tceqamnp
Subject:	TCEQ Add Monitors to Firth Ward and Pleasantville Communities in Houston, TX
Date:	Monday, May 17, 2021 5:37:19 PM
Attachments:	image001.png

To: Texas Commission on Environmental Quality
From: [Dr. Glenn S. Johnson]

I write in response to the draft of the 2021 Annual Monitoring Network Plan.

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.

It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

Best,

Glenn S. Johnson, Ph.D.
Professor

TSU
TEXAS SOUTHERN UNIVERSITY
Barbara Jordan – Mickey Leland
School of Public Affairs
Department of Urban Planning
& Environmental Policy

3100 Cleburne Street
Houston, Texas 77004
Office: 713-313-4848 | 713-313-4889(Fax)
Email: glenn.johnson@tsu.edu
www.tsu.edu

From:	Bridgette Murray
To:	tceqamnp
Cc:	Mary Fontenot
Subject:	TCEQ Air Monitoring Network Plan Comments
Date:	Friday, May 21, 2021 4:54:36 PM
Attachments:	Support Ltr Tx CommssionAir Quality PCL.docx

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please accept these comments from the Pleasantville Civic League in this matter

Thank you

Pleasantville
CIVIC LEAGUE
IN THE HEART OF THE HISTORIC PLEASANTVILLE

To: Texas Commission on Environmental Quality
From: Mary Fontenot
The Pleasantville Civic League

I write in response to the draft of the 2021 Annual Monitoring Network Plan (AMNP)

Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.

Each of these communities have unique exposures placing them at risk for high levels of particulate matter (soot). The State Department of Health has already documented contamination by creosote in the Greater Fifth Ward Area. Pleasantville initiated an air monitoring network that is demonstrating frequent spikes that are not being captured by the state monitor at Clinton Drive. Pleasantville's exposure is related to heavy traffic (proximity to both I-10 and 610), rail, metal recycling and many companies in the area documenting frequent toxic releases.

These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.

Again, please deploy the proposed new monitoring sites.

Regards,

Mary Fontenot

Pleasantville Civic League, President

From:	PFW Community Assoc
To:	tceqamnp
Subject:	TCEQ Annual Monitoring Network Plan - Public comment
Date:	Thursday, May 20, 2021 7:04:30 AM

Erica Hubbard
1705 Yates St.
Houston, TX 77020

Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

Dear TCEQ,

I understand you are currently reviewing your ambient air quality monitoring network and created an Annual Monitoring Network Plan to demonstrate how Texas is meeting or will meet federal air monitoring requirements specified in 40 CFR Part 58 and its appendices. Additional ambient air monitoring requested during previous AMNP public inspection and comment periods continue to be evaluated for potential inclusion in the TCEQ ambient air monitoring network. Any future implementation of these monitoring considerations may be included as part of the TCEQ federal air monitoring network or as state-initiative special studies.

You are now considering the following proposed air monitor below for the Houston FIfth Ward area based on previously received AMNP comments. These monitoring proposals are under consideration and I understand are subject to change. I have read the details regarding the potential monitor under consideration for Houston Fifth Ward included in this plan and summarized in Appendix M and appreciate the opportunity to submit a public comment as a concerned resident of Fifth Ward.

• Establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters.

I am submitting a public comment to support the proposal of a new air monitoring site for the Fifth Ward area located in Houston, Texas for the following reasons below.

1. I am a current resident of Fifth Ward and utilized the EPA's EJScreen mapping tool to create a 3 mile circumference around my residence and have indicated some of the results below. Please note this area is historical and was one of a handful of neighborhoods in Houston, TX where African Americans were legally

allowed to live prior to housing desegregation that occurred here in the early 1970's. Currently today 91% of the population in Fifth Ward are people of color, Black and Hispanic and 36% of the population have less than a high school education. According to the EPA's Environmental Justice dashboard, Fifth Ward's historical particulate matter (pm 2.5) index value average is valued at 10 versus the national EPA average of 8.55. Exposure to such particulates can negatively affect our health. Numerous scientific studies have linked particulate pollution exposure to a variety of problems, including decreased lung function. increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing and lung cancer.

2. According to the EPA's Environmental Justice dashboard, the diesel particulate matter for our area is 1.15 versus the state's average which is 0.42. Our diesel particulate matter is 168% above the state's average. We are inundated with vehicle emissions from Interstate I-10 and 59 due to our proximity. The future Interstate I-45/59/69 expansion that impacts our area will certainly exacerbate the problem making the urgency for air monitoring all the more critical to our health. To illustrate just how dangerous the situation is in our community, please review the Jackson Heart Study, peer-reviewed research which concluded that residential distance to roads not only impacts our respiratory health but is also associated with Left Ventricular end-systolic diameter, a marker of systolic dysfunction, in a cohort of African Americans, suggesting a potential mechanism by which exposure to traffic pollution increases the risk of Heart Failure.

   Weaver, A. M., Wellenius, G. A., Wu, W., Hickson, D. A., Kamalesh, M., & Wang, Y. (2017). Residential distance to major roadways and cardiac structure in African Americans: cross-sectional results from the Jackson Heart Study. *Environmental Health, 16*http://dx.doi.org.libaccess.hccs.edu/10.1186/s12940-017-0226-4

3. According to the EPA's Environmental Justice dashboard, our air toxic cancer risk is 43 versus the state's average which is 35. That's 18% above the state's average. Another clear sign our air quality must be monitored and helps explain the City of Houston's Health Department website that indicated in 2020 that the Greater Fifth Ward area is a part of a lung and bronchial cancer cluster. (map on the link below) https://www.houstontx.gov/health/Environmental/bcceh/documents/fwkgcc/cancer-cluster-map-20200518-v2.pdf

4. According to the EPA's Environmental Justice dashboard, our traffic volume and proximity index is 1700 versus the state's rate of 470, 262% above the state's average, another negative health statistic. Texas Department of Health & Human Services published a report in March of 2021 that Fifth Ward had slightly higher

incidents of birth defects than Harris County. https://dshs.texas.gov/epitox/CancerClusters/Supplemental-Assessment-of-the-Occurrence-of-Cancer-Houston-Texas-2000-2016.pdf Additional peer-reviewed studies have also correlated NO2 exposure in pregnant women in the first trimester and cardiovascular-related malformations. NO2 (Nitrogen Oxide) is the emission released during engine start up and idling of diesel engines. Fifth Ward is situated in the industrial area of Houston surrounded by Englewood Union Pacific rail yard, Union Pacific railroad tracks, voluminous diesel truck traffic, diesel truck repair shops and constant traffic from Interstate I-10 all contributing to our high incidents of birth defects compared to county levels.

Tie-Ning Zhang, Li, D., Qi-Jun, W., Xia, J., Wen, R., Xing-Chen, C., Ni, Y., Yan-Ling, C., Yan-Hong, H., & Chun-Feng, L. (2018). Exposure to Nitrogen Oxide in the First Trimester and Risk of Cardiovascular-Related Malformations: A Dose-Response Meta-Analysis of Observational Studies. *BioMed Research International, 2018*, 15. http://dx.doi.org.libaccess.hccs.edu/10.1155/2018/1948407

5. Houston's Fifth Ward is home to a cluster of metal recyclers and concrete processing plants. A recent study found NO2 levels here were 48% higher than the rest of the city. Again, it can not be overemphasized that this is a marginalized community largely compromised of people of color (more than 90% non-white) where 40% live below the federal poverty line. They face higher rates of asthma (11%, compared to 9%), Chronic Obstructive Pulmonary Disease (COPD) (10%, compared to 6%), Coronary Heart Disease (9% compared to 5%) and stroke (6% compared to 3%). Life expectancy is almost a decade lower than the rest of the region (69 compared to 78 years).

   Characterizing Elevated Urban Air Pollutant Spatial Patterns with Mobile Monitoring in Houston, Texas, David J. Miller, Blake Actkinson, Lauren Padilla, Robert J. Griffin, Katie Moore, P. Grace Tee Lewis, Rivkah Gardner-Frolick, Elena Craft, Christopher J. Portier, Steven P. Hamburg, and Ramon A. Alvar ezEnvironmental Science & Technology 2020 54 (4), 2133-2142 DOI: 10.1021/acs.est.9b05523

6. A study of Medicaid-enrolled children in Harris County which covers the city of Houston showed an association between increases in new asthma cases and increased levels of ozone, nitrogen dioxide, and fine particulate matter (PM2.5) levels in the air.

   J. Wendt et al., Association of short-term increases in ambient air pollution and timing of initial asthma diagnosis among Medicaid-enrolled children in a metropolitan area, Envtl. Research, 131: 50-58 (May 2014), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4502952/; see also Envtl. Defense Fund, Asthma in Texas (Aug. 1, 2016), http://blogs.edf.org/texascleanairmatters/2016/08/01/asthma-in-texas/

Given the six reasons listed above and historical lack of preventive and protective health investments in our community, I strongly urge TCEQ to approve the inclusion of the proposed air monitor for the FIfth Ward area in your ambient air quality monitoring

network that is also included in your Annual Monitoring Network Plan. Taking this measure will give us the awareness we need about the quality of ambient air that we breathe everyday in Fifth Ward that sustains our lives and the lives of our families and neighbors.

Sincerely,
Erica Hubbard
President, Progressive Fifth Ward Community Association

--

From: Northeim, Kari
To: tceqamnp
Subject: TCEQ ozone monitoring/air pollution monitoring networks
Date: Tuesday, April 27, 2021 10:56:40 AM

To whom it may concern at TCEQ,

I am a recent graduate of the University of North Texas, and spent the better part of 5 years researching the ozone monitoring network in Dallas – Fort Worth. My dissertation focused on ozone pollution monitoring and population vulnerability by developing a decision support approach for the placement of ozone air pollution sensors. You have completed a 2021 draft Annual Monitoring Network Plan, to which we would like to comment on.

Through research, we identified ozone monitoring network policy worthy considerations, even though the current network meets the EPA 40 CFR58 Appendix D regulatory standards. We deployed spatio-temporal location allocation modeling to evaluate the existing DFW sensor network based on population demand and provided results on incremental benefits for the addition of (n) sensors with their census tract centroid geographic placements. In addition, we applied the Center for Disease Control (CDC) Social Vulnerability Index (SVI) data sets and mapped populations and locations vulnerable to unknown health exposures (due to low sensor data coverage, I.E. sensors that are further away from populations or locations).

In the recent State of the Air, by the American Lung Association[1], DFW received an F (Collin, Dallas, Denton, Tarrant) rating for ozone air quality. Even when regulatory standards are met, there is evidence that the spatial representativeness of the existing ozone sensors are not adequate to evaluate health risks to the public. Even worse, our research found vulnerable populations exist that are large distances from ozone pollution monitors, questioning equitable access to air quality data.

We have this research submitted to journals, but would be willing to share in the modeling techniques and social vulnerability analysis if requested.

Thank you for your time in this important discussion.

Kari

Kari Northeim, PhD, MBA
Environmental Science
Department of Biological Sciences
University of North Texas
karinortheim@my.unt.edu
952/818-4086

[1] https://www.lung.org/research/sota/city-rankings/states/texas

From:	Allyn West via ActionNetwork.org
To:	tceqamnp
Subject:	Texas Commission on Environmental Quality, Houstonians need to know how much dirty soot we are breathing
Date:	Friday, May 21, 2021 4:59:13 PM
Attachments:	houstonians-need-to-know-how-much-dirty-soot-we-are-breathing_signatures_202105210958.pdf

Texas Commission on Environmental Quality,

288 people have signed a petition on Action Network telling you to Houstonians need to know how much dirty soot we are breathing.

Here is the petition they signed:

> I write in response to the draft of the 2021 Annual Monitoring Network Plan.
>
> Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.
>
> These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.
>
> Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.
>
> It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.
>
> We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

You can view each petition signer and the comments they left you in the attached PDF.

Thank you,

One Breath Partnership

Texas Commission on Environmental Quality,

288 people have signed a petition on Action Network telling you to Houstonians need to know how much dirty soot we are breathing.

Here is the petition they signed:

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>
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>
> We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

You can view each petition signer and the comments they left you below.

Thank you,

One Breath Partnership

---

1. Aaron Balderas (*ZIP code: 77012)*

2. Aaron Lassmann (*ZIP code: 77030)*

3. Abbi Hearne (*ZIP code: 84532)*

4. Adriana Perez (*ZIP code: 77023)*

5. Amy Mueller (*ZIP code: 77023)*

6. Aliah Lavonne Tigh (*ZIP code: 77098)*

7. Alese Pickering (*ZIP code: 77027)*

8. Alejandro Perez (*ZIP code: 77022)*
Please provide air monitors in the 5th ward area

9. Allie Eggert (*ZIP code: 77024)*

10. Sara Lyons (*ZIP code: 77025)*

11. Alyson Ward (*ZIP code: 77077)*

12. Alysson Romo (*ZIP code: 77017)*

13. Amal Rammah (*ZIP code: 77098)*

14. Amanda Thomas (*ZIP code: 77006)*

15. Amanda Howard (*ZIP code: 77088)*

16. Amar Saati (*ZIP code: 77030)*

17. Amelia Rhodeland (*ZIP code: 84532)*
The community deserves information about the air that they're breathing!

18. Adrien Moshenberg (*ZIP code: 77018)*

19. Ana Mac Naught (*ZIP code: 77096)*

20. andi valentine (*ZIP code: 77008)*

21. Andre Powell (*ZIP code: 77029)*

22. Anna Lemler (*ZIP code: 48103)*

23. Anna Frey (*ZIP code: 77004)*

24. Anthony D’Souza (*ZIP code: 77407)*

25. Abagael West (*ZIP code: 15218)*

26. Ashley B (*ZIP code: 77002)*

27. Ashley Pinter (*ZIP code: 77035)*

28. Ashton Drake (*ZIP code: 77006)*

29. Ava Burke (*ZIP code: 77008)*

30. Allyn West (*ZIP code: 77021)*

31. barbara edmonds (*ZIP code: 77026)*
can they be added in kashmere garden i have asthma amd allergy bad i go to an allery doctor and take alergy shots once a week

32. Ben Chou (*ZIP code: 77008)*

33. Beverly Wright (*ZIP code: 70126)*

34. William Forbes (*ZIP code: 75964-5318)*

35. Brittani Miller (*ZIP code: 77025)*

36. Lesly Van Dame (*ZIP code: 77057-2744)*

37. Bobby Jacobs (*ZIP code: 77020)*

38. Brandi Brown (*ZIP code: 77221)*

39. Brandt Mannchen (*ZIP code: 77346)*
Please add PM 2.5 monitors in Firth Ward and Pleasantville in Houston, Texas. it is time these communities got cleaner air like the rest of us.

40. Brandy Flores (*ZIP code: 77020)*

41. Janet Broussard (*ZIP code: 77020)*
Life long resident and this environmental racism has to end. It's sick and we are sick.

42. Bill Shirley (*ZIP code: 77007)*

43. Bernard Singleton (*ZIP code: 70150)*
Everyone deserves to breathe healthy air. It is a human right to know your air is safe to breathe.

44. Caitlin Ferrell (*ZIP code: 77008)*

45. Calvin Avant (*ZIP code: 32505)*

46. Camille Chenevert (*ZIP code: 77019)*

47. Morgan Blake (*ZIP code: 77022)*

48. Catherine Fraser (*ZIP code: 78722)*

49. Christopher Beer (*ZIP code: 77027)*
Deploy and upkeep! Good air quality is very important for daily living, not something we can live without. Once we know what is out there, the next step is to mitigate that damage, reducing the pollutants from the source.

50. Clair Hopper (*ZIP code: 77009)*

51. Meredith Kliewer (*ZIP code: 77011)*

52. Christopher Fleischman (*ZIP code: 77098)*

53. Chuck Jackson (*ZIP code: 77011)*

54. Chelsea Thomas (*ZIP code: 77023)*

55. Chloe Cook (*ZIP code: 77019)*

56. Christine C (*ZIP code: 77058)*

57. Kelsey Gilmore-Innis (*ZIP code: 77023)*

58. Colby Robinson (*ZIP code: 77047)*

59. Bruce Martin (*ZIP code: 77373-6968)*

60. Jessika Davidson (*ZIP code: 77024)*

61. Ria Stoicovy (*ZIP code: 77006)*

62. Christianah Oyenuga (*ZIP code: 32828)*

63. Cecile Roeger (*ZIP code: 77009)*

64. Chris Kemmerer (*ZIP code: 77009)*

65. Christopher Newton (*ZIP code: 77006)*

66. Cuong Luu (*ZIP code: 77009)*

67. Chris Wager Saldivar (*ZIP code: 77096)*

68. An anonymous signer (*ZIP code: 20740)*
Please monitor the air quality in east Houston and make the data public.

69. Cynthia Neely (*ZIP code: 77024)*
Please add new monitors to these areas!!!

70. Damian Thibodeaux (*ZIP code: 77006)*

71. Lauren Dorn (*ZIP code: 77054)*

72. Dale Cordray (*ZIP code: 77005)*
Please add these monitors!

73. David Collins (*ZIP code: 77021)*
We can't fix problems we don't know about. Environmental policy for far too long has suppressed important knowledge. I urge you to empower our environmentally disadvantaged neighbors by equipping them with that knowledge.

74. Della Wright (*ZIP code: 70119)*

75. Daniel Chow (*ZIP code: 77008)*

76. Diane Granahan (*ZIP code: 77059)*

77. Diane Prejean (*ZIP code: 77029)*

78. Arthur Johnson (*ZIP code: 70117)*

79. David Padgett (*ZIP code: 37027)*

80. Robert Bullard (*ZIP code: 77004)*

81. David Todd (*ZIP code: 78704)*
I think it is essential that we get a better understanding of PM 2.5 levels through additional monitors.

82. Elaine Bradford (*ZIP code: 77008)*

83. Emily Link (*ZIP code: 77007-1546)*

84. Elena White (*ZIP code: 77026)*
Hello! I am writing to support adding air monitors in Fifth Ward and Pleasantville. I'm a Fifth Ward resident, and there are several days a month where the air noticably smells bad. This step will be very important to helping us understand how health as a community.

85. Elica Moss (*ZIP code: 35762)*

86. Elijah Rumbaut (*ZIP code: 77025)*

87. Elizabeth Wheeler (*ZIP code: 77004)*

88. Emily Covey (*ZIP code: 77006)*

89. Simone English (*ZIP code: 32301)*

90. Erica Deakins (*ZIP code: 77023)*

91. Erin Krimian (*ZIP code: 77004)*

92. Betania Escobar (*ZIP code: 77502)*

93. Erandi Trevino (*ZIP code: 77075)*

94. Evan ONeil (*ZIP code: 77009)*

95. Emily Vinson (*ZIP code: 77023)*

96. Fern Uennatornwaranggoon (*ZIP code: 94105)*
Houston's Fifth Ward and Pleasantville -- two historically Black neighborhoods where hard-working people live with higher rates of health issues like asthma and COPD -- do not currently have regulatory air monitors. These communities badly need new monitors to know how much air pollution they're exposed to. It is their right to know what harm they are subjected to and to protect themselves.

97. Frank Blake (*ZIP code: 77006)*

98. Gargi Samarth (*ZIP code: 77494)*

99. Linda Gilbert (*ZIP code: 77029/3327)*

100. Ginni Salas (*ZIP code: 77550)*

101. Vidya Giri (*ZIP code: 77002)*

102. Glenn Johnson (*ZIP code: 77004)*

103. George Barrow (*ZIP code: 77009)*

104. Hannah Thalenberg (*ZIP code: 77023)*

105. Monica Harris (*ZIP code: 77396)*

106. Harry Perales (*ZIP code: 77379-5220)*

107. Helen Lueders (*ZIP code: 77098)*

108. Hilda Sinclaire (*ZIP code: 77047)*

109. Laurel Hays (*ZIP code: 77008)*

110. Muna Javaid (*ZIP code: 77090)*

111. Irene Martinez Batiz (*ZIP code: 773800)*

112. Isabel Canfield (*ZIP code: 46637)*

113. Isabel Arbelaez (*ZIP code: 77019)*

114. Itay Porat (*ZIP code: 77054)*

115. Aaron Joseph (*ZIP code: 77029)*

116. John Schwaller (*ZIP code: 77008)*
Cement recycle plants as well are sources for small particulates and locate in neighborhoods.

117. Justine Cherne (*ZIP code: 77461)*

118. James Caldwell (*ZIP code: 77020)*

119. James Lewis (*ZIP code: 77007)*

120. Jacinta Conrad (*ZIP code: 77006)*

121. James Klein (*ZIP code: 78411)*
This, like numerous other issues (climate change, gun safety, immigration reform, prison reform, education reform, short-term lending regulation, healthcare reform, banking regulation, opioid regulation) remains a vexing problem primarily due to corporations' ability to curry favor with elected officials. The corrupting influence of money in our political system is undermining our democratic traditions and discouraging Americans from voting and/or running for office. This ominous development may well end our experiment in representative democracy unless we alter this decades-long trend. For the sake of the republic, we must amend the US Constitution to state that corporations are not people (and do not have constitutional rights) and money is not speech (and thus can be regulated by state and/or federal campaign finance laws). Short of accomplishing this, no other reform of significance will be achieved. The moneyed interests will turn any reform to their benefit, often at the expense of the nation as a whole.

122. Jennifer Swanner (*ZIP code: 77006)*

123. Jennifer Vidal (*ZIP code: 77055)*

124. Jennifer Reiss (*ZIP code: 77018)*
These communities are disproportionately affected by air pollution and installing monitors is a key first step to ensuring the health and safety of residents.

125. Jennifer Juergens (*ZIP code: 77007)*

126. Jessica Ross (*ZIP code: 77004)*

127. Jess Haskins (*ZIP code: 77011)*

128. Jessica Goldstein (*ZIP code: 98122)*

129. Jaime Hernandez (*ZIP code: 77057)*

130. Joe Womack (*ZIP code: 36695)*

131. Jo Strickland (*ZIP code: 78729)*

132. Dr Paul B Joseph (*ZIP code: 77029)*

133. Joan Wesley (*ZIP code: 39201)*

134. Joseph Mcelligott (*ZIP code: 77346)*

135. Jonathan Brooks (*ZIP code: 77447)*

136. Joshlyn Thomas (*ZIP code: 77339)*
Residents of Fifth Ward deserve to breathe clean air! Stop subjecting them to environmental racism!

137. Joycelyn Davis (*ZIP code: 36610)*

138. Joseph Panzarella (*ZIP code: 77339)*

139. John Fenoglio (*ZIP code: 77005)*

140. Judieth Thompson (*ZIP code: 77029)*

141. Juanita Johnson (*ZIP code: 77029)*

142. Julia Orduna (*ZIP code: 77006)*
We all deserve the right to breathe.

143. julian perez (*ZIP code: 77084)*

144. Justine Welch (*ZIP code: 77012)*
As someone who lives adjacent to the Port of Houston and these neighborhoods, I believe it is vitally important to have these air monitors placed in the 5th Ward and Pleasantville neighborhoods. Everyone in houston deserves to breathe clean air, not just the folks in River Oaks, etc.

145. James Glynn (*ZIP code: 77015)*
I have worked in 5th Ward for 35years. It is underserved and under represented. We need clean are too.

146. Jimmy Xin (*ZIP code: 77025)*

147. Kristina Whitworth (*ZIP code: 77007)*
There is a pressing need in a city the size of Houston to have air monitors placed in more areas not only where industry is located but also in areas of concentrated population, particularly in communities of color and low SES, given environmental justice concerns in this city. I strongly support the placement of this monitor in the city.

148. Kathleen Brown (*ZIP code: 77029)*

149. Kelsey Baird-Campos (*ZIP code: 77007)*

150. kelsey brochu (*ZIP code: 77007)*

151. Keara Scott (*ZIP code: 77340)*

152. Katie Moore (*ZIP code: 27707)*

153. Kelly Johnson (*ZIP code: 77027)*

154. Kristine Singleton (*ZIP code: 77016)*

155. Kim Powell (*ZIP code: 77504)*

156. Kristina Ronneberg (*ZIP code: 77008)*

157. Katherine Egland (*ZIP code: 39507)*

158. Laura Michie (*ZIP code: 77004)*

159. Lauren Figaro (*ZIP code: 77007)*

160. Leticia Ortega (*ZIP code: 77017)*

161. Lance Hallberg (*ZIP code: 77555)*
The addition of these monitors for these communities is of vital importance in maintaining an awareness of possible health effects from pollution sources. Even if the pollution in the area falls below action levels, the fact that the community has access to this data will help in relieving the stress and anxiety of its members.

162. Lesa Walker (*ZIP code: 78703)*

163. Irene Vazquez (*ZIP code: 77005)*

164. Luna Hughson (*ZIP code: 49201)*

165. Lenni Marcus (*ZIP code: 77006)*

166. Marisa Hilliard (*ZIP code: 77009)*

167. Marisa Janusz (*ZIP code: 77007)*

168. Mary Beth Balderas (*ZIP code: 77012)*

169. Mary I Williams (*ZIP code: 70127)*

170. Carol Ortiz (*ZIP code: 77316-2908)*

171. Margaret McIntyre (*ZIP code: 77009)*

172. Michael Coleman (*ZIP code: 78704)*
This is a no-brainer. Do right - please - by our Houston brothers and sisters, TCEQ.

173. Meagan Shipley (*ZIP code: 77845)*

174. Megan Johnson (*ZIP code: 77808)*

175. Megan Tipps (*ZIP code: 77007)*

176. Meiling Gao (*ZIP code: 94114)*
Having worked with and followed the work of the Pleasantville community members in fighting for cleaner air for their families, friends, neighbors, and themselves, I fully support having more data from within the communities on air pollution and having TCEQ supported monitoring to address these health concerns.

177. Melissa Beeler (*ZIP code: 77006)*

178. Melanie Pang (*ZIP code: 77003)*

179. Cecilia Norman (*ZIP code: 77007)*

180. Paolo Micalizzi (*ZIP code: 94705)*
Monitoring air quality = targeted actions = healthier communities

181. Michael Moritz (*ZIP code: 77011)*

182. Milagro Tovar (*ZIP code: 77021)*

183. Miles Lewis (*ZIP code: 77007)*

184. minse cha (*ZIP code: 77054)*

185. Karen Skinner (*ZIP code: 63119)*

186. Lamiya Packer (*ZIP code: 36610)*

187. Michael Bloom (*ZIP code: 77009)*

188. Melanie Martin (*ZIP code: 77008)*

189. Amanda Martinez (*ZIP code: 77036)*

190. Monique Harden (*ZIP code: 70118)*

191. Margaret Mata (*ZIP code: 77009)*

192. Megan Shaughnessy-Mogill (*ZIP code: 94602)*

193. Louise Black (*ZIP code: 77016-2321)*
Please prove that lives in our community matters by deploy new monitoring sites in Fifth Ward and Pleasantville.

194. M. Filley (*ZIP code: 77004)*

195. Matthew Tresaugue (*ZIP code: 77381)*

196. Natalie Beasley (*ZIP code: 77034)*

197. Neal Ehardt (*ZIP code: 77019)*
We have a right to know if the air is safe to breathe. Please install more air monitors!

198. Nikalina O'Brien (*ZIP code: 77006)*

199. Niki Williamson (*ZIP code: 77092)*

200. Nate Nahmias (*ZIP code: 77007)*

201. Nicholas Robinson (*ZIP code: 77047)*

202. Olive Hershey (*ZIP code: 77006)*

203. Lily Norris (*ZIP code: 77401)*

204. Justine Moore (*ZIP code: 77504)*

205. Albert Han (*ZIP code: 77479)*

206. Perry Dorrell (*ZIP code: 77035)*

207. Peggy Shepard (*ZIP code: 10031)*

208. Peggy Shepard (*ZIP code: 10031)*

209. David Miller (*ZIP code: 02138)*

210. Stephen Pinkney (*ZIP code: 77004)*
This community deserve to be protected in the most urgent way.

211. Tyler Pitman (*ZIP code: 77062)*

212. PATRICE ROBINSON (*ZIP code: 77047)*

213. Rachel White (*ZIP code: 77091)*

214. Lindsey Chambers (*ZIP code: 77030)*

215. Rande Patterson (*ZIP code: 77007)*

216. Raul Camarillo (*ZIP code: 77502)*

217. Renae DeLucia (*ZIP code: 77098)*

218. Rebecca Flowers (*ZIP code: 77005)*

219. Paula Djabbarah (*ZIP code: 77027)*
Please add in low income neighborhoods where air quality is the poorest as are the residents who love there.
Thank you for your attention to this quality of life and health matter.

220. Geoff Carleton (*ZIP code: 77030)*

221. Rayford Richardson (*ZIP code: 77096)*

222. Rita Tyler (*ZIP code: 77029)*

223. Rhonda Glenn (*ZIP code: 77049)*

224. Rebecca Valleskey (*ZIP code: 77379)*
With so many hazardous chemical fires and increased pollution in our congested city, it is time to monitor the air of the Fifth Ward and to advocate for cleaner air for its residents.

225. Ramona Robinson (*ZIP code: 77047)*

226. Rujman (*ZIP code: 77054)*

227. Trina Russell (*ZIP code: 77029)*

228. Ruth Hirsch (*ZIP code: 77023)*

229. Ryan Higgins (*ZIP code: 94107)*

230. Ryan Gilbert (*ZIP code: 77036)*

231. Sabrina Perez (*ZIP code: 77008)*

232. Sara Cress (*ZIP code: 77008)*

233. Sarah Brazil (*ZIP code: 81004)*

234. Sarah Batson (*ZIP code: 78705)*

235. Sara Walker (*ZIP code: 77009)*

236. Saul de la Mancha (*ZIP code: 77007)*

237. Sean Wihera (*ZIP code: 94549)*

238. Selena Poznak (*ZIP code: 10031)*

239. Seung-Woo Whang (*ZIP code: 77498)*

240. Susie Hairston (*ZIP code: 77005)*
We need to install monitors in neighborhoods on the front lines, which includes the Fifth Ward and Pleasantville . I am concerned about how much air pollution my family is breathing in my Houston neighborhood, but it is even worse in other neighborhoods, and in order to protect people, we have to have data showing how much pollution people in all neighborhoods are being exposed to. Knowledge is power; it's about time regular people had the tools to protect themselves.

241. Sharon McKenzie (*ZIP code: 77007)*

242. Cleophus Sharp (*ZIP code: 77095)*
Show your concern for the lives of your constituents in Texas over the dollars spent to shorten the lives of Texans.

243. Eder Valencia (*ZIP code: 77061)*

244. Simone Kern (*ZIP code: 77023)*

245. Cristina Acuna (*ZIP code: 77031)*

246. Sarah Rhodes (*ZIP code: 33486)*

247. Sandra Mihail (*ZIP code: 77004)*

248. Sarah Elizabeth Moore (*ZIP code: 77018)*
Please protect air quality in these disadvantaged communities!

249. Stephanie Nicoll (*ZIP code: 77007)*

250. Stephanie Coates (*ZIP code: 77008)*

251. Stephen Huss (*ZIP code: 77429)*

252. William Strew (*ZIP code: 77022)*

253. Sue Schwaller (*ZIP code: 77008)*

254. Tessa Ehrman (*ZIP code: 77008)*

255. Joetta Stevenson (*ZIP code: 77020)*
I support placing air monitors in Fifth Ward and Pleasantville. The air quality in both communities are highly susceptible to dangerous particulates (pm 2.5) , gas emissions, and other chemicals that frankly speaking, should have already been monitored before now. Pleasantville sits across from the Houston Ship channel and the highly traveled 610 Loop Ship Channel bridge. It's residents are impacted daily by massive amounts of environmental hazards and emissions alike.
I was born in the historic Fifth Ward with bronchitis and suffered from it throughout my childhood. As an adult, I have been diagnosed twice with two types of breast cancer. Our community has a plethora of environmental concerns as well as, cement batch plants and metal recyclers. Action is warranted that goes beyond merely talking about it. Fifth Ward holds one of the largest railyards in Texas called Englewood. For decades it had a creosote manufacturing plant at that railyard (first owned by Southern Pacific and now Union Pacific). Rail lines lined with creosote treated ties webbed throughout this community for generations Now Fifth Ward has a nationally known Creosote Cancer Cluster which has impacted the lives and contributed to the untimely deaths of many residents over the years. We have a higher rate of respiratory cancer than other parts of Texas. Even our children contract leukemia 5X the state average! Fifth Ward also has been split by two major freeways (I-10 and I-59/69) which has exacerbated poor air quality. among other hazards. My neighborhood is now undergoing massive construction of a large Hardy Toll Road detention pond and it sits at the crossroads of two major neighborhood thoroughfares which are busy with resident and mass transit vehicles. Fifth Ward is in line to have its current air quality level worsened and seriously undermined by the proposed I- 45 Expansion being brought on by the Texas Department of Transportation. We need help and a serious commitment to monitor the air quality of both communities by the state of Texas. PLEASE place those air monitors in the historic Fifth Ward AND Pleasantville.

256. Sacoby Wilson (*ZIP code: 20715)*

257. Tom Adams (*ZIP code: 77009)*

258. Taylor Mann (*ZIP code: 49090)*

259. Taylor Twohy (*ZIP code: 77365)*

260. Thomas Cole (*ZIP code: 77030)*

Houstonian’s deserve to know about the quality of our air

261. Traci Donatto (*ZIP code: 77346)*

262. Catherine Flowers (*ZIP code: 77021)*

263. Felicia Thibodeaux (*ZIP code: 77029)*

264. Tiffany Valle (*ZIP code: 77098)*
The first step towards harm reduction is knowing how much damage is being done. I support the installation of air monitors.

265. TERESA KUMELSKI (*ZIP code: 77573)*

266. Tracey Barrett (*ZIP code: 27705)*

267. Travis Weddle (*ZIP code: 77006)*

268. Trey Conner (*ZIP code: 77338)*
My GF lives in 5th Ward and she can't walk to her apartment without a facemask from the UPRR diesel fumes. There's black soot in her room when she comes home daily. And she has a weird cough now and she's only been there a year. I can't imagine living there 40-50-60 years. This is environmental racism. If you don't like that word, then use prejudice so you can stomach your own immorality. Put air monitors up. - it's simple basic human decency and part of the whole Pursuit of Life Liberty and Happiness - which you are denying Americans. Put in the monitors and take ANY and ALL appropriate next steps to fix what you find. #ffs

269. Tracy Stephens (*ZIP code: 77051)*
Pleasantville community is surrounded by numerous industries, railroad traffic, 18 wheeler is idling, freeways and pipeline terminals. The community is land locked in which the 2 schools, library and community center are constantly at risk.

270. Christi Vasquez (*ZIP code: 77012)*

271. Melody Venatta (*ZIP code: 77023)*

272. Victoria Pena (*ZIP code: 77020)*

273. Wendy Ruisinger (*ZIP code: 77433)*

274. Marlene Sanchez (*ZIP code: 77005)*

275. Keridwen Whitmore (*ZIP code: 27707)*

276. Will Biddy (*ZIP code: 77002)*

277. Wilson Calvert (*ZIP code: 77023)*

278. Xiara Day (*ZIP code: 77054)*

279. Yadira Molina (*ZIP code: 77033)*

280. Zach Waldrop (*ZIP code: 77006)*

281. Zoe Middleton (*ZIP code: 77063)*

From:	Allyn West via ActionNetwork.org
To:	tceqamnp
Subject:	Texas Commission on Environmental Quality, Houstonians need to know how much dirty soot we are breathing
Date:	Friday, May 21, 2021 4:45:48 PM
Attachments:	houstonians-need-to-know-how-much-dirty-soot-we-are-breathing_signatures_202105210945.pdf

Texas Commission on Environmental Quality,

286 people have signed a petition on Action Network telling you to Houstonians need to know how much dirty soot we are breathing.

Here is the petition they signed:

> I write in response to the draft of the 2021 Annual Monitoring Network Plan.
>
> Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.
>
> These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.
>
> Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.
>
> It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.
>
> We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

You can view each petition signer and the comments they left you in the attached PDF.

Thank you,

One Breath Partnership

From:	Allyn West via ActionNetwork.org
To:	tceqamnp
Subject:	Texas Commission on Environmental Quality, Houstonians need to know how much dirty soot we are breathing
Date:	Friday, May 21, 2021 9:59:06 AM
Attachments:	houstonians-need-to-know-how-much-dirty-soot-we-are-breathing_signatures_202105210258.pdf

Texas Commission on Environmental Quality,

257 people have signed a petition on Action Network telling you to Houstonians need to know how much dirty soot we are breathing.

Here is the petition they signed:

> I write in response to the draft of the 2021 Annual Monitoring Network Plan.
>
> Please deploy the proposed new monitoring sites in Houston's Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions.
>
> These communities have a right to know what they are breathing. They have a right to breathe clean air. There is no monitor in Fifth Ward, and the nearest monitor is two miles away from Pleasantville.
>
> Both communities live with poor air quality from a range of sources, including congested freeways, metal recyclers and diesel trucks.
>
> It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.
>
> We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it.

You can view each petition signer and the comments they left you in the attached PDF.

Thank you,

One Breath Partnership

From:	Jana Pellusch
To:	tceqamnp
Cc:	Jana Pellusch
Subject:	Two new air monitors
Date:	Sunday, May 16, 2021 10:47:48 AM

Hello,
I have learned that TCEQ is considering installing an additional two monitors in the Houston area. While these monitors are not being placed in my area (Deer Park, a suburb southeast of Houston), I am pleased to know about the plans. I support this, and urge that the agency employ more monitors in industrial areas, vehicular traffic areas, and locations subject to pollutants from any source.

Jana Pellusch
714 Dartmouth Lane
Deer Park 77536

Sent from my iPad

From:	Jaclyn Wolfe
To:	tceqamnp
Subject:	Comment on the 2021 Draft Annual Network Monitoring Plan
Date:	Tuesday, May 11, 2021 10:52:59 AM

Hello,

I am a resident of Houston's Fifth Ward and I would like to voice my support of the establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters. This neighborhood is long overdue for environmental monitoring as is evidenced by the discovery of a creosote contamination to the groundwater that happened over 20 years ago. One can literally only imagine what the air quality is in this area due to the lack of environmental oversight in this neighborhood, this city, and the entire state of Texas. Please take the first step in ending environmental racism by placing an air monitoring site in this predominantly POC neighborhood. Thank you for your time and consideration.

--

Jaclyn Wolfe
4411 Heshe ST #A
Houston, TX 77020

Please consider the environment before printing this email.

From:	Jaclyn Wolfe
To:	tceqamnp
Subject:	Comment on the 2021 Draft Annual Network Monitoring Plan
Date:	Tuesday, May 11, 2021 10:52:59 AM

Hello,

I am a resident of Houston's Fifth Ward and I would like to voice my support of the establishment of a new air monitoring site in the Houston Fifth Ward to measure VOCs, PM2.5 continuous, and meteorological parameters. This neighborhood is long overdue for environmental monitoring as is evidenced by the discovery of a creosote contamination to the groundwater that happened over 20 years ago. One can literally only imagine what the air quality is in this area due to the lack of environmental oversight in this neighborhood, this city, and the entire state of Texas. Please take the first step in ending environmental racism by placing an air monitoring site in this predominantly POC neighborhood. Thank you for your time and consideration.

--

Jaclyn Wolfe
4411 Heshe ST #A
Houston, TX 77020

Please consider the environment before printing this email.

From:	Smith, Alexandra
To:	tceqamnp
Subject:	Letter of Support TCEQ
Date:	Friday, May 21, 2021 9:47:42 PM
Attachments:	image001.png Letter of Support TCEQ.pdf

Good evening,

Please see the attached letter of support. Please feel free to contact our office if you have any questions.

Thank you,

Alexandra Smith
District Caseworker/Field Representative
U.S. House of Representatives
Congresswoman Sheila Jackson Lee
18th Congressional District, Texas
1919 Smith Street, Suite 1180
Houston, TX 77002
Office: (713) 655-0050
Fax: (713) 655-1612

Please visit jacksonlee.house.gov to sign up for our newsletter, schedule a meeting, or open a constituent services request.

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May 21, 2021

Texas Commission on Environmental Quality
Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

To Whom It May Concern:

I am writing in response to the draft 2021 Annual Monitoring Network Plan (AMNP).

Please deploy the proposed new monitoring sites in Houston's Greater Fifth Ward and Pleasantville areas, as indicated in Appendix M in the AMNP. These monitors are needed to comply fully with the EPA regulatory requirements that residents and local officials have access to air pollution data in a timely manner, and they have sufficient data to inform public health policy decisions and protect public health.

Each of these communities have unique exposures placing them at risk for high levels of particulate matter (soot). The Texas State Department of State Health Services has already documented contamination by creosote in the Greater Fifth Ward Area[1], a cancer cluster in the area, and other adverse health impacts. Components of creosote are known to volatilize into the air[2], and this community does not have any state reference grade air monitors to collect adequate information regarding this.

The Pleasantville community initiated a community-led air monitoring program with low-cost sensors in November 2019 in response to resident's interest and concerns with the quality of the air and impacts to health. Both communities live with poor air quality from a range of sources,

[1] https://www.houstontx.gov/health/Environmental/bcceh/documents/fwkgcc/20200323/november-14-15-2019-assessment-of-the-occurence-of-cancer-houston-2000-2016-report.pdf
[2] https://www.tceq.texas.gov/assets/public/comm_exec/pubs/gi/gi-285.pdf

including congested freeways, metal recyclers, concrete facilities, and diesel trucks. After the 2019 Intercontinental Terminal Company (ITC) Fire in Deer Park, Texas; both Harris County and the City of Houston had to respond to the lack of state reference grade monitors in the area.

The Pleasantville community is part of the Pleasantville Area Super Neighborhood Council #57 (PASNC) which has grown into a very industrial and commercial area over time. The distribution of facilities reporting to the Toxic Release Inventory is provided**. See Figure 1**. With the cumulative burden of industrial and transportation sector sources near Pleasantville, the state (FRM) monitor located two miles away in Clinton Park is likely unable to capture the full magnitude and frequency of high readings observed within residential areas of the Pleasantville community.

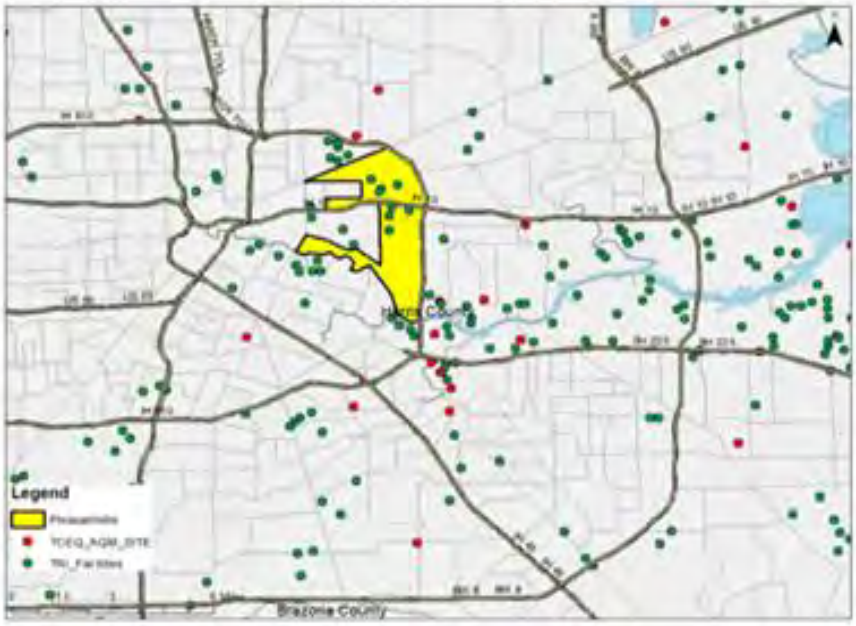

Figure 1 - The yellow area is the Pleasantville Area Super Neighborhood #57 (PASNC) boundaries. As the legend states the green dots reflect known toxic releases and red location of state monitors.

Our communities have a right to know what they are breathing. They have a right to breathe clean air. It is an issue of environmental justice. The monitors represent a new tool our shared home needs to be able to understand the levels of PM 2.5 and volatile organic compounds (VOC) throughout the region and advocate for the actions that will clean our air. New research from Environmental Defense Fund and the Harvard School of Public Health using ensemble and

satellite data shows that almost everyone in Houston breathes higher levels of PM 2.5 than we should, higher than the health-based standards the Environmental Protection Agency is setting.

We need to be able to protect ourselves. The best tool is better information. Deploying new sites in Fifth Ward and Pleasantville would help provide it. Communities in Houston area are able to report to the City Health Air Pollution Control Division, but the response is delayed. Data should be captured in a timely manner for priority in decision-making and protection of public health.

Again, please deploy the proposed new monitoring sites.

Very truly yours,

Sheila Jackson Lee
Member of Congress

From: Northeim, Kari
To: tceqamnp
Subject: TCEQ ozone monitoring/air pollution monitoring networks
Date: Tuesday, April 27, 2021 10:56:40 AM

To whom it may concern at TCEQ,

I am a recent graduate of the University of North Texas, and spent the better part of 5 years researching the ozone monitoring network in Dallas – Fort Worth. My dissertation focused on ozone pollution monitoring and population vulnerability by developing a decision support approach for the placement of ozone air pollution sensors. You have completed a 2021 draft Annual Monitoring Network Plan, to which we would like to comment on.

Through research, we identified ozone monitoring network policy worthy considerations, even though the current network meets the EPA 40 CFR58 Appendix D regulatory standards. We deployed spatio-temporal location allocation modeling to evaluate the existing DFW sensor network based on population demand and provided results on incremental benefits for the addition of (n) sensors with their census tract centroid geographic placements. In addition, we applied the Center for Disease Control (CDC) Social Vulnerability Index (SVI) data sets and mapped populations and locations vulnerable to unknown health exposures (due to low sensor data coverage, I.E. sensors that are further away from populations or locations).

In the recent State of the Air, by the American Lung Association[1], DFW received an F (Collin, Dallas, Denton, Tarrant) rating for ozone air quality. Even when regulatory standards are met, there is evidence that the spatial representativeness of the existing ozone sensors are not adequate to evaluate health risks to the public. Even worse, our research found vulnerable populations exist that are large distances from ozone pollution monitors, questioning equitable access to air quality data.

We have this research submitted to journals, but would be willing to share in the modeling techniques and social vulnerability analysis if requested.

Thank you for your time in this important discussion.

Kari

Kari Northeim, PhD, MBA
Environmental Science
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University of North Texas
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952/818-4086

[1] https://www.lung.org/research/sota/city-rankings/states/texas

From:	Wendell Hardin (SAMHD)
To:	tceqamnp
Cc:	Mario Martinez (SAMHD); Ricardo Ambriz (SAMHD); Kyle Cunningham (SAMHD)
Subject:	2021 draft Annual Monitoring Network Plan - Public Comment (City of San Antonio)
Date:	Friday, May 21, 2021 10:06:57 AM
Attachments:	image001.png CoSA Comments for Annual Monitoring Network Plan 20210422 .pdf

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Good Morning TCEQ,

The City of San Antonio would like to offer the attached Public Comment for the 2021 Draft Annual MNP. We look forward to TCEQ's response to this comment.

Sincerely,
Wendell Hardin (SAMHD)

Wendell Hardin, MSP, LPN
Program Manager – Ozone Attainment
San Antonio Metropolitan Health District
Review Towers, 111 Soledad, 10th Floor, Ste. 1041
San Antonio, Texas 78205
210-207-5538

www.sanantonio.gov/health

CITY OF SAN ANTONIO
METROPOLITAN HEALTH DISTRICT

Comment:

The Texas Commission on Environmental Quality (TCEQ) currently operates three ozone monitors in the San Antonio-New Braunfels metropolitan statistical area. TCEQ provides data from these three monitors to the public in a timely manner in compliance with ambient air quality standards. This data provides information about air pollution, supports air pollution research studies, and enables local government to develop emission reduction strategies.

The City of San Antonio believes that TCEQ should consider moving the Continuous Ambient Monitoring Station at Camp Bullis (CAMS 58) (AQS Site Number 480290052 in Appendix B) because minor source emissions at that location are contributing to elevated levels of ozone, specifically, the wastewater treatment facility clarifier located 0.4 miles west-northwest from CAMS 58 and a wastewater pond less than 100 yards away. Title 40 Code of Federal Regulations (CFR) Part 58 Appendix E states: "If a monitoring site is to be used to determine air quality over a much larger area, such as a neighborhood or city, a monitoring agency should avoid placing a monitor probe, path, or inlet near local, minor sources." The City of San Antonio believes evidence indicates that the water treatment plant at CAMS 58 is a local source of ozone-forming emissions that is the cause of past exceedances that are not representative of the air quality over the city.

Exceedances at CAMS 58 have followed a pattern of slow morning winds changing and coming back over the site in the afternoon. This is a recurring pattern of wind directions and exceedances that goes back years. The military training mission has been expanded at Camp Bullis resulting in greater effluent loads on the wastewater treatment facility.

On April 20, 2020, CAMS 58 was the only monitor in TCEQ Region 13 to exceed 70 parts per billion (ppb) with an 8-hour average for ozone of 72 ppb. On April 21, 2020, Joint Base San Antonio (JBSA) reported that there was a spill of approximately 75,000 gallons of wastewater from the wastewater treatment facility. The spill may well have started on April 20th and was not discovered until midmorning April 21st. Per JBSA's report to TCEQ, the wastewater spilled onto the ground and remained in the area.

On April 30, 2020, CAMS 58 was the only monitoring station in the State of Texas to exceed 70 ppb with an 8-hour average for ozone of 81 ppb. On May 2, 2020, JBSA reported that there was a spill of approximately 125,000 gallons of wastewater from the wastewater treatment facility. This spill was also reported to TCEQ. Again, this spill may have occurred prior to discovery. The JBSA corrective action proposed included the assignment of an on-site individual every day at the wastewater treatment plant as well as the installation of additional equipment. In addition, a new plant has been constructed to prevent spillage incidents and is currently awaiting TCEQ approval to operate.

On both April 20th and April 30th, the slow-moving winds in the morning were from the west-northwest direction (from the direction of the wastewater treatment facility) and in the afternoon on both days the winds had reversed and prevailed from the southeast, essentially trapping emissions from the wastewater treatment facility. These wind conditions and sufficient sunlight generate elevated levels of ozone.

While April 20th and April 30th are extreme examples of emissions from the wastewater treatment facility causing spikes in the ozone levels, it is believed that the wastewater treatment facility is contributing emissions that form ozone at exceedance levels at CAMS 58. These spill events support Dr. Harvey Jeffries' 2018 and 2019 reports analyzing the years 2012 through 2018 ozone exceedances over the 6 years followed a reoccurring pattern of predominantly NW-W morning winds and slow wind speeds to form ozone at exceedance levels. Dr. Jeffries' review of AutoGC monitoring data also found that it appeared that many of the exceedances at CAMS 58 were associated with high levels of isoprene possibly associated with algae blooms occurring in the wastewater ponds located extremely near the monitoring station.

In conclusion, there is a pattern of ozone exceedances occurring on days with sufficient sunlight and slow morning winds prevailing from the NW-W direction reversing by the afternoon flowing back to the monitoring site area. This provides the necessary time for chemistry to result in ozone exceedances. The increase in the number of exceedance days observed at CAMS 58 in recent years may also be attributed to the greater effluent loads on the wastewater treatment facility during the same timeframe.

Because CAMS 58 is used to monitor the ozone levels of a large urban area, the City of San Antonio believes that TCEQ should consider changing the regulatory 0_3 monitoring network by relocating CAMS 58 to an area that is free from any local minor sources in order to provide the most accurate description of ozone levels possible.

In the alternative, we request the TCEQ consider decommission the 0_3 monitoring at CAMS 58. Appendix H indicates that two Ozone SLAMS monitors are required in the San Antonio – New Braunfels MSA. Currently, there are three existing monitors. The decommissioning of CAMS 58 would maintain compliance with the requirement for two ozone monitors.

From:	VanVleck, Matt (PCS)
To:	tceqamnp
Subject:	Harris County Pollution Control Comment - 2021 TCEQ Annual Monitoring Network Plan
Date:	Monday, May 17, 2021 7:19:45 PM
Attachments:	image001.png image002.png image003.png image004.png 2021 AMNP Harris County Comment.pdf

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Please see the attached comments.

Matt Van Vleck

Air Supervisor | Technical Services
Harris County Pollution Control

Email: matt.vanvleck@pcs.hctx.net
Direct: (713) 274-6412 | **Main:** (713) 920-2831
Address: 101 South Richey Suite H Pasadena, TX 77506

Harris County
Pollution Control Services
Dr. Latrice Babin, Director

Established in 1953

May 17, 2021

Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

Re: 2021 Texas Commission on Environmental Quality Annual Monitoring Network Plan

Dear Ms. Landuyt:

Thank you for providing us the opportunity to submit comments regarding the 2021 Texas Commission on Environmental Quality (TCEQ) Annual Monitoring Network Plan (AMNP). Harris County Pollution Control Services Department (PCS) is the local regulatory enforcement authority for air, water, and solid waste issues in Harris County, Texas. We understand that TCEQ has solicited comments regarding the above plan.

PCS understands that TCEQ is considering installation of three new monitoring locations in Harris County:

1. Bayland Park
2. Fifth Ward
3. Pleasantville

TCEQ currently operates a monitoring site in Bayland Park with NO, NO_2, NO_x and O_3 detection. Bayland Park is located near large residential and commercial warehouse areas in southwest Harris County and is approximately 2 miles south of the site of a chemical warehouse fire that occurred on July 31, 2020. The existing monitoring site is also one mile southeast of Interstate 69. The AMNP states that TCEQ is considering the addition of a $PM_{2.5}$ Federal Equivalent Method (FEM) continuous monitor at this location. PCS supports the addition of a $PM_{2.5}$ FEM continuous monitor at Bayland Park, as it would be beneficial to characterize $PM_{2.5}$ concentrations in this area given the proximity of residences to Interstate 69 and other heavily traveled thoroughfares such as: Bissonnet Street, Hillcroft Street and Fondren Road. PCS currently has a non-FEM laser light scattering type particulate monitor co-located with TCEQ's air monitoring station in Bayland Park as part of Harris County's Community Air Monitoring Program (CAMP). The addition of a $PM_{2.5}$ FEM monitor at this location may also benefit Harris

Main (713) 920-2831 | 101 South Richey, Suite H | pollution.control@pcs.hctx.net
Complaint line: (713) 920-2831 | Pasadena, TX 77506 | pcs.harriscountytx.gov

County's CAMP program by providing the opportunity to compare CAMP monitor $PM_{2.5}$ data with a co-located FEM analyzer.

The AMNP also states that TCEQ is considering establishing an air monitoring site with Volatile Organic Compound (VOC) and $PM_{2.5}$ detection capabilities along with meteorological monitoring in Houston's Fifth Ward area. Houston's Fifth Ward is a densely populated residential area, northeast of downtown Houston with both Interstate 69 and Interstate 10 running through it. A portion of a major Union Pacific rail facility is also located in the Fifth Ward. PCS encourages the addition of a monitoring site with VOC and $PM_{2.5}$ detection capability in this area. PCS believes it would be beneficial to characterize $PM_{2.5}$ and VOC concentrations given the presence of two major interstates and a major rail facility with associated rail cars in chemical service traveling between Harris County's numerous chemical manufacturing and refining facilities.

Lastly, the AMNP states that TCEQ is considering establishing an air monitoring site with a $PM_{2.5}$ FEM continuous monitor in Pleasantville. Pleasantville is located northeast of Downtown Houston and is bordered by Loop 610 on the east side and bisected by Interstate 10. Pleasantville has a large residential area in its southern quarter. Anheuser-Busch Houston Brewery is located just north of the residential area. Magellan Pipeline Company, LP is located 1.6 miles to the north-northwest of the residential area and Valero Refining-Texas LP is located 1.25 miles to the southeast. PCS supports the addition of a monitoring site with $PM_{2.5}$ detection capability near the Pleasantville residential area. PCS believes that it would be beneficial to characterize $PM_{2.5}$ concentrations in this area given the proximity of Loop 610, Interstate 10, and Anheuser-Busch Houston Brewery to residences. PCS also recommends that addition of a Gas Chromatograph or similar VOC analyzer at such a site due to the proximity of Magellan Pipeline Company's terminal and the Valero refinery.

Thank you for the opportunity to provide these comments regarding the 2021 Annual Monitoring Network Plan. Should you have any questions, please contact Matt Van Vleck at 713-274-6412 or via email at matt.vanvleck@pcs.hctx.net .

Sincerely,

Dr. Latrice Babin

Director

cc: Aaron Dunn - Harris County Judge's Office
Danielle Sullivan - Harris County Precinct 1
Kristen Lee – Harris County Precinct 2
Carole Lamont - Harris County Precinct 3
Cheryl Guenther - Harris County Precinct 4
Charles Pryor – Harris County Precinct 4
Sarah Utley - Harris County Attorney's Office
Nicole Bealle - TCEQ Region 12

From:	Hoekzema, Andrew
To:	tceqamnp
Cc:	Alepuz, Christiane
Subject:	Central Texas Clean Air Coalition Comments on TCEQ 2021 AMNP
Date:	Thursday, May 20, 2021 8:53:55 PM
Attachments:	image003.png CAC Letter to TCEQ on 2021 Monitoring Network Plan.pdf

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Hello,

I am submitting a letter on behalf of the Central Texas Clean Air Coalition on the 2021 AMNP. Please let us know if you have any questions.

Thanks,

Andrew Hoekzema
Director of Regional Planning and Services
Capital Area Council of Governments
Ph: 512-916-6043 ~ Fax: 512-916-6001
ahoekzema@capcog.org ~ www.capcog.org
No electronic communication by a CAPCOG employee may legally obligate the agency

Central Texas Clean Air Coalition

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Commissioner Terry Cook
Williamson County

May 14, 2021

Ms. Holly Landuyt
Texas Commission on Environmental Quality (TCEQ)
P.O. Box 13087, MC-165
Austin-TX 78711-3087

Subject: Comments on TCEQ's Draft 2021 Annual Monitoring Network Plan

Dear Ms. Landuyt:

The Central Texas Clean Air Coalition (CAC) appreciates the opportunity to comment on the Texas Commission on Environmental Quality's (TCEQ's) 2021 Annual Monitoring Network Plan. The CAC understands the resource constraints that TCEQ faces. Also, the CAC realizes that as an area that is currently attaining all of the National Ambient Air Quality Standards (NAAQS), the Austin-Round Rock-Georgetown Metropolitan Statistical Area (MSA) may not be TCEQ's top priority for additional monitoring. However, we respectfully request that TCEQ consider deploying additional ozone (O_3) and fine particulate matter ($PM_{2.5}$) monitors in the MSA.

The region continues to have 8-hour O_3 levels that exceed 70 parts per billion (ppb), and the region's annual $PM_{2.5}$ levels are both higher than most of the rest of the state and within the range that EPA staff had recommended as part of the 2020 PM NAAQS review (8 – 11 $\mu g/m^3$). The CAC also knows that the new EPA administration is evaluating whether to "reconsider" the prior administration's decision to retain the O_3 and PM NAAQS in 2020, from news reports. Even if a "reconsideration" is not pursued, there is a good chance that these NAAQS will be tightened upon the next review due in 2025.[1] The region's ability to avoid or limit the scope of any future potential "nonattainment" designation would be aided by additional regulatory O_3 and $PM_{2.5}$ monitoring assets. TCEQ's 2020 Five-Year Assessment indicated that TCEQ is still operating a number of monitors that TCEQ considers "low" or "moderate" priority around the state. The CAC hopes that TCEQ would see additional O_3 and $PM_{2.5}$ monitoring in the region as a "moderate" priority, at least, especially if TCEQ receives any additional resources from the legislature this year or has the opportunity to reallocate resources. A speciated $PM_{2.5}$ monitor would be especially useful to the region's ability to better understand what types of $PM_{2.5}$ are contributing to the region's pollution levels.

Again, the CAC appreciates consideration of this request and the opportunity to work with TCEQ to improve air quality in Central Texas.

Sincerely,

Round Rock Council Member Matthew Baker; Chair of the Central Texas Clean Air Coalition

[1] The White House, "Fact Sheet: List of Agency Actions for Review", January 20, 2021, https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/20/fact-sheet-list-of-agency-actions-for-review/

From: John W
To: tceqamnp
Subject: Air Monitoring Network Announcements Update
Date: Wednesday, April 28, 2021 9:38:16 AM

Hello,
My comments are as follows. I believe Corpus Christi needs to have a vehicle emissions testing program. Daily while walking on sidewalks I can barely breathe because of gross emitters. Corpus Christi's vehicle fleets is not turning over quickly enough to protect citizens' health. We have many older and grossly polluting vehicles on the road. Because of the current lack of PM2.5 monitors TCEQ is somewhat blind to the problem. We need more monitors in high traffic areas such as by SPID. I am estimating that people working in along SPID will have shortened lives because of the air they breathe during their work day. Pollution is worse during periods of low to no wind and when the wind comes from a northward direction. Please add more monitors along SPID and implement a vehicle emission testing program asap.
Thank you,
John Weber

From: Texas Commission on Environmental Quality <tceq@service.govdelivery.com>
Sent: Thursday, April 22, 2021 3:07 PM
To: js_weber@hotmail.com <js_weber@hotmail.com>
Subject: Texas Commission on Environmental Quality Air Monitoring Network Announcements Update

Texas Commission on Environmental Quality Draft *2021 Annual Monitoring Network Plan*

You are subscribed to Air Monitoring Network Announcements for Texas Commission on Environmental Quality. This information has recently been updated, and is now available.

The draft *2021 Annual Monitoring Network Plan* provides information on the current TCEQ ambient air monitoring network established to determine compliance with federal monitoring requirements specified in 40 Code of Federal Regulations Part 58 and its appendices. This document presents the current federal network established for use in evaluations to determine compliance with the National Ambient Air Quality Standards and to meet federal monitoring requirements and objectives. This plan is limited to the portion of the TCEQ air monitoring network designed to comply with federal monitoring requirements and supported by federal funding. The TCEQ also operates a robust network of state-initiative monitors that support a variety of purposes, including potential health effects evaluation; however, these monitors are outside the scope of this document and are not included. This document includes the

From:	Chase Porter
To:	tceqamnp
Subject:	Comments on draft 2021 AMNP by LSLA
Date:	Friday, May 21, 2021 5:00:12 PM
Attachments:	Comments of LSLA Clients on draft 2021 AMNP.pdf

Good afternoon,

Please see the attached comments by Lone Star Legal Aid on behalf of its clients, Caring for Pasadena Communities, the Port Arthur Community Action Network, Gayla Rochelle Young, and Derek Stafford on the draft 2021 Annual Monitoring Network Plan.

Best,

Chase Porter
Equal Justice Work Fellow
Attorney at Law
Lone Star Legal Aid
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Houston, Texas 77001
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Equal Justice Works Fellow

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Houston, Texas 77001-0398

713-652-0077 x 8108
800-733-8394 Toll-free

May 21, 2021

VIA EMAIL tceqamnp@tceq.texas.gov
Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, TX 78711-3087

Re: TCEQ's Draft 2021 Annual Monitoring Network Plan

To whom it may concern,

On behalf of its respective clients identified below and their represented communities, Lone Star Legal Aid (LSLA) submits these comments to the Texas Commission on Environmental Quality (TCEQ) regarding TCEQ's Draft 2021 Annual Monitoring Network Plan (2021 AMNP). LSLA's clients would appreciate a prompt response to the comments by TCEQ and the United States Environmental Protection Agency (EPA) and hope these comments are reflected in the final version of the 2021 Annual Monitoring Network Plan for Texas.

I. INTRODUCTION

LSLA's mission is to protect and advance the civil legal rights of the millions of Texans living in poverty by providing free advocacy, legal representation, and community education so to ensure equal access to justice. LSLA's service area encompasses one-third of the State of Texas, including 72 counties in the eastern and Gulf Coast regions of the state. LSLA's Environmental Justice team focuses on the right to the fair distribution of environmental benefits and burdens and the right to equal protection from environmental hazards. LSLA

advocates for these rights on behalf of impacted individuals and communities in LSLA's service area. These comments are submitted on behalf of the following low-income individuals and the environmental justice communities and residents represented by these individual and organizational clients: Caring for Pasadena Communities, the Port Arthur Community Action Network, Gayla Rochelle Young of Beaumont, Texas, and Dustin Stafford of Woodville, Texas.

II. REPRESENTED COMMUNITIES

A. Caring for Pasadena Communities

Caring for Pasadena Communities (CPC) is a community-based nonprofit organization committed to raising awareness of environmental issues affecting residents of Pasadena and nearby communities along the Houston Ship Channel, where many of its members live and work. CPC is organized to advocate for these communities, improve public education on environmental issues, and to ensure equal treatment for low-income residents in environmental matters. This work has entailed direct involvement in the public participation process of numerous projects by highlighting environmental justice concerns for various permitting agencies that would otherwise go unnoticed and unaccounted for.

B. Port Arthur Community Action Network

The Port Arthur Community Action Network (PACAN) is a not-for-profit community-based organization in the West Port Arthur neighborhood of Port Arthur that mobilized in the immediate aftermath of Hurricane Harvey to address a slew of environmental releases and problems associated with the storm. The organization was responsible for hosting disaster relief legal clinics for the citizens of Port Arthur and advocated for a more effective response to the storm by local governmental authorities. In addition, PACAN has and remains active in reviewing, commenting, and challenging air permit applications in the West Port Arthur area that would compound existing issues with air and water quality in the neighborhood and larger city. PACAN is also active in commenting on statewide and federal plans regarding environmental protection and regulation, including several iterations of TCEQ's Annual Monitoring Network Plan. PACAN is committed to improving the quality of life of residents in Port Arthur, Texas.

C. Gayla Rochelle Young, resident of the east side of Beaumont, Texas

Gayla Rochelle Young is an individual who lives in the historic Pear Orchard neighborhood, a largely Black, low-income community in the east side of Beaumont, Texas. Ms. Young lives within 1 mile of the sprawling ExxonMobil Beaumont Refinery and Chemical Plant complex and the Port of Beaumont, and nearby many other industrial facilities. Her home is not far from the busy I-10 corridor and her neighborhood is crossed by multiple railroad lines.

A foster mother of several children, Ms. Young is acutely aware of the many challenges faced by Black, low-income children in Beaumont. This includes the short- and long-term health

effects of air pollution. In addition to living near multiple major air pollution sources, Ms. Young's children attend Charlton-Pollard Elementary School, located only about six city blocks from the sprawling ExxonMobil complex—one of the nation's largest oil, gas, and petrochemical facilities—and only 1 block from the Port of Beaumont and the various energy and manufacturing companies operating at and near the port.

Ms. Young, her family, and many of her neighbors have long suffered from a seemingly disproportionate number of adverse health challenges. Family members have developed and died from cancer. Ms. Young herself often has had breathing problems, irritation of the eyes, and other uncomfortable health issues which all developed since she moved to Beaumont from outside of Texas.

D. Dustin Stafford, resident of Woodville, Texas

Lone Star Legal Aid also represents Dustin Stafford, as a resident of Woodville, Texas in Tyler County, which currently has no air monitors operated by TCEQ despite the presence of at least one facility in the area operating in noncompliance with their air permits. Over the last 5 years, due to the presence and operations of a nuisance wood pellet manufacturing facility in the area now operated by Woodville Pellets, LLC, the community comprised of residents like Dustin Stafford and his mother have been engaged in regularly contacting TCEQ concerning the health impacts they are experiencing regularly from this facility. It is not uncommon for residents with asthma and other breathing impairments to experience breathing issues when the facility is operating; moreover, residents, like Mr. Stafford, have lost livestock, such as geese and chickens on a monthly basis, and other animals on his property like his dogs have exhibited breathing ailments. These conditions raise serious concerns about the air quality in Woodville, Texas, prompting Lone Star Legal Aid to submit these comments on his behalf.

III. PLACEMENT OF AIR MONITORS IN ENVIRONMENTAL JUSTICE COMMUNITIES

Environmental justice is an ongoing struggle to remedy environmental discrimination in this country. The EPA defines environmental justice as follows:

> Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.[1]

[1] United States Environmental Protection Agency, Environmental Justice-Related Terms As Defined Across the PSC Agencies – 05/13/13, available at https://www.epa.gov/sites/production/files/2015-02/documents/team-ej-lexicon.pdf.

The EPA defines "fair treatment" as ensuring "that no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations or programs and policies."[2]

Environmental discrimination and the uneven spread of environmental harms and risks have historically been evident in the process of selecting and building environmentally hazardous sites, including waste disposal, manufacturing, and energy production facilities. The locations of busy roads and railroads follow a similar pattern. The siting of such hazardous infrastructure in communities of color and/or low-income communities has had a disproportional negative impact on the overall health and well-being of those communities. Pasadena, West Port Arthur, the east side of Beaumont, and Woodville all have been recognized as environmental justice communities by the EPA and other organizations working for social and economic change.

TCEQ must recognize the inclusion of "government…programs and policies" in the definition of fair treatment. A well designed and inclusive air monitoring program can be an effective tool to identifying and alleviating risks and harms. An air monitoring program which does not sufficiently monitor the many air pollutants released into environmental justice communities has the potential to perpetuate the challenges faced by those communities. In other words, TCEQ should view the 2021 Annual Monitoring Network Plan as an important opportunity to fulfill TCEQ's obligations under Title VI of the Civil Rights Act of 1964 as well as basic tenets equal protection.

LSLA's clients note here that in their past advocacy, TCEQ has consistently explicitly declined to perform any type of environmental justice analysis when implementing its programs and policies. For example, in response to comments filed in regards to the 2019 iteration of the Annual Monitoring Network Plan, TCEQ responded that "[c]omments regarding environmental justice issues are…outside the scope of the AMNP"[3] and otherwise declined to respond to environmental justice concerns raised by both LSLA's clients and other commenters. LSLA's clients urge TCEQ to recognize that:

(1) TCEQ *always* has an obligation under the law to ensure its programs and policies do not have discriminatory effects;
(2) air monitoring is a vital piece of protecting Texas' most burdened communities and thus environmental justice cannot be kept at arm's length from this plan; and

[2] Id.
[3] Texas Commission on Environmental Quality, 2019 Annual Monitoring Network Plan with Response to Public Comments, available at https://www.tceq.texas.gov/assets/public/compliance/monops/air/annual_review/historical/2019-AMNP.pdf.

(3) the significant and increased presence of air pollution sources near low-income communities and people of color requires a proportionate increased presence of comprehensive air monitoring in those same communities.

On the latter point, LSLA's clients recognize there are a number of monitors in the Beaumont-Port Arthur and Houston-Galveston-Brazoria metropolitan areas, but submit these comments to show there are still holes in the network resulting in the potential to miss air pollution from many of Texas' largest pollution sources. In short, the location and type of air monitors located in the represented communities are not fully proportionate to the presence of the many types of air pollution emitted into those communities.

Holes in the draft 2021 AMNP are particularly acute and potentially harmful to the regions' environmental justice communities, including Pasadena, Beaumont's east side, and Port Arthur's west side. First, not all monitoring stations are monitoring for all criteria pollutants, so the actual number of monitors does not guarantee all pollutants are being sufficiently monitored in an particular area based on the types of pollutants generated in that area. Second, there are not enough monitors within the communities for people to know if, where they attend school, work, and otherwise live their lives, they are being impacted by emissions from facilities that are clustered in and around their respective neighborhoods. Third, there should be more of an effort to make the information reported from monitors more accessible to the public for real time events as well as a stronger mobile monitoring system that can be deployed in the event of emergencies so that the public can be aware of what risks there are to public health during the event.

In each of the represented communities, there are also historic considerations regarding the siting choices of hazardous facilities that should be recognized and taken into account by TCEQ as it produces the final 2021 AMNP. A report from 2015 stated that hazardous waste, treatment, and disposal facilities "may be sited in locations that are both disproportionately nonwhite at the time of siting and are already undergoing demographic changes."[4] Demographic changes typically attract hazardous sites rather than minority groups being drawn to areas around hazardous sites. Regardless of how proximity of industry and people of color developed, it is important for TCEQ to recognize and consider potential health impacts from air pollution on the represented "fence line" communities.

Communities should be able to easily access information on the toxic emissions coming from industrial facilities. Communities should also be able to easily access information about the emissions' health hazards. There are several key limitations on TCEQ's existing monitoring technology: (1) it is not recorded in real time; (2) it does not identify sources of the pollution; and (3) it only measures emissions at the fence line as opposed to requiring monitoring systems in the actual communities. Real time information will reveal spikes in emissions, how long they lasted, and where they are coming from. Because stationary monitors do not move, and are at

[4] Paul Mohai and Robin Saha, 2015 Environmental Research Letters, 10, 115008, available at https://iopscience.iop.org/article/10.1088/1748-9326/10/11/115008/pdf.

a set height, they do not pick up all pollutants and will likely miss many upset events which have a direct impact on public health. In addition to providing daily, real time monitoring of the (serious) every day emissions in industrial areas, the air monitoring network should be prepared and able to measure emissions related to major events, such as the March 17, 2019 International Terminals Company (ITC) disaster in Deer Park and which impacted air quality across Houston for at least a week, the April, 2017 industrial fire at German Pellets in Port Arthur and which burned and smoldered for almost three months, and the November 27, 2019 explosion at the Texas Petroleum Chemical Group's (TPC) Port Neches facility, which impacted individuals in Port Neches, Beaumont, and across northern Jefferson County for a number of days. Ms. Young herself clearly recounts the day TPC exploded—she was preparing for Thanksgiving with her family—and having difficulties breathing in the aftermath of that emergency.

TCEQ must realize where its monitoring program is insufficient given the number and size of industrial facilities and the many potential threats to human health associated with them, both every day as well as during emissions upsets, fires, or other disasters. The following comments provide some specific details about LSLA's clients' communities and the bases for analyzing monitoring deficiencies in other similarly situated neighborhoods.

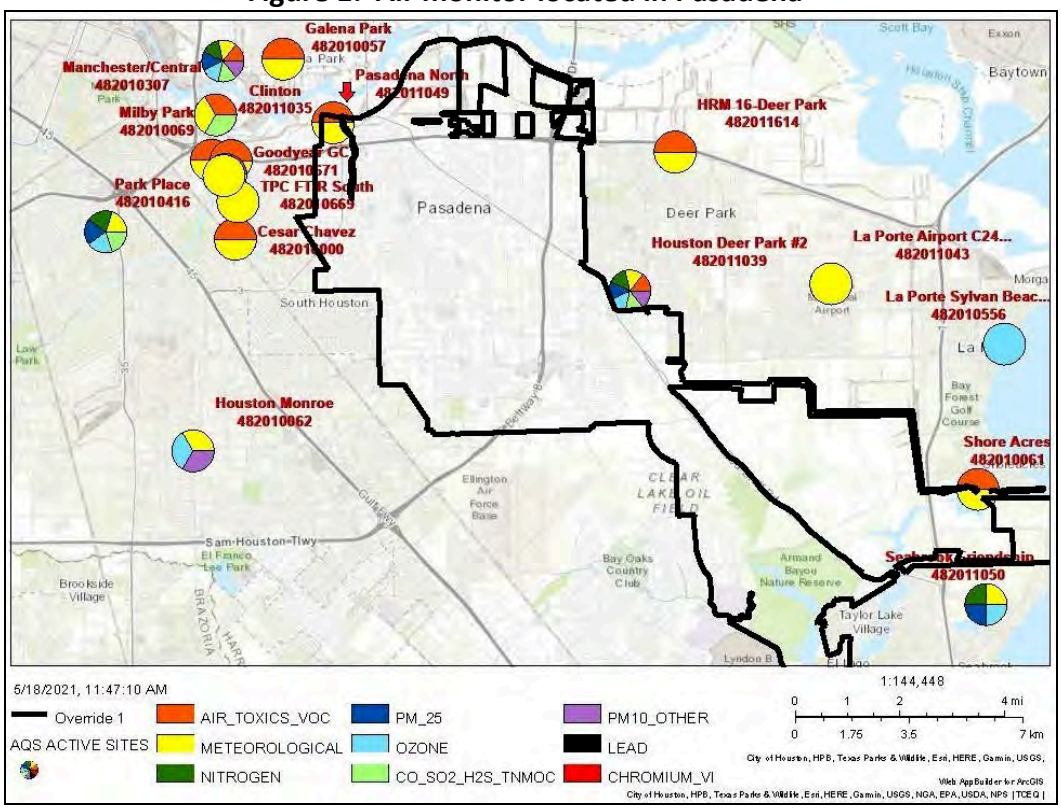
A. Pasadena and surrounding communities near the Houston Ship Channel

As shown below in **Table 1**, TCEQ only has one air monitor in the City of Pasadena, Pasadena North (#482011049), a VOC monitor located at 702 Light Co Service Road, Pasadena, Texas. This monitor is insufficient for monitoring air quality for Pasadena residents for a number of reasons. **Figure 1** shows the location of this air monitor.

Table 1. Air monitor located in Pasadena

EPA Site Number	Monitor Name	Monitor Location	Pollutant(s) Monitored
482011049	Pasadena North	702 Light Co Service Road	VOC

Figure 1: Air monitor located in Pasadena[5]



First, Pasadena is a city covering 44.74 square miles with a population of 151,227 in 2019.[6] Given the city's large size, the Pasadena North monitor, located in the upper northwestern corner of Pasadena, cannot accurately capture air quality for much of the city. By comparison, the neighboring city of Deer Park, Texas is a quarter of Pasadena's size in area (10.57 square miles) and population (33,474),[7] yet has two monitors: (1) a VOC monitor, HRM 16-Deer Park (#482011614), and (2) a more comprehensive monitor, Houston Deer Park #2 (#482011039), which tracks VOCs, nitrogen, $PM_{2.5}$ and PM_{10}, O_3, SO_2, NO_2, NOy, CO, and carbonyl. Both Pasadena and Deer Park are highly industrial regions; however, Deer Park has a monitor for every 5.285 square miles (or a monitor per 16,737 people), whereas Pasadena has one monitor for 44.74 square miles (or a monitor per 151,227 people). Even if the TCEQ does not install an air monitor to cover every five square miles in Pasadena, the discrepancy between Pasadena and Deer Park demonstrates that one air monitor is not enough.

Second, the Pasadena North monitor's location likely is deficient because the wind in Pasadena often blows from the southeast, shown in **Figure 2**. As **Figure 3** shows, many facilities that are part of the U.S. EPA's Toxics Release Inventory (TRI) program in Pasadena are located in

[5] Texas Commission on Environmental Quality, Air Monitoring Sites, available at https://www.tceq.texas.gov/airquality/monops/sites/air-mon-sites.
[6] United States Census Bureau estimates for 2019.
[7] https://www.census.gov/quickfacts/fact/table/deerparkcitytexas,pasadenacitytexas/PST045219.

the southeastern part of the city. TCEQ should place another air monitor in Pasadena that can better capture the air quality impacts of these facilities specifically on Pasadena residents.

Figure 2: Wind Direction in Pasadena

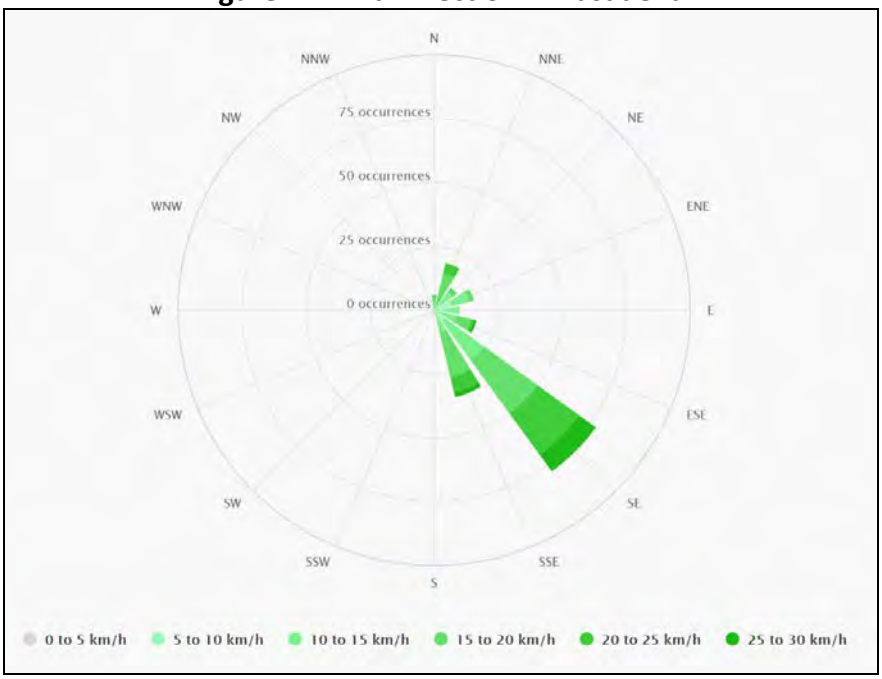
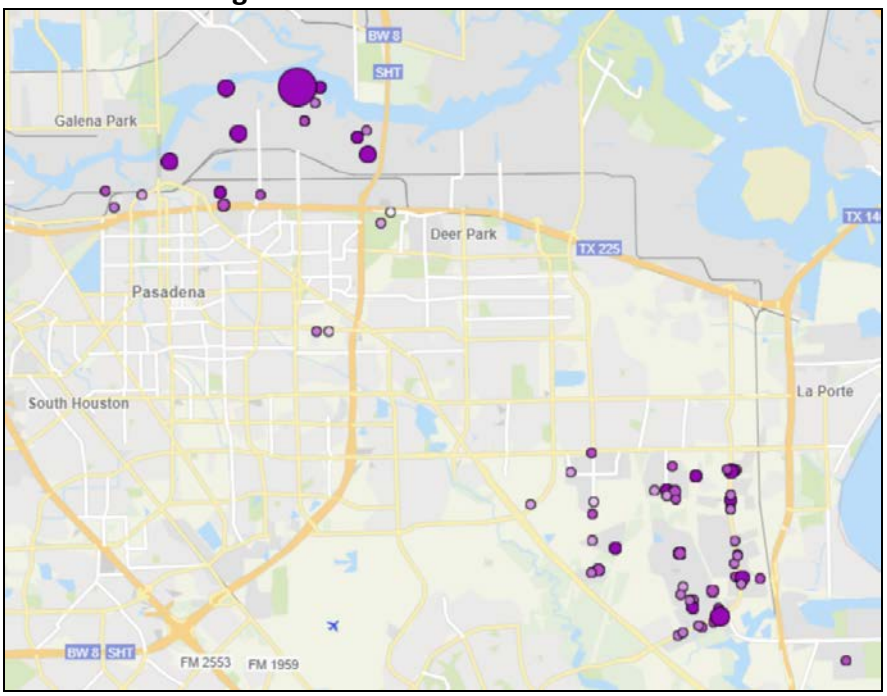


Figure 3: TRI Facilities in Pasadena[8]



[8] United States Environmental Protection Agency, Toxic Release Inventory, Mapping Tool, available at https://www.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools.

Third, Pasadena North only tracks VOCs. There are at least 60 facilities located in Pasadena, Texas registered with the EPA and regularly making TRI reports. These facilities report not only VOCs, but also other chemicals, including ammonia and heavy metal compounds—such as cobalt, nickel, and zinc compounds. In addition, other types of facilities, including five concrete batch plants, emit particulate matter. TCEQ should install additional monitors in Pasadena that can better capture non-VOC chemicals and particulate matter.

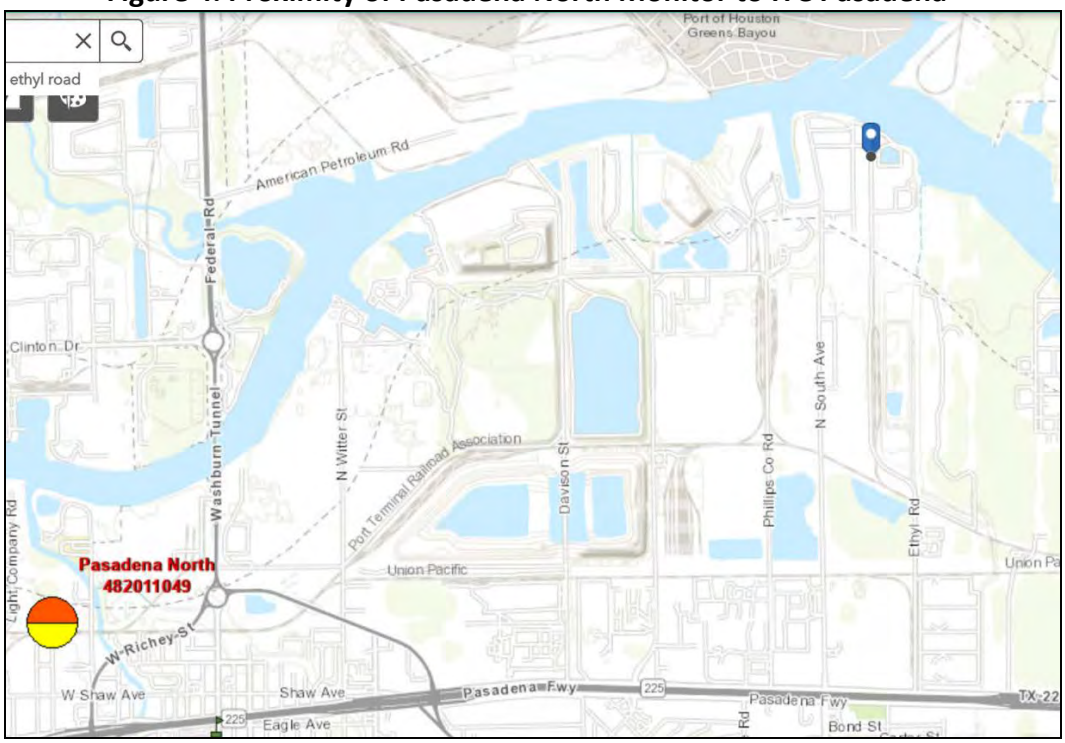
CPC recognizes that there are other air monitors in municipalities surrounding Pasadena, such as Deer Park, Houston, Shore Acres, Seabrook, and League City, which measure other air pollutants in addition to VOCs. However, these monitors listed in **Table 2**, below, do not reflect the air pollutants inside the Pasadena community. Accordingly, the presence of monitors around Pasadena do not guarantee that air quality is being adequately monitored in Pasadena, nor that the public has a complete picture of air pollutants in Pasadena.

Table 2. Air monitors around the Houston Ship Channel

EPA Site Number	Monitor Name	Monitor Location	Pollutant(s) Monitored
482016000	Cesar Chavez	4829 Galveston Rd. (Houston)	VOC
482010572	Clear Lake High School	2929 Bay Area Blvd. (Houston)	O_3
482011035	Clinton	9525 1/2 Clinton Dr. (Houston)	NOx, O_3, $PM_{2.5}$, PM_{10}, SO_2, VOC
482010673	Goodyear Houston Site #2	2000 Goodyear Dr. (Houston)	VOC
482010062	Houston Monroe	9726 1/2 Monroe St. (Houston)	O_3, PM_{10}
482010307	Manchester/Central	9401 1/2 Manchester St. (Houston)	SO_2, O_3, VOC
482010069	Milby Park	2201A Central St. (Houston)	VOC
482010416	Park Place	7421 Park Place Blvd (Houston)	NOx, O_3, $PM_{2.5}$, SO_2
482010669	TPC FTIR South	8600 Park Place Blvd (Houston)	NOx, O_3, $PM_{2.5}$, SO_2
482011039	Houston Deer Park #2	4514 1/2 Durant St. (Deer Park)	O_3, $PM_{2.5}$, SO_2
482010057	Galena Park	1713 2nd St. (Galena Park)	VOC
482010061	Shore Acres	3903 ½ Old Hwy 146 (La Porte)	VOC
482011050	Seabrook Friendship Park	4522 Park Rd. (Seabrook)	NOx, O_3, $PM_{2.5}$

Fourth, even though the Pasadena North monitor tracks VOCs, the monitor does not ensure accurate monitoring for the many facilities in Pasadena emitting VOCs. For example, CPC has commented on permit applications submitted by Intercontinental Terminals Company's Pasadena facility (ITC Pasadena), located at 1030 Ethyl Road, Pasadena, Texas. Earlier this year, TCEQ preliminarily approved ITC Pasadena's New Source Review permit, which treated the facility as a minor source for VOCs, even though the aggregate VOC emissions from the facility as a whole would exceed the major source threshold. Given ITC Pasadena's VOC emissions, CPC would expect the TCEQ to monitor the facility. However, the Pasadena North monitor is five miles away from ITC Pasadena. Moreover, the monitor is located southwest of ITC Pasadena, which means the monitor is not in the range of prevailing winds.

Figure 4: Proximity of Pasadena North Monitor to ITC Pasadena[9]

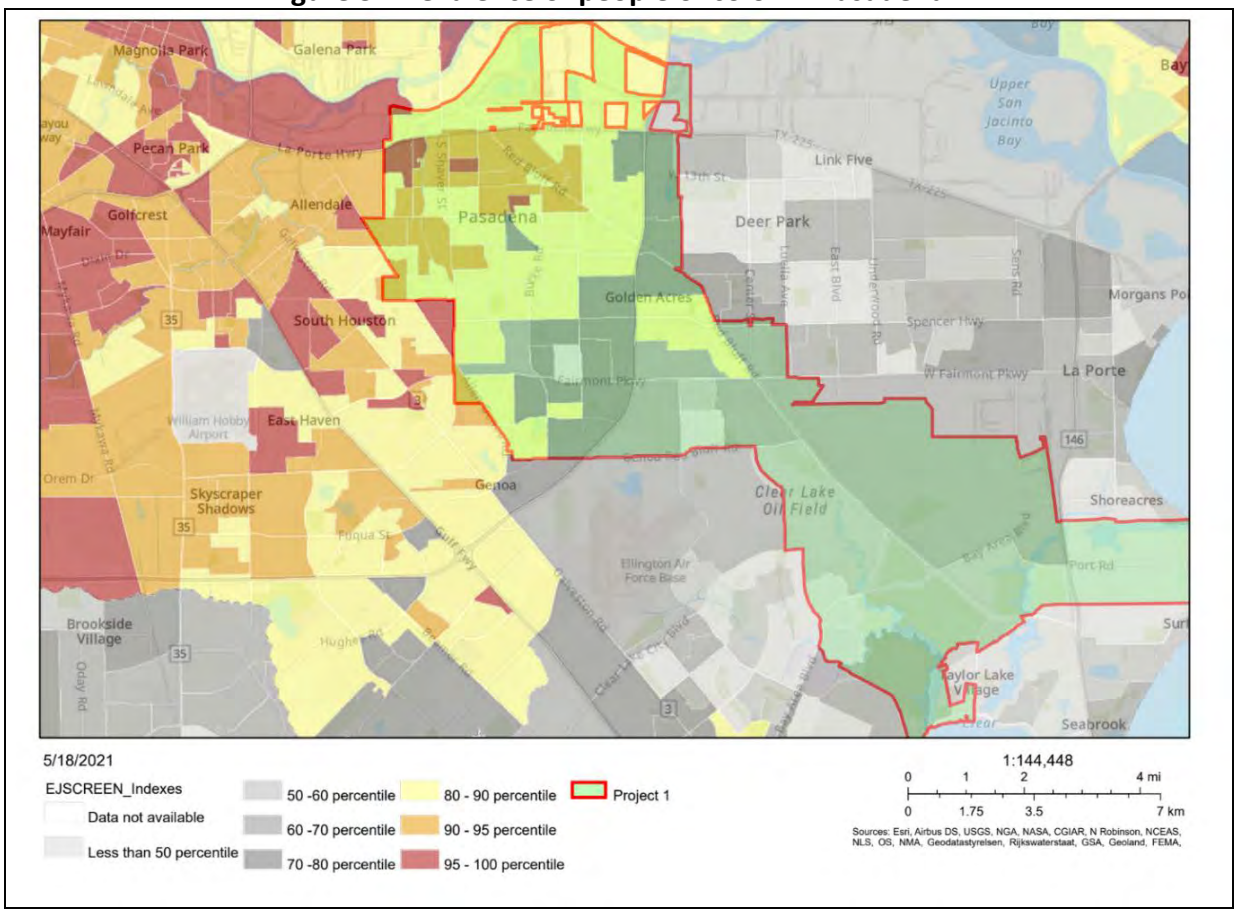


Finally, Pasadena residents form an environmental justice community surrounded by hazards from existing and new facilities regulated by TCEQ. As **Figure 5,** below, shows, most northern Pasadena residents are people of color and low-income. Pasadena residents are in the 85th percentile nationally for being at risk of air toxics cancer; 98th percentile for Risk Management Plan site proximity—or proximity to facilities that use extremely hazardous substances; and 86th percentile for exposure to higher levels of particulate matter 2.5 ($PM_{2.5}$) pollution. By comparison, the residents of neighboring Deer Park, which has two air monitors, are not an environmental justice community. TCEQ must ensure stronger air monitoring in

[9] Texas Commission on Environmental Quality, Air Monitoring Sites, available at https://www.tceq.texas.gov/airquality/monops/sites/air-mon-sites.

Pasadena that recognizes this environmental justice community and protects Pasadena residents who bear disproportionate air pollution harms.

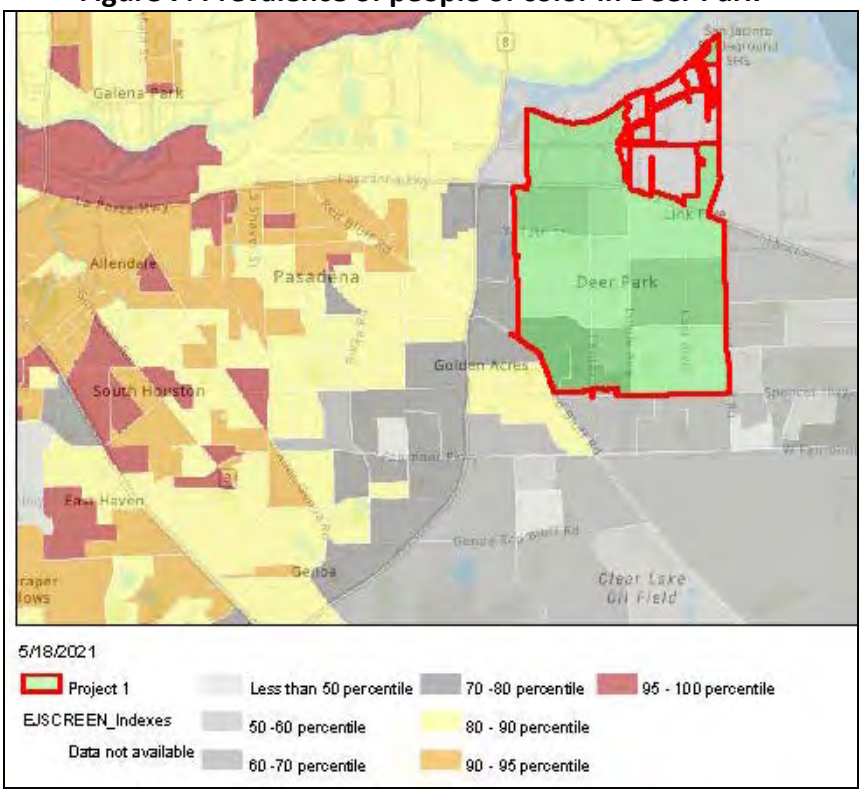
Figure 5: Prevalence of people of color in Pasadena[10]



[10] United States Environmental Protection Agency, EJScreen Mapping Tool, https://ejscreen.epa.gov/mapper/.

Figure 6: Side-by-Side Maps Comparing the Respiratory Hazard Index with the Ratio of Income to Poverty Level in Pasadena

Figure 7: Prevalence of people of color in Deer Park[11]



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The 2021 Draft Plan does not propose any additional air monitors for Pasadena. For the reasons mentioned above and further explained in Section IV, TCEQ should site additional air monitors in Pasadena.

B. The West Port Arthur neighborhood

Although its founders intended to create a tourist resort town on the Gulf Coast, Port Arthur's future quickly changed as the town became an industrial center just after the turn of the 20th Century after the Lucas oil geyser erupted in 1901 just a few miles northwest of what is now the West Port Arthur neighborhood. The discovery of the Spindletop oil field fueled the development of oil and gas in the region generally. Numerous companies located in the City of Port Arthur because of its proximity to vast oil activity and the Port of Port Arthur. By 1914, Port Arthur was the second largest refining source in the United States and has remained an industrial town dominated by oil, gas, and petrochemical producers ever since. As industry continues to operate and expand their operations in Port Arthur, and new industry continues to move to Port Arthur, the town will continue to remain an industry town. Consequentially, it is likely the amount of air pollution put out into the community will significantly increase.

[11] Id.

West Port Arthur, or the Westside of Port Arthur, is a residential neighborhood that is predominately a community of color, low-income, and surrounded on nearly all sides by major industry. **Figure 8**, below, shows a satellite image of the Port Arthur area. West Port Arthur is identified by a triangle. One can see the many major industrial areas—largely appearing in a light color—which surround the neighborhood to the west, south, and east. The Port of Port Arthur is along the visible ship channel in the lower-right portion of the map. Numerous railroad lines cross through the area. **Figure 9** maps the prevalence of people of color in Port Arthur. **Figure 10** shows the percentage of households below the poverty level in Port Arthur.

Figure 8. Location of West Port Arthur and nearby industry

Figure 9. Prevalence of people of color in Port Arthur[12]

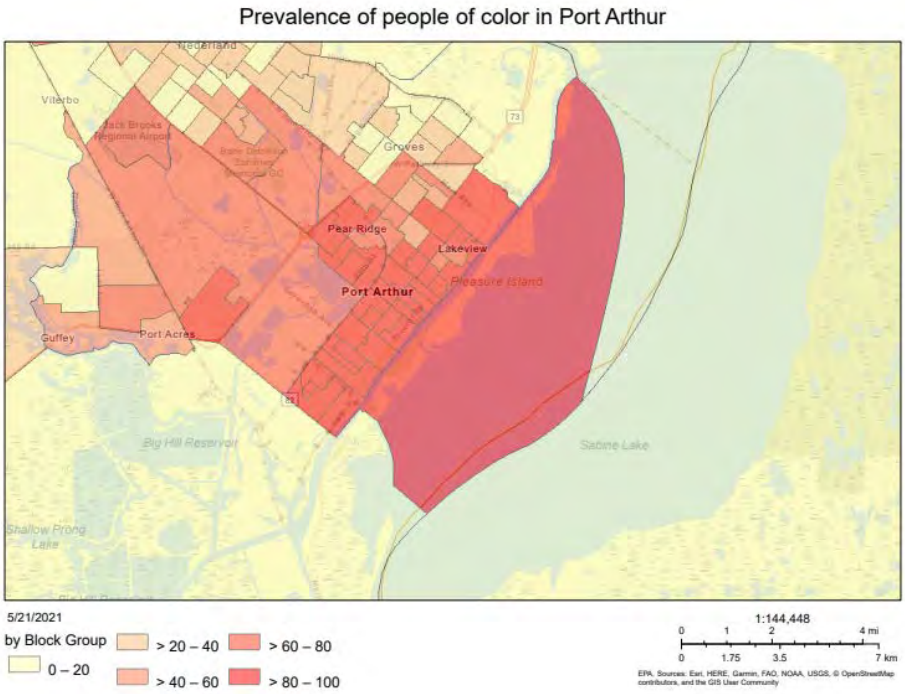
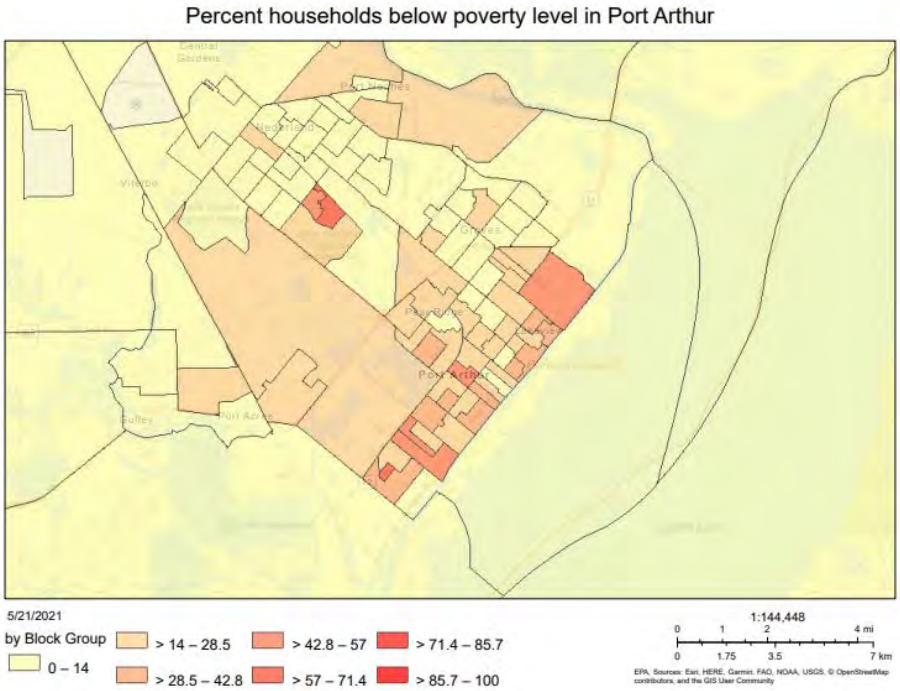


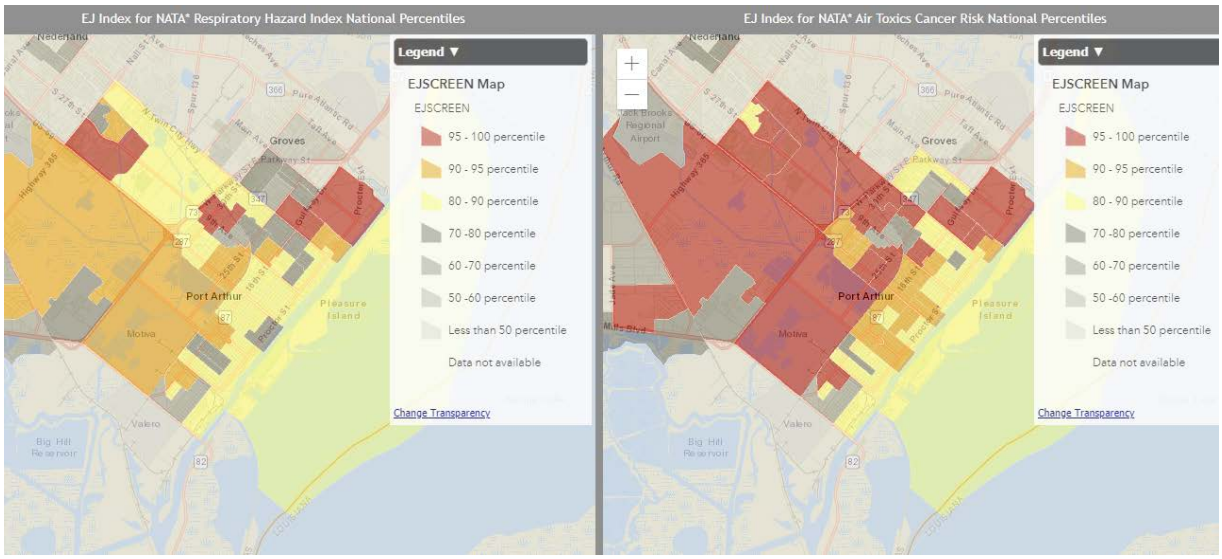
Figure 10. Percent households below poverty level in Port Arthur[13]



[12] Id.
[13] Id.

Today, the neighborhood suffers from excessive releases of smog-causing and toxic air pollution, due to the large number of refineries, petrochemical plants, and other heavy industrial facilities which surround the community. **Figure 11** shows that the West Port Arthur area faces some of the nation's largest respiratory health and cancer challenges in the entire United States. While PACAN acknowledges the draft 2021 AMNP includes five stationary air monitors located at 4 locations within the limits of the City of Port Arthur, the monitoring network as proposed in the draft plan remains insufficient. As shown in **Table 3**, below, the number of pollutants being monitored at each station is minimal.

Figure 11. Side-by-side EPA Respiratory Hazard Health Indicator and Cancer Risk Indicator for Port Arthur[14]



In the EPA's most recent release of the National Emissions Inventory (NEI), there were at least 23 carbon monoxide (CO) emitters, 14 lead (Pb) emitters, 23 nitrogen dioxide (NO_2 or NOx) emitters, 23 particulate matter 10 (PM_{10}) emitters, 23 particulate matter 2.5 ($PM_{2.5}$) emitters, 24 sulfur dioxide (SO_2) emitters, and 26 volatile organic compounds (VOC) emitters in Port Arthur itself, plus a number near Port Arthur in places such as Sabine Pass whose emissions enter the Port Arthur air shed as winds blow pollutants from south to north.[15] In each of these categories, Port Arthur is home to some of the state's largest emitters. Port Arthur's multiple large refineries are among the highest VOC, NOx, CO, $PM_{2.5}$ and PM_{10} emitters in the state. Oxbow Calcining, discussed in depth below, is one of the state's highest SO_2 and Pb emitters, and uniquely located immediately adjacent to an urban area. Not only are high amounts of all of these pollutants being emitted into Port Arthur's air shed, they are precursors to each other and to ozone (O_3). As discussed in more depth below, Beaumont-Port Arthur has long struggled to maintain O_3 attainment.

[14] Id.

[15] United States Environmental Protection Agency, National Emissions Inventory, 2017 Release, available at https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data. (Hereinafter "EPA NEI 2017 Database").

The proximity of residential West Port Arthur and these major air polluting industrial activities directly contribute to poverty, environmental and community degradation, and significant public health challenges including increased rates of respiratory issues and cancer in the area.

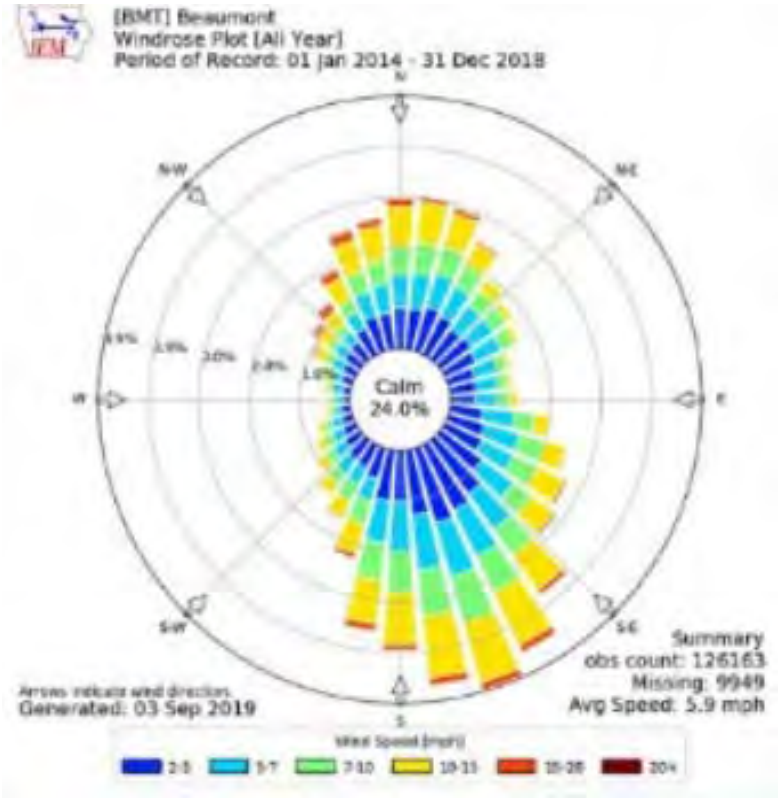
Table 3. Air monitors in the draft 2021 AMNP within the City of Port Arthur

EPA Site Number	Monitor Name	Monitor Location	Pollutant(s) Monitored
482450018	Jefferson County Airport	End of 90th Street at Jefferson County Airport	None
482450021	Port Arthur Memorial High School	2200 Jefferson Drive	$PM_{2.5}$
482450011	Port Arthur West	623 Ellias Street	O_3, SO_2
482451071	Port Arthur West 7th Street Gate 2	West 7th Street, Chevron Port Arthur Gate 2	SO_2
482450102	SETRPC 43 Jefferson Co. Airport	Jefferson County Airport	O_3

C. The east side of Beaumont

Like Port Arthur, Beaumont's economy has long been tied to the oil, gas, and petrochemical industry. The city is home to the sprawling ExxonMobil Beaumont refinery and petrochemical complex as well as numerous other petrochemical and chemical facilities. Beaumont is also home to one of the largest and busiest seaports in the world. Directly across the Neches River from the Port of Beaumont are a major steel mill and other industry. To the southeast of town, many other major oil, gas, and petrochemical facilities operate along the Neches River. Their pollutants are likely blown into Beaumont's air shed by the area's predominant winds shown in **Figure 12**.

Figure 12. Prevailing winds in Beaumont[16]



Beaumont's largest facilities and highest emitters largely directly border the east side of Beaumont, a historically low-income, Black portion of the city. The residents of the east side's historic neighborhoods, such as Charlton-Pollard (where Ms. Young's children attend school) and Pear Orchard (where Ms. Young and her family live), have long suffered from poor health. Despite this history, and despite the presence of some of Texas' largest polluters, the draft 2021 AMNP includes only one air monitors in the Beaumont city limits. **Table 4**, below, describes this monitor and the types of pollution it monitors.

Table 4. Air monitor in the draft 2021 AMNP located in the City of Beaumont

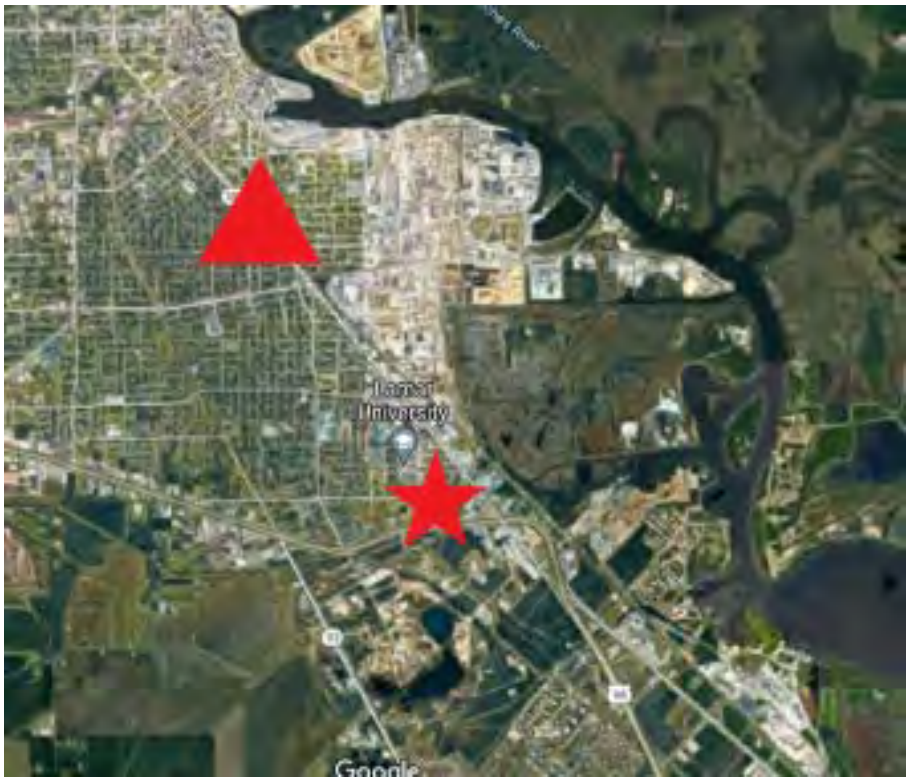
EPA Site Number	Monitor Name	Monitor Location	Pollutant(s) Monitored
482450009	Beaumont Downtown	1086 Vermont Avenue	$NO/NO_2/NOx$, O_3, SO_2, VOC

Despite its name, the "Beaumont Downtown" air monitor is not in downtown Beaumont. It is located on the south side of town. While it is located in a position to capture some emissions blowing from south and southeast of Beaumont, the monitor is not well placed

[16] Texas Commission on Environmental Quality, 2020 Five Year Ambient Monitoring Network Assessment, available at https://www.tceq.texas.gov/assets/public/compliance/monops/air/annual_review/historical/2020-5yrAAMNA.pdf, at 37.

to capture emissions from facilities within Port Arthur. **Figure 13**, below, shows the location of Ms. Young's east side neighborhood (by a "triangle") and the location of the Beaumont Downtown air monitor (by a "star"). The air monitor is upwind (south of) and thus unlikely to capture emissions from ExxonMobil, the Port of Beaumont, the Optimus Steel facility, and numerous other industrial facilities on the eastern side of Beaumont and north or west of the monitor. The monitor is not positioned to monitor air quality in Ms. Young's neighborhood or the other nearby residential areas on the east side of Beaumont. And for that matter, the monitor is not positioned to monitor air quality anywhere on the more affluent west side of Beaumont. The monitor does not measure PM nor CO, nor does it measure Pb. **Figure 14** shows the location of Charlton-Pollard Elementary School in relation to the Port of Beaumont and the sprawling ExxonMobil complex. Every day, 588 students attend this school.[17] All 588 are free-lunch eligible.[18] 365 are Black and 190 are Hispanic.[19] Even though these young children attend school just six blocks from one of the area and state's largest polluters, the closest meaningful air monitor (Beaumont Downtown) is over 2.5 miles away and in the wrong direction. Like Port Arthur and Pasadena, the east side of Beaumont faces some of the nation's most health challenges, as shown in **Figure 15**.

Figure 13. Relative location of Gayla Rochelle Young's Pear Orchard Neighborhood and the Beaumont Downtown air monitor



[17] United States Department of Education, National Center for Education Statistics, Charlton-Pollard Elementary Profile, available at https://nces.ed.gov/ccd/schoolsearch/school_detail.asp?Search=1&Zip=77704&Miles=5&ID=480967012447.
[18] Id.
[19] Id.

Figure 14. Location of Charlton-Pollard Elementary School

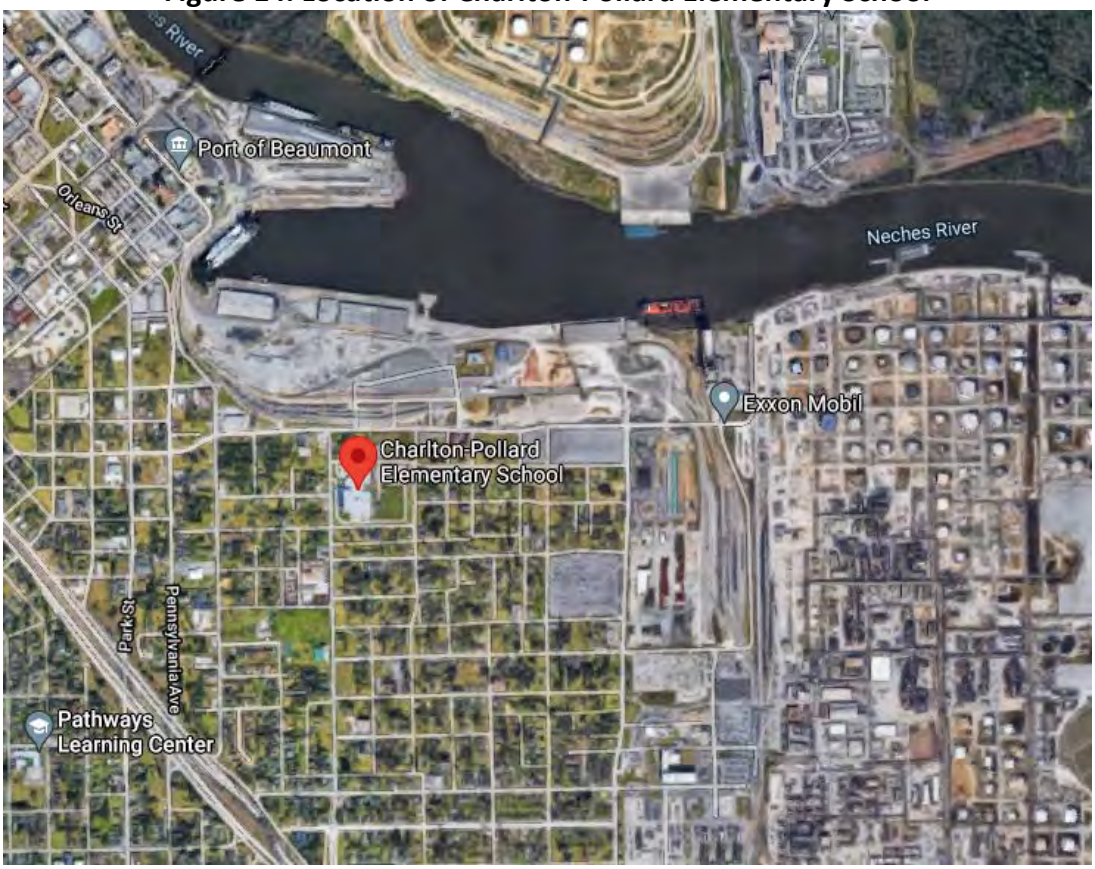
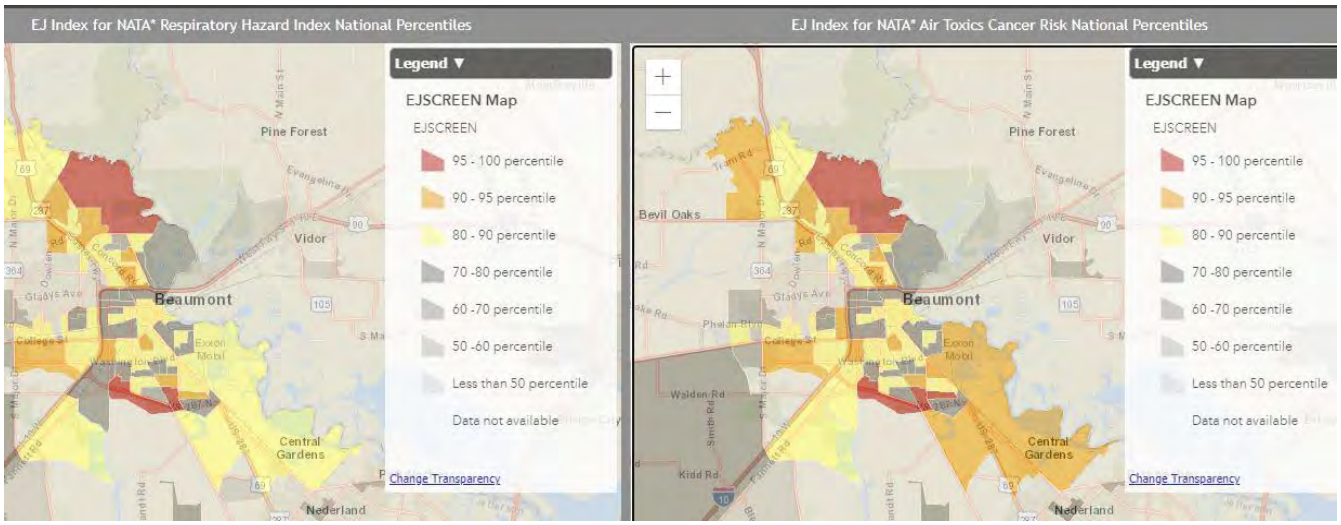


Figure 15. Side-by-side EPA Respiratory Health Indicator and Cancer Risk Indicator for Port Arthur[20]



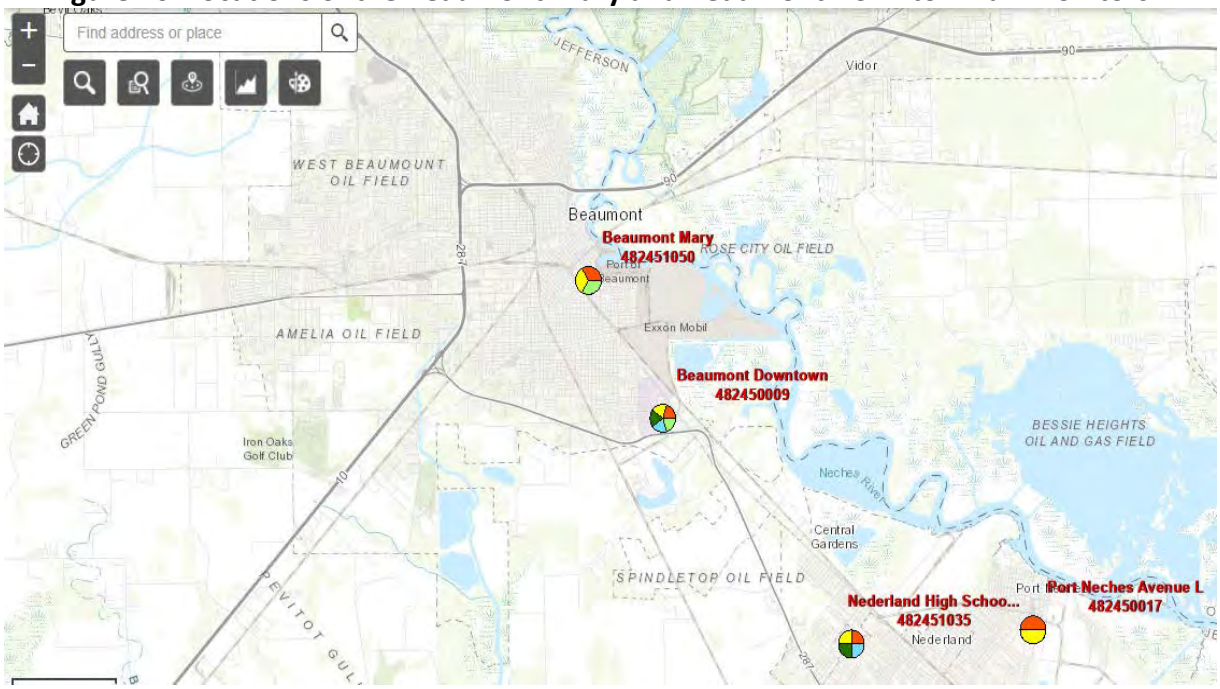
Ms. Young does acknowledge the "Beaumont Mary" air monitor located near her home, but this monitor is not included in the draft 2021 AMNP; presumably because it does it monitor

[20] United States Environmental Protection Agency, EJScreen Mapping Tool, https://ejscreen.epa.gov/mapper/.

any criteria air pollutants. The monitor's single canister sampler type only provides VOC measurements every few days—it does not produce daily concentrations of VOCs. Its most recently available data is from September, 2020.

The screen capture of TCEQ's air monitoring database below, **Figure 16**, shows the location of the Beaumont Downtown and Beaumont Mary air monitors. Beaumont is devoid of air monitors. One can see the ExxonMobil plant labeled on the map and located north (downwind) of the Beaumont Downtown air monitor.

Figure 16. Locations of the Beaumont Mary and Beaumont Downtown air monitors[21]



Apart from the Beaumont Downtown air monitor, the closest AMNP monitors are located at Nederland High School and Port Neches Avenue L, approximatley 7 to 8 miles south of Ms. Young's neighborhood and nearly 6 miles south of ExxonMobil's most southern reaches. The Port Neches Avenue L monitor only monitors VOCs, rather than any of the six criteria pollutants. The Nederland High School monitor measures O_3 and NOx, as well as some VOCs, but does not measure SO_2, CO, Pb, nor $PM_{2.5}$ or PM_{10}. Even though it does measure two criteria pollutants, it is not only located well south of Beaumont's industry, it is poorly positioned to measure emissions from many of the major industrial facilities located along the Neches River in Nederland and Port Neches. In short, the Beaumont Downtown monitor is largely singularly responsible for measuring emissions from one of the most signficant industrial corridors in the state and country. It does not measure three criteria pollutants and is located upwind from one of the state's largest polluters (ExxonMobil's complex) and other busy industrial areas on the

[21] Texas Commission on Environmental Quality, Air Monitoring Sites, available at https://www.tceq.texas.gov/airquality/monops/sites/air-mon-sites.

east side of Beaumont. In addition, the busy I-10 corridor—a source of CO—cuts through central Beaumont.

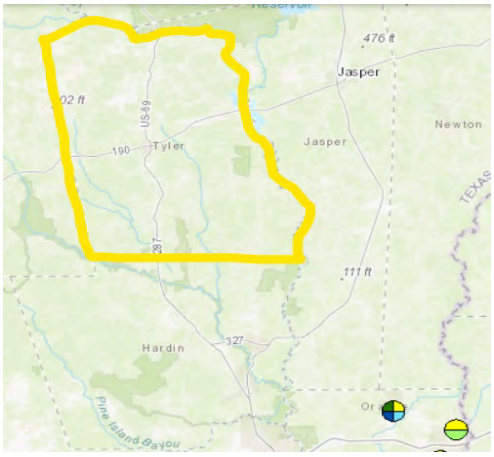
Ms. Young urges TCEQ to add additional monitoring without the City of Beaumont, including the eastern side of Beaumont which is most closest to the City's major industrial areas. Section V discusses particular criteria pollutants in more detail.

IV. COMMUNITIES WITHOUT MONITORING RESOURCES

Woodville

Tyler County is in southeastern Texas, which has a population of 21,672[22] over 936 square miles. As shown below in **Figure 17**, there are no air monitors that are part of TCEQ's Texas Air Monitoring Information System (TAMIS) present in Tyler County. Woodville is the county seat and largest town in the County centered at the intersection of I69, and U.S. Highway 190, and U.S. Highway 287. Woodville has a population of 2,586,[23] and is approximately fifty-six miles north of Beaumont and ninety miles northeast of Houston. Nearby Jefferson, Hardin and Orange Counties are near nonattainment status for ozone as of April 2018.[24] Harris-Galveston-Brazoria Counties have been in nonattainment status for ozone since 1992.

Figure 17. Screenshot of Tyler County from TCEQ's TAMIS[25]



In Woodville, Texas, there is a pellet mill operated by Woodville Pellets, LLC (RN106205032) that does not have a current Title V Federal Operating Permit. However, the

[22] United States Census Bureau population estimates as of July 1, 2019.
[23] United States Census Bureau, 2010 Census.
[24] Beaumont area close to exceeding federal air quality standards, BEAUMONT ENTERPRISE (April 20, 2018) https://www.beaumontenterprise.com/news/article/Beaumont-area-close-to-exceeding-federal-air-12850775.php.
[25] Texas Commission on Environmental Quality, Air Monitoring Sites, available at https://www.tceq.texas.gov/airquality/monops/sites/air-mon-sites.

plant has continued to operate in the area despite its failure to timely renew its Title V permit in 2020. This facility emits volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) in excess of its permit limits, causing the community concerns regarding their health. Further, the facility emits particulate matter, which has been measured on local $PM_{2.5}$ and PM_{10} outdoor air monitors in the area less than 1 mile from the facility. The $PM_{2.5}$ and PM_{10} readings at these monitors suggest levels that warrant attention from the TCEQ for the possible need for air monitoring.

Based on information and belief, the facility has at least twice invoked the audit privilege when performing testing at its facility to determine the extent that its operations exceed the permitted limits. The results of these audits have not all been made public, so there is no transparency with respect to the public as to how much the facility has exceeded its permits, which is why air monitors in this area are warranted. The results of one audit from 2014 revealed that the facility actually emits at least 580 tons of VOCs per year when operated at the plant's intended production rate. The prior owners admitted that the facility's VOC emissions were more than twice the 250 tpy major source threshold for Prevention of Significant Deterioration (PSD). The actual VOC emissions were nearly 10 times its permitted limits of 64 tons per year. The excess emissions total 515 tons of VOCs per year. Thus, the plant should have been permitted as a major source subject to PSD, rather than minor source permitting.

Based on information and belief, the facility has never conducted any emissions testing to demonstrate compliance with limits on HAP emissions. Yet, emissions factors developed by other comparable wood manufacturing companies show that the Woodville Pellets facility can emit up to 149 tpy of total HAPs, which greatly exceeds the facility's permitted limits of 10 and 25 tpy.

Figure 18. Photograph of Woodville Pellets, LLC in Operation (January 2, 2020)

Because this wood pellet manufacturing facility is the first of its kind in Texas and the permitting has been so challenging for the regulatory agency to get correct, air monitors would help capture the actual emissions from the facility, particularly given that the plant has received multiple notices of violations of its permit from TCEQ in recent years. Without a valid Title V Federal Operating Permit or even a draft compliance schedule that sets forth the bases by which this facility will be brought online, there are valid concerns about how any change will be brought about. For over five years, nothing has changed at the plant to reduce the unlawful emissions, nor has the plant obtained a major source PSD permit. Having real data to evaluate this plant's operations would assist the agency not only in enforcement efforts, but also to help with more thoughtful approval of these types of facilities in the future should additional facilities be proposed in Texas.

The community members living nearby the pellet plant have suffered through these excess emissions with very little relief from the regulatory agency and frankly feel forgotten. Although the population of the town of Woodville is less than 3,000, the lives there are no less important. While the profile of this known air pollution in excess of permitted limits does not necessarily meet all the criteria under 40 CFR Part 58 for air monitors in Tyler County. Commenters wanted to take the opportunity to raise this ongoing issue for the agency to consider whether it needs to do some further evaluation of whether this facility merits dedicated monitoring. Not only would that provide the agency exact data concerning the facility's unpermitted operations, but also it would allow the public to know the exact potential impacts on their health that are coming from this facility. Given the facility's emissions, possible air monitors for VOCs, $PM_{2.5}$ or PM_{10} might be considered.

V. COMMENTS ON REGULATORY NETWORK REVIEW

Beginning in the 1970s, EPA developed the National Ambient Air Quality Standards (NAAQS) for six principal air pollutants which can be harmful to public health and the environment, including carbon monoxide (CO), lead (Pb), nitrogen oxides (NOx), ozone (O_3), particle pollution (PM, including $PM_{2.5}$ and PM_{10}), and sulfur dioxide (SO_2). EPA often refers to these pollutants as "criteria pollutants" because allowed levels are set using human health or environmental criteria. The NAAQS include primary and secondary standards for maximum concentrations of these criteria pollutants measured and averaged across various time periods. Because even relatively brief exposures to certain concentrations of one or more of these six pollutants can be harmful, the NAAQS utilize averaging times as low as 1-hour.

TCEQ's Annual Monitoring Plans describe how TCEQ will place air monitors meant to measure concentrations of the six NAAQS and other federal monitoring requirements and objectives. While LSLA's clients acknowledge TCEQ has "more than double the monitors required by federal rule", the sheer number of monitors does not ensure TCEQ is adequately monitoring all six criteria pollutants across the state and best protecting the people of Texas from NAAQS violations. Rather, TCEQ must ensure monitors—no matter how many there are—are placed where they will best capture emissions and concentrations where people live. And

TCEQ must ensure monitors are capable of measuring the appropriate criteria pollutants all hours of the day, on all days of the year. The following comments made on behalf of LSLA's clients are offered on specific criteria pollutants as well as one non-criteria pollutant, hydrogen cyanide (HCN), in order to help TCEQ improve the 2021 plan and ensure Texans are best protected from emissions.

A. Sulfur Dioxide (SO_2) Monitoring

SO_2 is an air toxic associated with a variety of negative health effects. Short term exposures to SO_2 can harm the respiratory system and cause a variety of symptoms making breathing difficult.[26] Children and people with existing pulmonary issues such as asthma are especially vulnerable to the negative effects of SO_2.[27] Additionally, SO_2 can react with other compounds in the air to form particular matter, another criteria pollutant and potent respiratory irritant discussed below.[28]

1. SO_2 monitoring in Port Arthur is inadequate

Port Arthur—most specifically, West Port Arthur—is home to several major emitters of SO_2. Most notably, the West Port Arthur neighborhood is home to Oxbow Calcining (Oxbow). Oxbow is a relatively small facility that because of its decades-long and continuing refusal to install modern pollution controls is by far the largest emitter of SO_2 in Jefferson County. According to the EPA's most recent NEI release in 2017, Oxbow emitted 11,495.4977 tons of SO_2.[29] This comprised over 85% of all SO_2 releases in Jefferson County. Oxbow's SO_2 emissions in 2017 were the 11th largest among all facilities in Texas. Every other facility among the top 14 SO_2 emitters in Texas and all other emitters of at least 6950 tons of SO_2 were electricity generation facilities.[30]

Oxbow is also largely unique in that is located in an urban setting—the City of Port Arthur is directly adjacent and downwind from Oxbow. While the City of Port Arthur itself has a population of 54,280[31], the facilities emitting more SO_2 than Oxbow are mostly located in *counties* with fewer people than Port Arthur. (Jefferson County has a population of over 250,000[32]). **Table 5** shows these facilities and their respective county's population. Of those located in counties with similar or larger populations than the City of Port Arthur, those emitters are located in rural portions of their respective county. Nor do any of the other counties have the concentration of polluters as does the Port Arthur area.

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[26] United States Environmental Protection Agency, Sulfur Dioxide Basics, What are the harmful effects of SO_2, available at https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#effects.
[27] Id.
[28] Id.
[29] EPA NEI 2017 Database.
[30] Id.
[31] United States Census Bureau estimate for 2019.
[32] United States Census Bureau estimate for 2019.

Table 5. Texas' largest SO_2 emitters and their county's population[33]

SO_2 Emissions (Tons)	Facility Name	County Name	County Population
47,632.468	Big Brown Steam	Freestone	19,717
37650.621	Wa Parish Electric Generating Station	Fort Bend	811,688
36441.458	Martin Lake Electrical Station	Rusk	54,606
29412.161	Monticello Steam Electric Station	Titus	32,750
17447.481	Sandow Steam Electric Station	Milam	24,823
14074.801	Welsh Power Plant	Titus	32,750
13625.198	Tolk Station	Lamb	12,893
12880.344	Harrington Station Power Plant	Potter	117,415
12201.5	Coleto Creek Power Station	Goliad	7,658
12097.5529	Calaveras Plant	Bexar	2,003,554
11495.498	**Oxbow Calcining**	**City of Port Arthur**	**54,280 in City of Port Arthur**
10240.356	Limestone Electric Generation	Limestone	23,437
8775.872	Oak Grove Steam Electric	Robertson	17,047
8584	San Miguel Electric Plant	Atascosa	51,553
6949.595	Borger Black Carbon Plant	Hutchinson	20,938

While emissions from all of these facilities are high and serious, Oxbow is unique in its emissions being directly adjacent and upwind from an urban area otherwise surrounded by a number of other major air pollution emitters. WA Parish Electric Generation Station is located in a rural portion of south-central Fort Bend County, some 6 or more miles from the county's population centers. Martin Lake Electrical Generation is in rural Rusk County, 5 miles from the town of Tatum and 13 or more miles from population centers in Carthage and Henderson. The Harrington Station Power Plant is located 4.5 to 5 miles northwest of the northwestern edges of urban Amarillo. The Calaveras Plant is 5.5 miles outside of San Antonio's I-410 loop and in a largely rural area of southeast Bexar County. San Miguel Electric Plant is in a very rural portion of south Atascosa County. None of these 5 facilities are in or near concentrated industrial areas. **Figure 19** shows the location of Oxbow, in relation to West Port Arthur, identified by a "triangle."

[33] EPA NEI 2017 Database and United States Census Bureau estimates for 2019.

Figure 19. Location of Oxbow in relation to West Port Arthur

Because Oxbow's SO_2 emissions are above 2,000 tons per year, Oxbow is subject to the EPA's Data Requirement Rule for the one-hour SO_2 primary standard.[34] This rule requires EPA and TCEQ to provide additional air quality data around major sources of SO_2 to help ensure compliance with the NAAQS. This can be provided through a combination of modeling and monitoring and must demonstrate that monitoring data is collected from locations where peak 1-hour SO_2 concentrations are expected to occur. To monitor SO_2 emissions from Oxbow, TCEQ has located and included in the draft 2021 AMNP an air monitor at West 7th Street, near the Valero Port Arthur Gate 2 (also called the CAMS 1071 air monitor).

There is, unfortunately, ample evidence that Oxbow has repeatedly and substantially altered its operating procedures to intentionally bypass SO_2 monitoring so that the nearest monitor will not pick up peak SO_2 concentrations (and open up Oxbow to enforcement actions). When the CAMS 1071 monitor was previously registering NAAQS violations, Oxbow discontinued use of cold stacks at its facility and re-routed its emissions to its hot stacks.[35] Oxbow modified the height and width of one of its hot stacks, so to disperse SO_2 higher into the air; Oxbow increased the height of one hot stack from 150 to 170 feet and narrowed the stack from 13.5 feet to 10.58 feet.[36] Oxbow also performed wind dispersion modeling in order to

[34] Draft 2021 Annual Monitoring Network Plan, at 11.
[35] Oxbow Calcining LLC's Semi-annual Deviation Report to TCEQ for the period of February 26, 2018 through August 15, 2018.
[36] NSR 45622, p. 12 – Letter from Oxbow to TCEQ Re: Alteration Request for Permit No. 45622 (Sept. 20, 2018).

determine under what conditions the 7th Street air monitor would, specifically, register high SO_2 levels.[37] In this modeling, Oxbow also conducted experiments under various kiln stack operational setups under different wind speeds, wind gusts, wind directions, and outdoor air temperatures.[38] Oxbow created an alert system which notified the facility when the nearest SO_2 monitor—then located on 7th Street near Texaco Island Road—picked up SO_2 concentrations of 25 ppb or higher and would accordingly modify its operations to try to avoid exceeding SO_2 limits *at the monitor's location*. [39]

Oxbow's actions did not lower emissions nor did any of its actions lower the risk that Port Arthur's air shed would suffer SO_2 exceedances. Oxbow's actions, simply and merely, helped ensure the 7th Street air monitor would not register exceedances. As stated by TCEQ's former Executive Director Jeff Saitas, removing the cold stacks and carefully operating so to not offend the air monitor did not prevent any real problem. "[T]he fact that [22 million pounds of SO_2] are pushed higher and go elsewhere does not mean that concentrations above 75 parts per billion are not occurring."[40] Saitas further testified:

> [I]f this room were Jefferson County and the tip of this pen was the monitor itself, and if I were a smoker and I'm smoking and blowing smoke right at that pen and it reads something, then the fact that if I move my head up and send the smoke higher or turn my head and send it here does not mean that the problem is solved. It means it's going somewhere else.[41]

This pattern of behavior helps explain the drop in the multiple exceedances of the 1-hour daily maximum SO_2 concentrations between 2017 and 2018.[42] Oxbow's litigation with nearby the Port Arthur Steam Energy facility served to further bring to light Oxbow's pattern of behavior to circumvent the CAMS 1071 monitor. In a brief submitted to the Court of Appeals for the Ninth Circuit resulting from the litigation, Oxbow's counsel explicitly tied the aforementioned efforts to avoiding exceeding the NAAQS standard at the CAMS 1071 monitor.[43]

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[37] Port Arthur Steam Energy, L.P. v. Oxbow Calcining LLC, Exh. 16: 5-minute data; Exh. 105.

[38] Id.

[39] See Port Arthur Steam Energy, L.P. v. Oxbow Calcining LLC, Exh. 85 (Emails between Sri Vedala and Kris Kissel-Weir Re: SO2 exceeds 25 at Port Arthur, Jan. 1, 2017); Exh. 86 (Emails between Kris Kissel-Weir and Roy Schorsch, and between Roy Schorsch and Daniel Rosendale Re: SO2 Emissions Reporting Status Update, Feb. 13, 2017); Exh. 87 (Emails from Kris Kissel-Weir, and from Ryan Glander, Re: SO2 Exceeds 25 at Port Arthur, Feb. 1, 2017); Exh. 88 (Emails between Kris Kissel-Weir and Michael Holtham, Re: SO2 readings at Port Arthur, Apr. 29, 2017).

[40] Port Arthur Steam Energy, L.P. v. Oxbow Calcining LLC, Ex. 6 (Transcript of Nov. 4, 2019 arbitration proceedings), pp. 501-502.

[41] Port Arthur Steam Energy, L.P. v. Oxbow Calcining LLC, Ex. 6 (Transcript of Nov. 4, 2019 arbitration proceedings), p. 502.

[42] On December 20, 2017, the Director of the Air Quality Division at TCEQ, David Brymer, notified Oxbow that monitoring data from January-November, 2017 indicated the 75 ppb SO_2 NAAQS had been exceeded during that timeframe on eight separate occasions. (Letter from David Brymer to Tony Botello sent December 20, 2017.) In this same letter, TCEQ informed Oxbow that the exceedances occurred during periods where the facilities used its cold stacks instead of the hot stacks, which TCEQ noted were better effectively dispersing emissions.

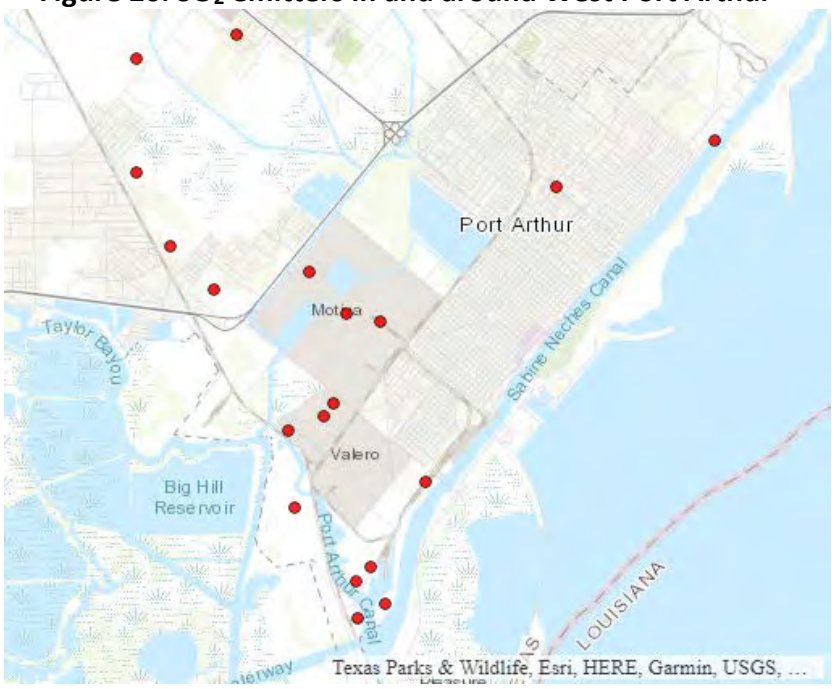
[43] Appellant Oxbow Calcining's Brief, 11-13, Oxbow Calcining LLC v. Port Arthur Steam Energy, L.P., (Tex. App. 2018)(No. 09-1800392-CV).

In December, 2019, TCEQ moved the CAMS 1071 monitor, formerly the Port Arthur 7th Street Texaco Road air monitor, to a new location on 7th Street. The CAMS 1071 monitor is now known as the Port Arthur 7th Street Gate 2 air monitor. Oxbow's actions in regards to the former location, however, represent a pattern of behavior to avoid exceedances at the closest SO_2 monitor. Given Oxbow's unique location near an urban area, its massive and extraordinary SO_2 emissions, and its sophisticated history of actions to avoid *detection* of NAAQS violations—as opposed to avoiding NAAQS violations—PACAN makes the following recommendations of TCEQ with regards to monitoring SO_2 concentrations in the West Port Arthur air shed.

(1) Complete additional air modeling of SO_2 emissions and concentrations from Oxbow and the area's other SO_2 emitters;
(2) Add at least one additional SO_2 monitor nearby the Oxbow facility. One monitor should perhaps be located south of the facility, so to capture potential high SO_2 emissions from Oxbow during favorable wind conditions.

PACAN also notes here that its members, their families, and their neighbors have often smelled a rotten-egg odor that they associated with SO_2. **Figure 20** shows the location of SO_2 emitters according to the 2017 NEI. Though their emissions are dwarfed by Oxbow's, other facilities in and around West Port Arthur release SO_2 which together with expanded and increased industry in the area threaten to further increase SO_2 exceedances and health challenges in West Port Arthur. PACAN hopes TCEQ will take a new, ground-up, holistic review of SO_2 in West Port Arthur.

Figure 20. SO_2 emitters in and around West Port Arthur[44]

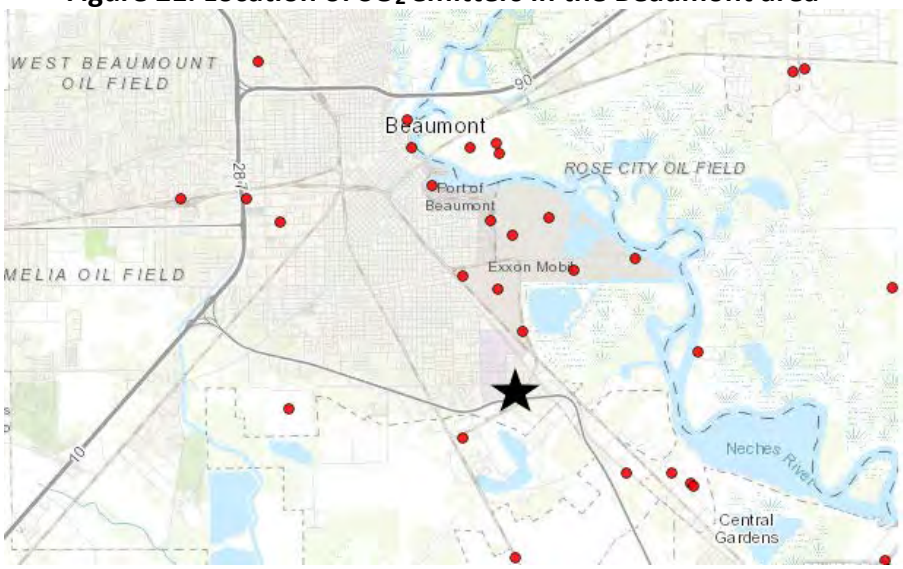


[44] EPA NEI 2017 Database.

2. Beaumont should have more SO_2 monitoring near its larger polluters

There are numerous SO_2 emitters on the east side of Beaumont. **Figure 21**, below, shows a screen shot of the EPA's NEI mapping tool showing the location of reporting SO_2 emitters in or near Beaumont according to the NEI's most recent release in 2017. The only SO_2 monitor—the Beaumont Downtown monitor—is located by the "star." Easily evident is that the SO_2 monitor is located south of numerous SO_2 emitters. No less than 18 are located north of the monitoring site, even though winds typically blow from the south and to the north in Beaumont.

Figure 21. Location of SO_2 emitters in the Beaumont area[45]



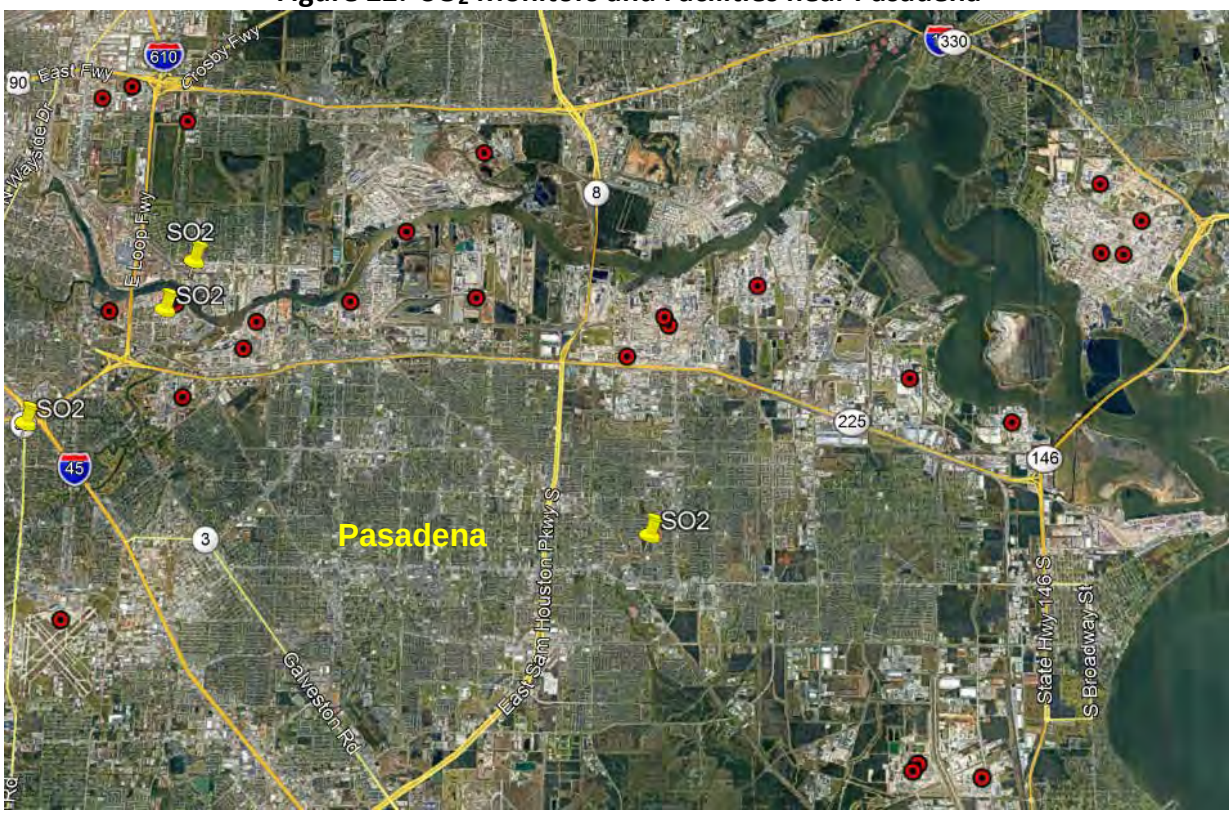
Two major SO_2 emitters located within 2 miles and just east of Ms. Young's home—and less than a mile and south/southeast from the school Ms. Young's children attend—include ExxonMobil's Beaumont Refinery (675.214 tons) and the Arkema Beaumont Plant (267.577 tons).[46] To help inform and protect herself, her family, and those in her neighborhood and across Beaumont, Ms. Young urges TCEQ to place at least one SO_2 monitor in east-central Beaumont at the Beaumont Mary site or other available and appropriate location.

3. TCEQ must ensure SO_2 monitoring in Pasadena

As discussed above, the City of Pasadena suffers from a lack of adequate monitoring. The city contains and is adjacent to a number of facilities that emit SO_2 and sulfur compounds in large quantities, and should have at least one SO_2 monitor to ensure that citizens are protected from these emissions. The following map, **Figure 22**, shows the location of sulfur-emitting facilities (in red), and existing SO_2 monitors (in yellow).

[45] EPA NEI 2017 Database.
[46] EPA NEI 2017 Database.

Figure 22: SO_2 Monitors and Facilities near Pasadena



Several the facilities near Pasadena are major emitters of SO_2. For example, in 2014 Exxon's Baytown Refinery released 2,203 tons of SO2, Pasadena Refining System's Refinery released 1,064 tons of SO_2, Eco-services' Houston Plant released 918 tons of SO2, Motiva's Houston Refinery released 366 tons of SO_2, and Arkema's Houston Plant released 372 tons of SO2, among many others.[47] Despite their proximity to this collection of high-emitting facilities, most residents of Pasadena live three to five miles from the nearest SO_2 monitors in either Manchester or Deer Park.

Several members of CPC have smelled and continue to smell the rotten-egg odor that is indicative of SO_2 pollution. SO_2 is clearly in the air, but without any monitors it is impossible to know exposure levels. The community deserves to know if the air they are breathing contains harmful levels of SO_2, and TCEQ has a duty to collect and share that information. An SO_2 monitor in central Pasadena would enable TCEQ to "measure typical concentrations in areas of high population density," and would further the monitoring goal of providing "air pollution data to the general public in a timely manner."[48]

[47] EPA, 2014 National Emissions Inventory Report, available at https://gispub.epa.gov/neireport/2014/.
[48] 40 C.F.R. 58 Appx. D 1.1.1(b), 1.1 (a).

B. Lead (Pb) Monitoring

Lead exposure can severely harm much of the human body. Exposure can harm the nervous system, kidney function, immune system, reproductive and development systems, and the cardiovascular system.[49] It can also harm the capacity of blood to carry oxygen throughout the body. Infants and children are especially at risk to lead related harms.[50] Those exposed to lead at a young age may develop behavioral problems and learning deficits.[51]

In addition to being one of the state's most prolific and problematically located SO_2 emitters, Oxbow is also one of the state's most prolific and problematically located lead emitters. Oxbow was the state's 8th highest lead emitter according to the 2017 NEI data release, having released 626.4 pounds of lead that year.[52] Oxbow is the 4th highest non-airport facility. According to TCEQ's 2019 Emissions Inventory, Oxbow is the state's 5th highest non-airport facility.[53] As described previously, Oxbow is located directly adjacent from the West Port Arthur neighborhood. West Port Arthur is directly downwind and in the path of Oxbow's emissions.

While Oxbow's lead emissions—626.4 pounds in the 2017 NEI release—are below the 0.5 tons per year standard in Title 40 CFR Part 58, Appendix D, Section 4.5(a), Oxbow is just the headliner in a cluster of lead emitters whose emissions, when taken together, total over 750 pounds of releases according to the 2017 NEI data release. Oxbow's emissions alone, and certainly the emissions of Oxbow, the nearby Valero refinery, and other nearby lead emitters, are substantially higher than the releases of the Conecsus Tejas Facility in Kaufman County, which the 2021 draft AMNP places a lead monitor near. (Conecsus released approximately 260 pounds of lead in 2019 and 523 in 2017.[54] And there are no other lead emitters in Kaufman County which released more than approximately 6.6 pounds of lead in 2019.[55])

Considering the many health and air quality challenges already faced by West Port Arthur and multiple nearby lead emitters, PACAN urges TCEQ to consider placing a lead monitor in West Port Arthur.

C. Ozone (O_3) Monitoring

As the main ingredient of "smog", ground level ozone is a harmful air pollutant which negatively effects human health and the environment. Breathing O_3 can trigger a variety of

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[49] United States Environmental Protection Agency, Basic Information about Lead Air Pollution, available at https://www.epa.gov/lead-air-pollution/basic-information-about-lead-air-pollution#health.
[50] Id.
[51] Id.
[52] EPA NEI 2017 Database.
[53] Texas Commission on Environmental Quality, 2019 Point Source Emissions Inventory, available at https://www.tceq.texas.gov/airquality/point-source-ei/psei.html. (Hereinafter "TCEQ 2019 Emissions Inventory).
[54] EPA NEI 2017 Database and TCEQ 2019 Emissions Inventory.
[55] TCEQ 2019 Emissions Inventory.

health problems including chest pain, coughing, throat irritation, and airway inflammation.[56] It can also reduce lung function and harm lung tissue.[57] O_3 exposure can worsen bronchitis, emphysema, and asthma, leading to increased medical care needs and expenses.[58] People most at risk of harm from breathing O_3 include those with asthma, children, older adults, and people who are active outdoors, including outdoor workers.[59] In addition, people with certain genetic characteristics and people with reduced intake of certain nutrients, such as vitamins C and E, are at greater risk of harm from O_3 exposure.[60]

Due to the serious consequences of ground level ozone, it is critically important that levels of O_3 be sufficiently monitored in environmental justice communities such as Pasadena, Port Arthur, and the east side of Beaumont. All of these communities already are vulnerable and have compromised health and limited access to health care due to other social and economic factors.

1. Beaumont and Port Arthur both need additional ozone air monitors

When the EPA compiled the Environmental Profile for the west side of Port Arthur in or around 2011, the agency noted air quality in the area as it related ozone "was not within guidelines" based on air monitoring results that took place during the time the profile was generated. Ozone continues to be a major concern for the community despite Jefferson's County relatively recent achieved attainment status based on the following events:

- The Beaumont-Port Arthur area, including Hardin, Jefferson, and Orange counties, was designated "attainment" under the 1997 eight-hour ozone NAAQS on October 20, 2010 with an effective date of November 19, 2010. In December, 2008, the TCEQ submitted a re-designation request and maintenance plan Texas State Implementation Plan (SIP) revision for the area using certified monitoring data from 2005, 2006, and 2007. On October 20, 2010, the EPA published notice in the Federal Register finalizing approval of the 2008 re-designation request and maintenance plan SIP revision, including a determination that the Beaumont-Port Arthur area had attained the 1997 eight-hour ozone standard and had met all of the applicable 1997 eight-hour ozone requirements and one-hour ozone anti-backsliding requirements for purposes of redesignation.
- On March 27, 2008, the EPA lowered the primary and secondary eight-hour ozone NAAQS to 0.075 parts per million (75 parts per billion). Hardin, Jefferson, and Orange Counties were designated unclassifiable/attainment under the 2008 eight-hour ozone NAAQS, effective July 20, 2012.

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[56] United States Environmental Protection Agency, Health Effects of Ozone Pollution, available at https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution.
[57] Id.
[58] Id.
[59] Id.
[60] Id.

- On October 1, 2015, the EPA lowered the primary and secondary eight-hour ozone NAAQS to 0.070 parts per million (70 parts per billion). Hardin, Jefferson, and Orange Counties were designated attainment/unclassifiable for purposes of redesignation.

According to Appendix H of the draft 2021 AMNP, the 2017-2019 8-hour design value (ppm) for the Beaumont-Port Arthur metropolitan area is 0.070, or 100% of the NAAQS. This means Beaumont-Port Arthur must have at least 2 O_3 monitors under SLAMS, NCore, and PAMS requirements. PACAN and Gayla Young acknowledge that TCEQ has placed 7 O_3 monitors within Beaumont-Port Arthur.

The design value indicates Beaumont-Port Arthur is right at the edge of ozone non-attainment. In addition to this existing challenge brought on by the many existing industrial facilities in the area, there are a number of recently approved or pending air pollution permit applications across the metropolitan area. These additional or expanded facilities will emit ozone precursors such as NO_x, VOCs, and CO and threaten to again push the Beaumont-Port Arthur area into non-attainment.

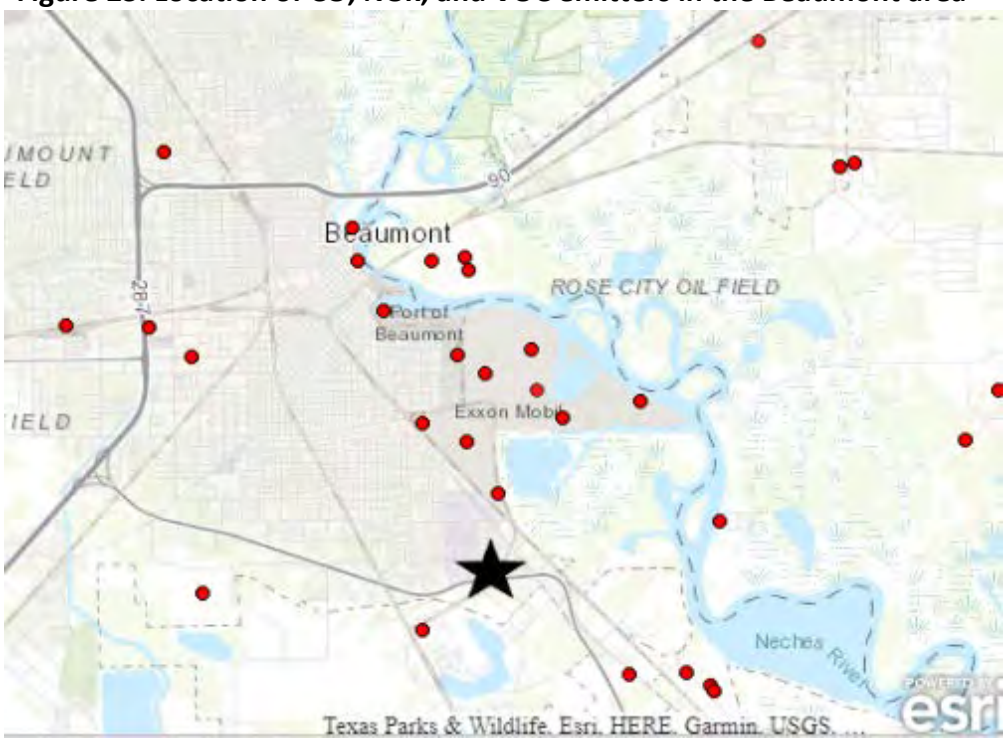
While TCEQ's plan includes the seven existing ozone monitors in Beaumont-Port Arthur, there are gaps within the network. The only O_3 air monitor in or around the City of Beaumont is the "Beaumont Downtown" monitor located at 1086 Vermont Avenue. Even though it is named "Beaumont Downtown", the monitor is on the southern side of Beaumont. According to the EPA's 2017 NEI data release, this location is upwind of no less than 27 CO, NOx, and/or VOC emitting facilities in Jefferson County located east of the Neches River, north of US-96, and west of the town of Bevil Oaks in north-central Jefferson County or those located just across the Neches River from central Beaumont.[61] This concern includes multiple large, significant emitters of these O_3 precursors, most of which are located near Gayla Young's home. Three of the major emitters are outlined in **Table 6**, below. **Figure 23** shows the location of the many CO, NOx, and VOC emitters in the area. The Beaumont Downtown monitor is marked with a "star."

Table 6. Largest CO, NOx, and VOC emitters in the east Beaumont area[62]

Facility	CO Emissions (tons)	NOx Emissions (tons)	VOC Emissions (tons)
ExxonMobil Beaumont Refinery	2,038.024	1,783.248	1,265.697
ExxonMobil Beaumont Chemical Plant	328.890	272.56	691.417
Optimus Steel	935.392	257.771	13.842

[61] EPA NEI 2017 Database.
[62] EPA NEI 2017 Database.

Figure 23. Location of CO, NOx, and VOC emitters in the Beaumont area[63]



In fact, the ExxonMobil Beaumont Refinery is Jefferson County's largest emitter of CO and VOCs, and Jefferson County's second largest emitter of NOx by less than 100 tons. The ExxonMobil Beaumont Chemical Plant is the county's 4th largest emitter of VOCs. And Optimus Steel, located just across the Neches River in Orange County, would be the second largest CO emitter in Jefferson County (only behind ExxonMobil's refinery) and is the third largest emitter of CO in Orange County. Vehicle, rail, and ship traffic associated with the busy I-10 corridor, Port of Beaumont, and many railroads in urban Beaumont likely further contribute to ozone formation in Beaumont. Given the presence of these major emitters of O_3 precursors, Gayla Young urges TCEQ to require additional ozone monitoring at the existing Beaumont Mary air monitor location. Ms. Young also hopes TCEQ will initiate additional O_3 monitoring in other locations on the east side of Beaumont to help protect the many vulnerable residents of that portion of town. Finally, Ms. Young urges TCEQ to conduct O_3 modeling for the east side of Beaumont.

PACAN mirrors these recommendations in regards to West Port Arthur. West Port Arthur is surrounded by major emitters of O_3 precursors and the numerous new or expanding facilities in the area threaten the health of air shed. These expanded or new facilities include, among others, the Golden Pass, Exxon, and Sempra-Port Arthur LNG terminals, Valero's Coker expansion, Motiva's terminal expansion, Motiva's olefins plant, and Motiva's plastics unit. Together, these will emit thousands of pounds of O_3 precursors and potentially push the area over the edge. PACAN urges TCEQ to require additional ozone monitoring in the Port Arthur

[63] EPA NEI 2017 Database.

area and to conduct ozone modeling for West Port Arthur, the City of Port Arthur, and Jefferson County as a whole.

2. TCEQ must ensure effective ozone monitoring in Pasadena

Pasadena itself is wholly without any comprehensive monitoring network save the single monitor on the north end of the City. TCEQ can and should remedy this under the proposed network monitoring plan. Any plan to deploy new monitors in and around Pasadena should include O_3 tracking capabilities since the amount of exposure is currently unassessed and unknown.

CPC recognizes and applauds that an ozone SPM monitor was previously proposed in CPC's area of interest along Harvard Street at the Houston West End site and that this monitor was activated at the beginning of this year. Even so, the single monitor in the City of Pasadena does not monitor O_3. The nearest ground level ozone monitors are Park Place, Clinton, Houston East, Houston West, HRM #3 Raden Road, and Houston Deer Park #2. Without an O_3 monitor, Pasadena residents cannot know their exposure levels to ozone. TCEQ should place an ozone-specific monitor in Pasadena to ensure Pasadena residents can address a vital health, safety, and environmental issue that is otherwise undocumented in the area.

D. Particulate Matter (PM, $PM_{2.5}$, and PM_{10}) Monitoring

Particulate matter (PM) refers to microscopic particles in the atmosphere that are hazardous to human health. PM, sometimes referred to in everyday language as soot, dust, or smoke, consists of very small solid particles or liquid droplets suspended in the air.[64] While some PM can be seen with the naked eye, some are so small that they can only be seen by an electron microscope.[65] The smaller the particles, typically the more threatening they are to human health—smaller particles are more capable and likely to penetrate deep into the respiratory system and lodge themselves into a person's lungs.[66] Recent studies indicate PM can have many effects on the human body, including:

- Cause lung irritation, leading to increased permeability in lung tissue;
- Aggravate the severity of lung disease, causing rapid loss of airway function;
- Cause inflammation of lung tissue, resulting in the released of chemical which can negatively impact heart function;
- Cause changes in blood chemistry that can result in clots which may lead to heart attacks; and,
- Increase susceptibility to viral and bacterial pathogens leading to pneumonia in vulnerable persons unable to clear those pathogens and infections.

[64] https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects.
[65] Id.
[66] Id.

The NAAQS regulate both $PM_{2.5}$ and PM_{10}. $PM_{2.5}$—those with a diameter of 2.5 micrometers or less—are considered of greatest health concern. Still, PM_{10}—those with a diameter of 10 micrometers or less—are considered inhalable and can negatively impact human health. PM can also get into a person's bloodstream. TCEQ must ensure its monitoring plan adequately monitors both $PM_{2.5}$ and PM_{10}.

PM is also the main cause of reduced visibility in the United States. Just as other criteria pollutants are precursors of O_3, including SOx, NOx, VOCs, these criteria pollutants are precursors of PM. Other chemicals such as ammonia are also considered precursors to PM. Thus, while facilities may directly emit PM, PM may be formed by other emissions and TCEQ must be mindful of this when it anticipates or models future PM concentrations.

1. Beaumont and West Port Arthur need further $PM_{2.5}$ monitoring

Within the Beaumont-Port Arthur metropolitan area, there are no monitors in the draft 2021 AMNP tracking PM_{10} and only three monitors tracking $PM_{2.5}$ (Hamshire, Port Arthur Memorial School, and SETRPC 42 Mauriceville). Only the Port Arthur Memorial School monitor is in Port Arthur. It is not within West Port Arthur. There is no $PM_{2.5}$ monitor in Beaumont, including the east side of town. This is despite the two areas being home to some Texas' highest $PM_{2.5}$ emitters. **Table 7** shows the EPA's 2017 NEI data for the 9 highest $PM_{2.5}$ emitters in Jefferson County, including the statewide rank for each respective facility. A disproportionate number of emitters are located in Jefferson County. In addition, Optimus Steel, located just the Neches River from Beaumont's east side in Orange County, was the 69th largest emitter.

Table 7. 2017's largest $PM_{2.5}$ emitters in Jefferson County[67]

Facility Name	$PM_{2.5}$ Emissions (tons)	Statewide Rank
ExxonMobil Beaumont Refinery	529.433	11th highest
Motiva Port Arthur Refinery	493.278	12th highest
Valero Port Arthur Refinery	155.039	41st highest
Total Port Arthur Refinery	147.239	43rd highest
Oxbow Calcining, Port Arthur	125.463	52nd highest
ExxonMobil Beaumont Chemical Plant	121.692	53rd highest
TPC Port Neches Plant	115.208	55th highest
Air Products Port Arthur Facility	91.540	72nd highest
Chevron Port Arthur Plant	81.065	81st highest

None of the $PM_{2.5}$ air monitors in Beaumont-Port Arthur are well positioned to capture emissions from any of these facilities and certainly are not well positioned to capture the full impact of these facilities. The Hamshire and SETRPC 42 Mauriceville monitors are many miles west and east of any of these facilities, respectively. The Port Arthur Memorial School monitor is closer to them, but it is south/southeast (upwind) of the ExxonMobil refinery and chemical plant facilities in Beaumont and the TPC Port Neches plant. It is northwest of the Motiva,

[67] EPA NEI 2017 Database.

Valero, and Total refineries in Port Arthur and the Oxbow Calcining facility. Between the Port Arthur Memorial School monitor and these facilities sits West Port Arthur.

In addition to $PM_{2.5}$ emissions, some of the state's emitters of PM precursors are in the area. Precursors include NOx, SO_2, ammonia, and a variety of other gases and VOCs. This includes many of the facilities in **Tables 6 and 7**. As described previously, Oxbow Calcining is one of Texas' highest SO_2 emitters and is uniquely located adjacent and upwind to a populated urban area. The ExxonMobil Beaumont Refinery was Texas' 41st highest SO_2 emitter, at 675.514 tons in the EPA's 2017 NEI data release.[68] The Motiva, Valero, and Total refineries all emitted between 307 and 370 tons. And the Dow Beaumont Plant and Arkema Beaumont facility emitted 271.028 tons and 267.576 tons, respectively. These 7 facilities are all amongst the state's 69 highest SO_2 emitters. In regards to NOx, the X Port Arthur Refinery is the state's 26th highest emitter and ExxonMobil's Beaumont Refinery is the state's 30th highest emitter. There are no less than 8 emitters in Jefferson County emitting at least 608 tons—these are all among the state's top 100 emitters. At least 7 of the state's top 100 emitters of ammonia are located in Jefferson County. And 11 of the state's highest VOC emitters are located in Jefferson County.[69]

Due to the direct $PM_{2.5}$ emissions and likely indirect $PM_{2.5}$ formation via the above described emissions of ammonia, NOx, SO_2, and VOCs, PACAN and Ms. Young urge TCEQ to reconsider its $PM_{2.5}$ monitoring scheme in Beaumont-Port Arthur. In addition, Beaumont is home to the bustling Port of Beaumont and crossed by the busy I-10 corridor and numerous railroads. The Port of Port Arthur is also a busy seaport and both local vehicle and rail traffic related to the many industrial facilities and traffic transiting Port Arthur on its way to and from Louisiana release exhaust and create dust. Taken together, the urban center and east side of Beaumont should have $PM_{2.5}$ monitoring of its own. A $PM_{2.5}$ monitor should be located further south from the Port Arthur Memorial School monitor, closer to Port Arthur's major industry and within the West Port Arthur neighborhood.

2. Beaumont and Port Arthur should have PM_{10} monitoring

There are no monitors in the Beaumont-Port Arthur area which measure PM_{10} concentrations. While $PM_{2.5}$ is considered generally more dangerous than PM_{10}, PM_{10} is not by any means harmless. Gayla Young and PACAN reiterate the previous section in regards to PM_{10}. There is a high concentration of PM precursor emitting facilities in and near their two communities on Beaumont's east side and Port Arthur's west side, yet no PM_{10} monitors. There are multiple busy highways and two bustling seaports. Many railroads cross the area, taking materials, oil, gas, and chemicals to and from the area's many industrial facilities. And, similarly to $PM_{2.5}$, some of the state's largest direct emitters of PM_{10} are located near West Port Arthur and Beaumont's east side. **Table 8** shows these emitters.

[68] EPA NEI 2017 Database.

[69] Table 9, below, shows these 11 facilities and their specific emissions in 2017.

Table 8. Highest PM_{10} emitters in Jefferson County[70]

Facility Name	PM_{10} Emissions (tons)	Statewide Rank
ExxonMobil Beaumont Refinery	532.765	16th highest
Motiva Port Arthur Refinery	503.238	19th highest
Valero Port Arthur Refinery	251.160	34th highest
Oxbow Calcining, Port Arthur	190.924	49th highest
Total Port Arthur Refinery	147.239	61st highest
ExxonMobil Beaumont Chemical Plant	145.234	63rd highest
TPC Port Neches Plant	126.339	73rd highest
Air Products Port Arthur	91.953	95th highest

3. Pasadena needs PM monitoring, including both $PM_{2.5}$ and PM_{10}

The City of Pasadena does not currently have any PM monitors within its city limits. The nearest monitors that track either type of PM are the Park Place Monitor ($PM_{2.5}$) and the Clinton Monitor (PM_{10} and $PM_{2.5}$) are both located outside Pasadena's city limits. As previously mentioned, however, Pasadena residents face a high risk of respiratory health issues, including air toxics cancer. Thus, PM monitoring in Pasadena is necessary to protect Pasadena residents' health.

The PM_{10} measurements at the Clinton Monitor have the highest measured concentrations during the 2016-18 evaluation period. Because this is the only monitor along the Houston Ship Channel that is measuring for PM, CPC is of the opinion that TCEQ can shore up its network by increasing the amount of PM monitors in the area, starting with Pasadena. CPC urges the TCEQ to augment the Clinton, Houston East, and Houston Deer Park #2 monitors by deploying more monitors capable of tracking both PM_{10} and $PM_{2.5}$. These enhancements can be accomplished by installing monitors in the cities of Pasadena, Deer Park, La Porte, and Galena Park. CPC urges the TCEQ to install these monitors not only along the ship channel, where there is the highest concentration of industry, but also away from the Ship Channel and within residential areas of each of the respective municipalities. CPC also encourages the TCEQ to consider the placement of PM monitoring capabilities in the Houston community of Manchester. The monitor currently deployed in Manchester is often not functional with regard to its non-methane organic compounds monitoring capabilities, which is an ongoing issue that merits immediate attention.

E. Carbon Monoxide (CO) Monitoring

Exposure to CO "reduces the amount of oxygen that can be transported in a person's blood stream to the body's organs."[71] When the brain, heart, and other critical organs do not

[70] EPA NEI 2017 Database.

[71] United States Environmental Protection Agency, Basic Information about Carbon Monoxide (CO) Outdoor Air Pollution, available at https://www.epa.gov/co-pollution/basic-information-about-carbon-monoxide-co-outdoor-air-pollution.

receive enough blood, "dizziness, confusion, unconsciousness, and death" can happen.[72] While these severe effects are most usually tied to indoor exposures, outdoor exposure is of "particular concern for people with some types of heart disease."[73] When exercising, working outside, or under increased stressed, "short-term exposure to elevated CO may result in reduced oxygen to the heart accompanied by chest pain."[74]

Gayla Young reiterates and expands on the comments made in the above ozone section with regards to carbon monoxide. The largest CO emitter in Jefferson County or adjacent Orange County or any adjacent county for that matter is the ExxonMobil Beaumont Refinery. Ms. Young's children attend—and spend time outdoors—just 6 blocks from the ExxonMobil Beaumont Refinery at the Charlton-Pollard Elementary. The location of the Charlton-Pollard Elementary School is again shown below in **Figure 24**, for convenience. In addition to the many other pollutants emitted by the refinery and other industry nearby and south/southeast of the school, Ms. Young is particularly concerned for the health of her children and other students at the school. CO also likely reaches much of the rest of the east side of Beaumont. Ms. Young urges TCEQ to model CO in and around the Charlton-Pollard neighborhood and to place a CO monitor in the area.

Figure 24. Location of Charlton-Pollard Elementary School Next to the ExxonMobil Refinery

[72] Id.
[73] Id.
[74] Id.

F. Nitrogen Dioxide (NOx) Monitoring

The Beaumont Downtown air monitor measures NOx even though it is poorly positioned to capture emissions from the two largest emitters in Beaumont, ExxonMobil's Beaumont Refinery and ExxonMobil's Chemical Plant. Together, these two facilities emitted 2,474.666 tons according to EPA's 2017 NEI data release.[75] Located essentially in the same location, these two facilities together would be the largest NOx emitter in the entire Beaumont-Port Arthur area and 22nd largest in the entire state. Yet, none of Jefferson County's NOx monitors nor any of the draft 2021 AMNP's 58 NOx monitors are positioned to capture these emissions. Ms. Young urges TCEQ to add NOx monitoring near the east-central portion of Beaumont near the Charlton-Pollard and Pear Orchard neighborhoods. Such a monitor, if placed well, would be able to capture concentrations from the sprawling Exxon-Mobil complex as well as those NOx emissions which are blown from other emitters to the south and southeast of Ms. Young's part of town.

Such a monitor would improve TCEQ's compliance with Title 40 CFR Part 58, Appendix D, Section 4.3.4 which "states that the EPA Regional Administrators collaborate with the states to designate a minimum of 40 NO_2 monitoring stations nationwide that are positioned to protect susceptible and vulnerable populations (referred to as RA-40 monitoring requirements)."[76] TCEQ states it meets this requirement by placing a NOx monitor near Nederland High School.[77] While Ms. Young appreciates the need for NOx monitoring in Nederland, she notes Nederland High School is a majority white, higher income neighborhood. **Figure 25** shows, by national quintile, the percentage of households above the poverty line in the Beaumont-Port Arthur area. One can see that Nederland is, in actuality, a pocket of higher income households while the eastern side of Beaumont is noticeably and significantly poorer. Lower incomes are tied to increased health challenges and worse health outcomes by numerous studies. In addition, the CDC's most recent Social Vulnerability Index materials for Jefferson County show the Nederland area to be a pocket of lower vulnerability while Beaumont's east side is among the most vulnerable areas in Jefferson County and the entire State of Texas.[78] **Figure 26** shows a map for the overall vulnerability score, and the link provided provides more detailed information. Because of the area's high vulnerability and nearby large NOx emissions, the east side of Beaumont—the Beaumont Mary monitor or otherwise appropriate location, per modeling—would be an ideal location for a NOx monitor.

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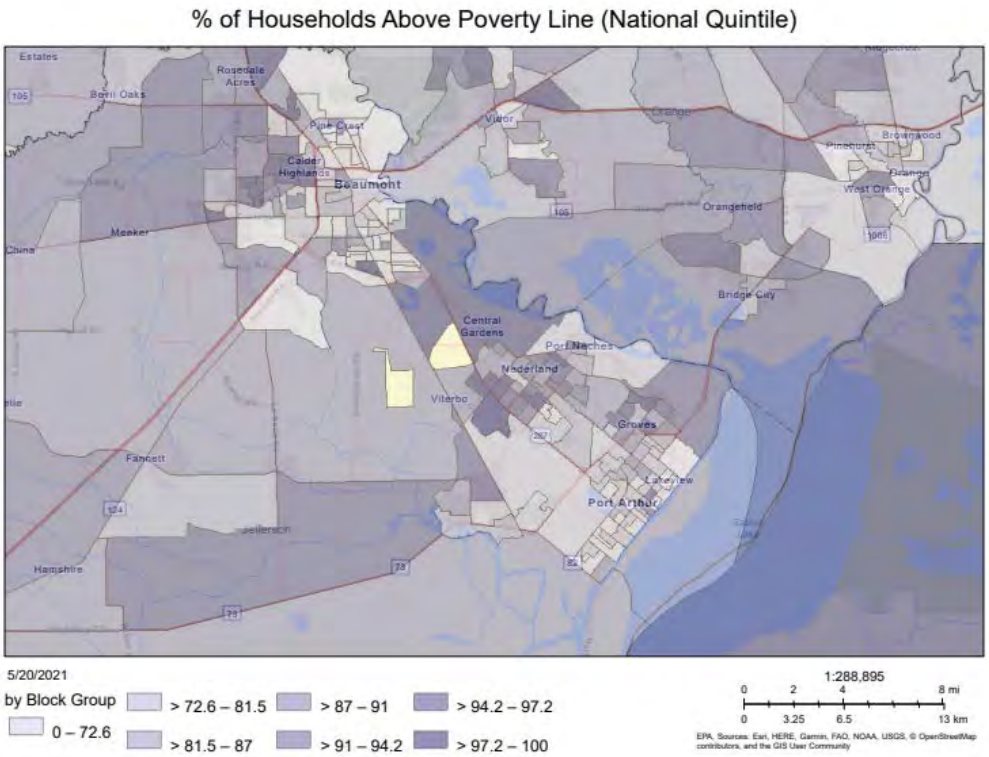
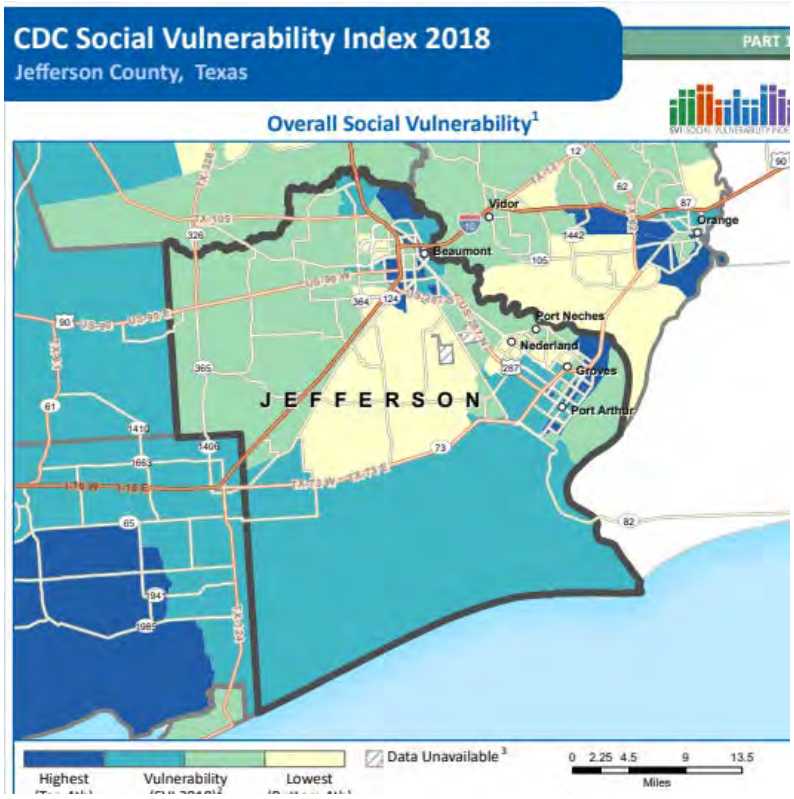
[75] EPA NEI 2017 Database.
[76] Draft 2021 AMNP at 9.
[77] Id.
[78] United States Centers for Disease Control and Prevention, Social Vulnerability Index, Jefferson County, Texas, 2018 Profile, available at https://svi.cdc.gov/Documents/CountyMaps/2018/Texas/Texas2018_Jefferson.pdf.

Figure 25. Households in Beaumont-Port Arthur by % Above Poverty Line[79]



[79] United States Environmental Protection Agency, EJScreen Mapping Tool, https://ejscreen.epa.gov/mapper/.

Figure 26. Social vulnerability in Jefferson County[80]



G. Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) Monitoring

Hazardous Air Pollutants (HAPs) are known as toxic air pollutants or air toxics which cause or may cause cancer or other serious health effects such as "damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory and other health problems."[81] Examples of HAPs include benzene, perchloroethylene, and methylene chloride. These three chemicals are all volatile organic compounds also known as VOCs. HAPs/VOCs are significant challenges across the communities represented in these comments.

1. Beaumont-Port Arthur needs more VOC and HAP monitoring

As noted in the EPA's Environmental Profile, even though pollutants such as benzene are typically below state screening levels as read on community monitors, the EPA's modeling "Regional Air Impacts Modeling Initiative" (RAIMI) indicates risk for the West Port Arthur neighborhood in the middle to upper end of the EPA's acceptable risk for long term effects based on modeled risk past the fence lines of existing facilities. Further, the EPA continues to

[80] United States Centers for Disease Control and Prevention, Social Vulnerability Index, Jefferson County, Texas, 2018 Profile, available at https://svi.cdc.gov/Documents/CountyMaps/2018/Texas/Texas2018_Jefferson.pdf.
[81] United States Environmental Protection Agency, Health and Environmental Effects of Hazardous Air Pollutants, available at https://www.epa.gov/haps/health-and-environmental-effects-hazardous-air-pollutants.

believe there was a moderate risk of exposure from exceptional accidents or large episodic releases due to accidents, power outages, or other events that might result in shelter-in-place events in Port Arthur. Given the number of industrial facilities emitting into its air shed, and the number of accidents, power outages, and other events in Beaumont, it is safe to assume similar risks exist in Beaumont's east side, as well.

These comments previously mentioned the 11 largest VOC emitters in Jefferson County. These form a disproportionate 15.28% of the largest 72 VOC polluters in the entire state. **Table 9** provides their 2017 emissions according the EPA's NEI data release and their statewide rank.

Table 9. VOC emitters in Jefferson County[82]

Facility Name	VOC Emissions (tons)	Statewide Rank
ExxonMobil Beaumont Refinery	1265.696	5
Valero Port Arthur Refinery	1130.140	8
Beaumont Chemical Plant	774.623	12
Motiva Port Arthur Refinery	593.950	23
Total Port Arthur Refinery	493.615	34
ExxonMobil Polyethylene Plant	404.549	46
Nederland Marine Terminal	273.212	63
ExxonMobil Beaumont Chemical Plant	272.156	64
Chevron Port Arthur Plant	260.942	66
BSF Total Olefins	260.449	67
TPC Port Neches Plant	239.506	72

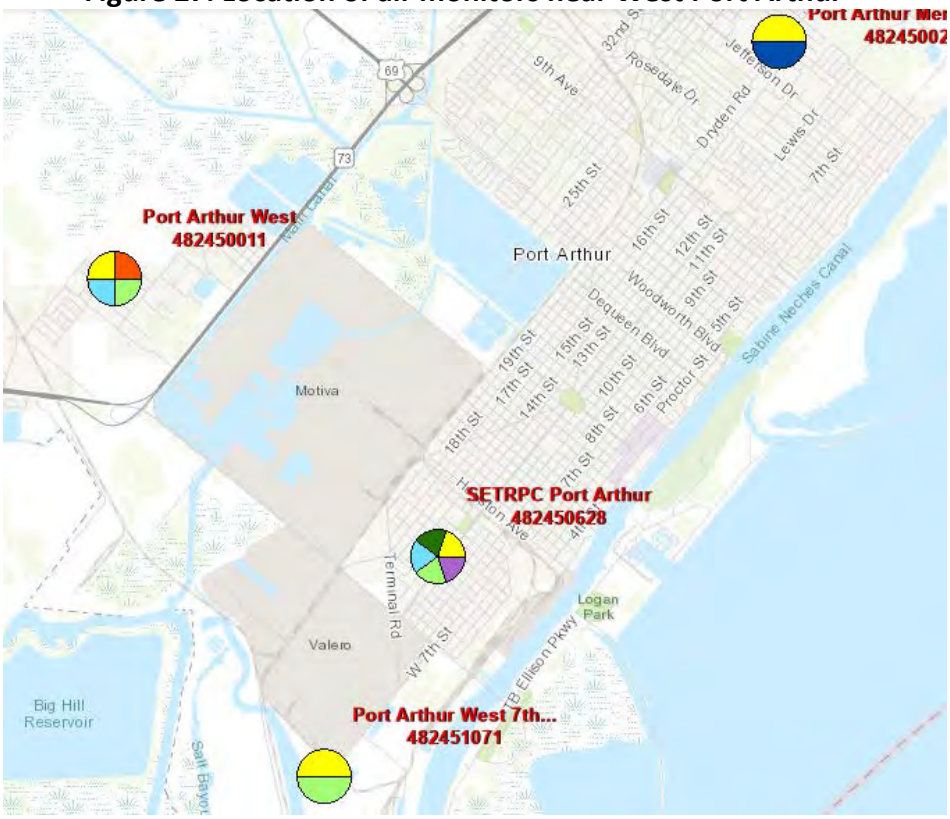
The Beaumont Mary and Beaumont Downtown air monitors measure certain VOCs. However, the Beaumont Mary air monitor's single canister sampler type only provides measurements every few days. Currently, on the TCEQ's air monitoring database, no data is available from the canister after September, 2020. This provides very little ability for Ms. Young and her neighbors to understand the presence of VOCs in their air, even though two of the state's 12 largest VOC emitters are no more than 1 or 2 miles from their homes. The Beaumont Downtown air monitor includes an automated gas chromatograph which provides consistent VOC measures throughout the day. Ms. Young urges TCEQ to install a similar sampler type at the Beaumont Mary site so to provide helpful, meaningful, and consistent VOC monitoring data to both regulatory authorities and the community.

West Port Arthur is surrounded by many of the state's largest VOC emitters. Despite this, only the Port Arthur West air monitor measures VOCs. Like the Beaumont Mary monitor, it only utilizes two single canister samplers which have no available data later than September, 2020. PACAN urges TCEQ to utilize an automated gas chromatrograph or other technology which can provide contemporary, daily VOC monitoring information to the public and regulatory authorities.

[82] EPA 2017 NEI Database.

Additionally, PACAN urges TCEQ to install a VOC monitor in the urban heart of West Port Arthur. **Figure 27** below shows the location of the Port Arthur West and other monitors near West Port Arthur. While some of PACAN's members live near the Port Arthur West air monitor—and PACAN supports the continued use of that monitor with upgraded VOC capabilities—PACAN also advocates for the protection of the many low-income individuals and families who live closer to the SETRPC Port Arthur air monitor. PACAN suggests TCEQ work to install a VOC monitor at the SETRPC site which will provide real-time data.

Figure 27. Location of air monitors near West Port Arthur[83]



2. TCEQ should ensure sufficient VOC monitoring in Pasadena.

As already mentioned, the sole air monitor in Pasadena is a VOC monitor. However, as detailed above, the monitor does not ensure adequate VOC monitoring for facilities in Pasadena that are not located near the Pasadena North monitor, including ITC Pasadena. Thus, more VOC monitors in Pasadena are necessary.

More monitors would help protect fence line communities in and around Pasadena who bear the brunt of exposure to VOC emissions whenever nearby industrial facilities malfunction or weather a disaster. During Hurricane Harvey, for example, elevated benzene readings were measured by the EPA and a private monitoring firm hired by Environmental Defense Fund and

[83] Texas Commission on Environmental Quality, Air Monitoring Sites, available at https://www.tceq.texas.gov/airquality/monops/sites/air-mon-sites.

Air Alliance Houston, who both did mobile monitoring in the Manchester area in early September 2017 after the nearby Valero Refinery suffered a damaged storage tank during the storm. After reviewing the air monitoring results, the EPA acknowledged Valero had significantly underestimated the amount of benzene that leaked out and had failed to report fully the community's exposure.

H. Monitoring Non-Criteria Pollutants

While it is not a criteria pollutant, TCEQ should conduct monitoring for Hydrogen Cyanide (HCN) in Pasadena and along the Houston Ship Channel. HCN is a colorless gas with a faint, bitter, almond-like odor that is emitted from Fluid Catalytic Cracking Units. This well-known poison has been used for executions and in chemical warfare. As a gas it may be inhaled or absorbed through the skin. Chronic and sub-chronic inhalation of HCN can cause a range of effects to the central nervous system, like "headaches, weakness, nausea, and changes in taste and smell." Such exposure can also enlarge the thyroid, affect its uptake of iodine, and alter thyroid hormone levels. Chronic inhalation of HCN may also harm pulmonary function.

Other associated adverse health effects of exposure to HCN include Parkinson-like symptoms; bilateral lesions in basal ganglia (neurodegenerative disorder); memory problems; personality changes; sudden collapse; anxiety; hyperventilation; giddiness; headache; arrhythmias; nausea; vomiting; tachycardia; bradycardia (slower-than-normal heart rate); hypertension; hyperpnoea (increased depth and rate of breathing); seizures; coma; palpitations; apnea; dilated pupils; pulmonary edema (excess fluid in the lungs); syncope (temporary loss of consciousness due to insufficient blood flow to the brain); cardiopulmonary failure (cardiac arrest); acidosis (excess of acid in the blood); encephalopathy (brain disease); diabetes; and skin burns.

In 2002, EPA recognized that industry-reported HCN emissions were much higher than it had previously understood. The EPA estimated HCN emissions from existing fluid catalytic cracking units ("FCCUs") had a chronic non-cancer target organ-specific hazard index from inhalation exposure of 1, which EPA recognizes is significant. Unfortunately, while EPA and TCEQ have set health-based effects screening levels for HCN, neither has adopted technology standards to control emissions. HCN emitting facilities have been required to conduct stack testing to determine emissions and to report those emissions to the EPA, but no off-site monitoring has been conducted. According to TRI data, facilities along the Houston Ship Channel released a combined 340,103.40 pounds of HCN in 2017. Large emitters include the ExxonMobil Baytown Refinery, the Shell Deer Park Refinery, the Valero Houston Refinery, and the LyondellBasell Houston Refinery. According to the EPA, out of all Hazardous Air Pollutants, HCN emitted from refineries is the primary driver of non-cancer health risk and the most highly ranked pollutant on the Maximum Neurological Hazard Index.[84] TCEQ must not downplay the risks posed by HCN, and must quantify those risks for the hundreds of thousands of people living near these facilities.

[84] EPA, Final Residual Risk Assessment for the Petroleum Refining Source Sector at 36, 41, 44 (September 2015).

Because no off-site monitoring has been conducted, and because no cumulative modeling has been performed, exposure levels remain a mystery. HCN has a variety of negative health effects, and existing standards leave the public uncertain about their exposure. It is imperative that TCEQ monitor this pollutant. TCEQ must conduct an in-depth review of the effects of HCN exposure on the surrounding population and effectively convey that information to the public. Satisfaction of this duty must be based on implementation of proper techniques that yield more monitoring data.

VI. CONCLUSION

LSLA and its clients, Caring of Pasadena Communities, Port Arthur Community Action Network, Gayla Rochelle Young, and Dustin Stafford hope TCEQ will reflect these comments in its final 2021 air monitoring network plan and would appreciate a complete response from TCEQ in response to the comments and concerns raised in this letter. Please contact the undersigned counsel if you have any questions or need clarification regarding the comments contained herein.

Respectfully submitted,

/s/Amy Catherine Dinn

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ATTORNEYS FOR CARING FOR PASADENA COMMUNITIES, PORT ARTHUR COMMUNITY ACTION NETWORK, GAYLA ROCHELLE YOUNG, AND DUSTIN STAFFORD

From:	Yvette Arellano
To:	tceqamnp
Subject:	Air Monitor Network Plan 2021
Date:	Friday, May 21, 2021 4:40:48 PM
Attachments:	Air Monitor Network Plan 2021 Comments Final .pdf

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Good afternoon,

Attached below are comments on the TCEQ Air Monitor Network Plan 2021 submitted on behalf of Achieving Community Tasks Successfully, Coalition of Community Organizations, and Fenceline Watch.

Thank you for allowing us the opportunity.

-Shiv Srivastava
Fenceline Watch

May 21, 2021

Re: Public comment and public hearing request on proposed 2021 Annual Monitoring Network Plan by Achieving Community Tasks Successfully, Coalition of Community Organizations and Fenceline Watch

As community members and advocates who live, work, worship, recreate and protect our communities for our families and future generations, Achieving Community Tasks Successfully, Coalition of Community Organizations and Fenceline Watch respectfully submit the following comments to the Texas Commission on Environmental Quality for the 2021 proposed Annual Monitoring Network Plan.

There are four items we are highlighting in this comment set and they are: comments over process and means to increase public participation, support for additional monitoring considerations and comments on current monitoring locations with supporting information.

I. Process and Increasing Public Engagement

Following up on previous year recommendations and expanding on those recommendations we request that these plans be subject to public proceedings through notice and comment rulemaking along with five public meetings in Houston, El Paso, Central Texas, Panhandle and Brownsville for some geographic representation. Having identified two areas in our comment that present linguistic barriers we advise the TCEQ to translate this plan into Spanish and to follow the same in areas where English is not the dominant language. In 2021 TCEQ has already embarked on a historic rulemaking over public participation amendments including language and we hope to see TCEQ resolve this issue.

II. Appendix M: 2021 Additional Monitoring Considerations

First We appreciate and support the additional monitoring considerations for Houston Fifth Ward area, Houston Pleasantville and Gregory-Portland are in San Patricio County and would like to add recommendations with context.

A. Proposed Houston Fifth Ward

There is mounting evidence of public health threats in Fifth Ward from lead and other contaminants. A 2014 study reports that almost all of Fifth Ward experiences amongst the highest probabilities for very low birth weights.[1] Even in 2019, Fifth Ward is a lead poisoning hot spot. The Agency for Toxic Substances and Disease Registry recognizes that lead can be released into the air from windblown dust and the weathering of lead-

[1] Thompson, J.A., et al., Evaluating geostatistical modeling of exceedance probability as the first step in disease cluster investigations: very low birth weights near toxic Texas sites 607-611 (2014), available https://www.ncbi.nlm.nih.gov/pubmed/24906417,

painted surfaces.[2] Earlier this year, the Houston Health Department, Bureau of Com. unity and Children's Environmental Health was awarded a grant "to expand a recent and successful place-based lead poisoning prevention pilot to the Fifth Ward, a lead poisoning hot spot." [3]

Proposed Houston Fifth Ward air monitor

- Fifth Ward air monitor should include: Air Toxics VOC(continuous), PM2.5 (continuous), CO, SO2, H2S, TNMOC (continuous), Ozone (continuous)
    - 86th percentile in the country for Ozone
    - 96th percentile for NATA Diesel PM
    - 91st percentile for Air Toxics Cancer Risk
    - 90th percentile for Respiratory Hazard Index
    - 99th percentile for Superfund Proximity
    - 87th for Hazardous Waste Proximity

EJSCREEN Report (Version 2020)

the User Specified Area

TEXAS, EPA Region 6

Approximate Population: 10,898

Input Area (sq. miles): 2.40

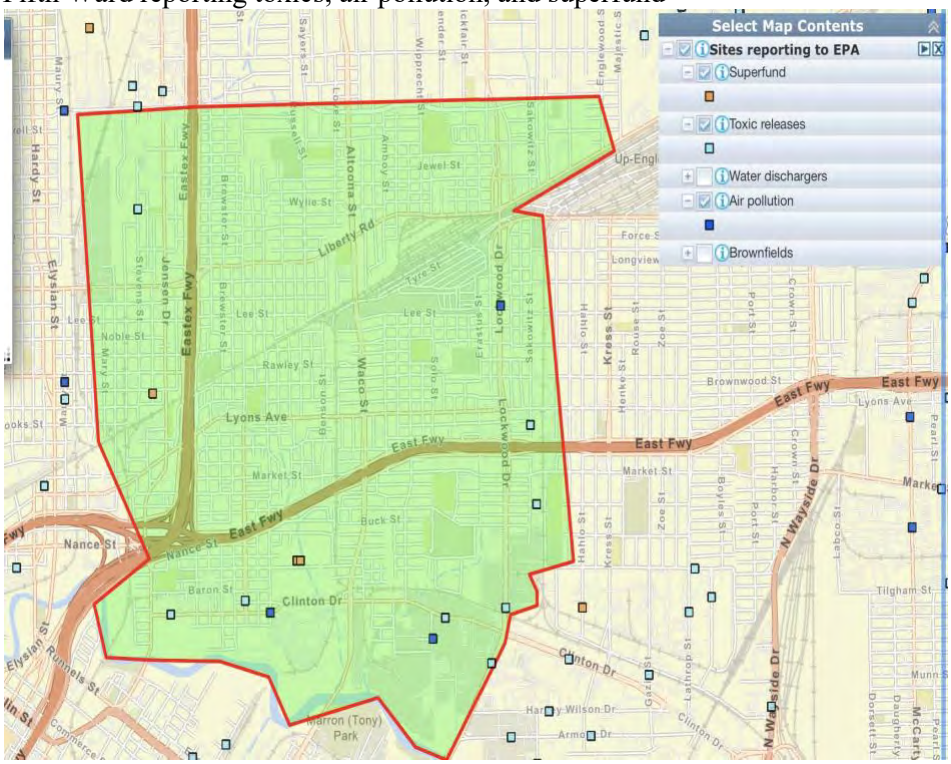
Fifth Ward

Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
EJ Indexes			
EJ Index for Particulate Matter (PM 2.5)	76	82	90
EJ Index for Ozone	72	77	86
EJ Index for NATA* Diesel PM	94	96	96
EJ Index for NATA* Air Toxics Cancer Risk	79	84	91
EJ Index for NATA* Respiratory Hazard Index	83	86	90
EJ Index for Traffic Proximity and Volume	97	98	96
EJ Index for Lead Paint Indicator	94	95	94
EJ Index for Superfund Proximity	99	99	99
EJ Index for RMP Proximity	92	94	96
EJ Index for Hazardous Waste Proximity	93	94	87
EJ Index for Wastewater Discharge Indicator	94	95	96

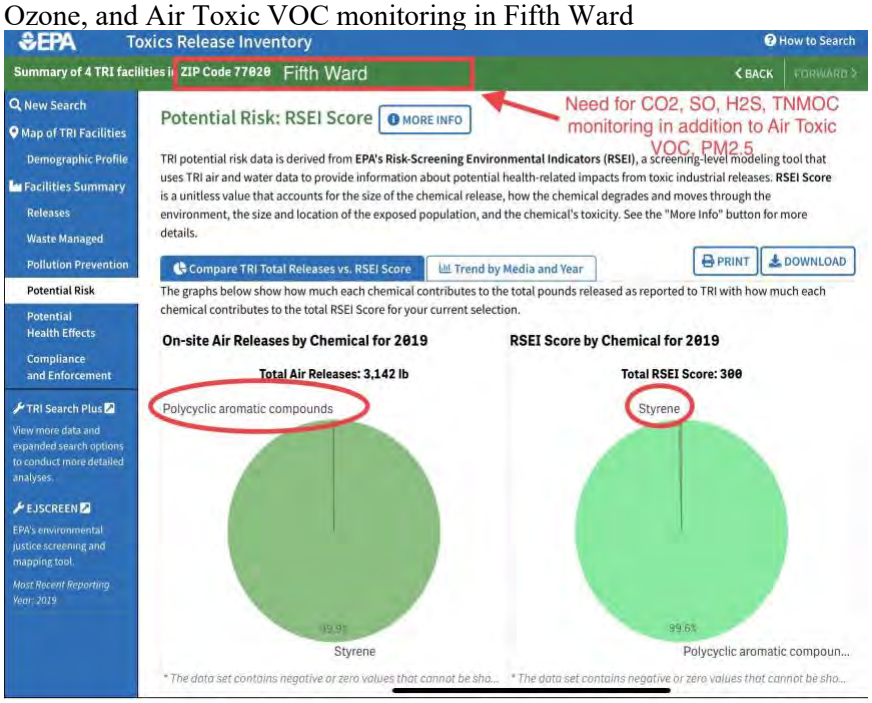
[2] Agency for Toxic Substances & Disease Registry, Public Health Statement for Lead (Aug. 2007), available https://www.atsdr.cdc.gov/phs/phs.asp?id=92&tid=22

[3] National Environmental Health Association, NEHA and Partners Award HiAP and Lead Poisoning Prevention Funds (Jan. 18, 2019), https://www.neha.org/news-events/latest-news/neha-and-partners-award-hiap-and-leadpoisoning-prevention-funds.

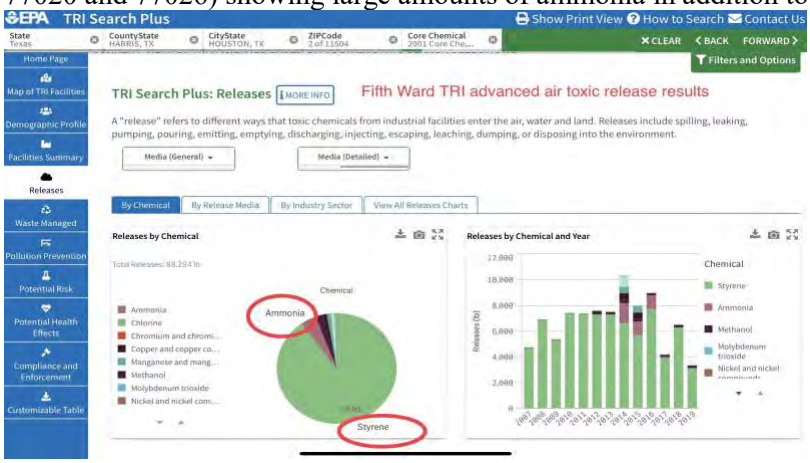
Sites in Fifth Ward reporting toxics, air pollution, and superfund



- Air pollutant health risk TRI assessment showing the need for CO2, SO2, H2S, TNMOC, Ozone, and Air Toxic VOC monitoring in Fifth Ward



- Advanced TRI air pollutant chemical inventory of Fifth Ward (data for both zipcodes of 77020 and 77026) showing large amounts of ammonia in addition to styrene



B. Proposed Pleasantville air monitor

A monitor for the area of Pleasantville is completely necessary but it must be equipped with the ability to capture other emissions of high concern including continuous monitoring for both Chromium and VOC. The information below illustrates the need and health hazards as illustrated by the EJSCREEN and more importantly the EPA TRI information.

Numerous industrial facilities within the Super Neighborhood's footprint encircle the two residential neighborhoods. These facilities include two metal recycling plants. In addition, there are at least eight (8) facilities located in the area registered with the EPA and regularly making TRI reports of VOCs and other chemicals being released in the area in the last few years. Because of the industrial nature of this neighborhood, Pleasantville was included as one of 9 super neighborhoods studied in Mayor White's 2005 Task Force on Air Pollution health risks in Houston. Within one mile of the Pleasantville Area, there are 37 TRI reporting facilities, 13 large quantity generators of hazardous waste, 3 facilities that treat, store or dispose of hazardous waste, 9 major discharges of air pollutants, 4 major storm water discharging facilities, and 1 radioactive waste site, which is also a Superfund site. The Pleasantville neighborhood is predominantly Black/African-American and Latino/Hispanic, with 64% of Pleasantville Elementary School's 301 students identified as Black/African-American, 34% as Latino/Hispanic, and 2% as white or mixed race. 95% of Pleasantville Elementary students qualify for free or reduced price lunch and 15% are learning English as a second language.3 In 2015, eighteen (18) percent of the population living in the Super Neighborhood boundaries was over the age of 65% and twenty (20) percent was under the age of 18. The median household income in this area was $32,899 in 2015.

Pleasantville air monitor should include: Air Toxics VOC (continuous), PM2.5 (continuous), CO, SO2, H2S, TNMOC (continuous) and chromium (continuous)

- 93rd percentile in the country for Air Toxic Cancer Risk
- 90th percentile in the US for PM2.5
- 94th percentile NATA Diesel PM

- 91st for Traffic Proximity and Volume
- 91st for Respiratory Hazard Index

EJSCREEN Report (Version 2020)

the User Specified Area, TEXAS, EPA Region 6

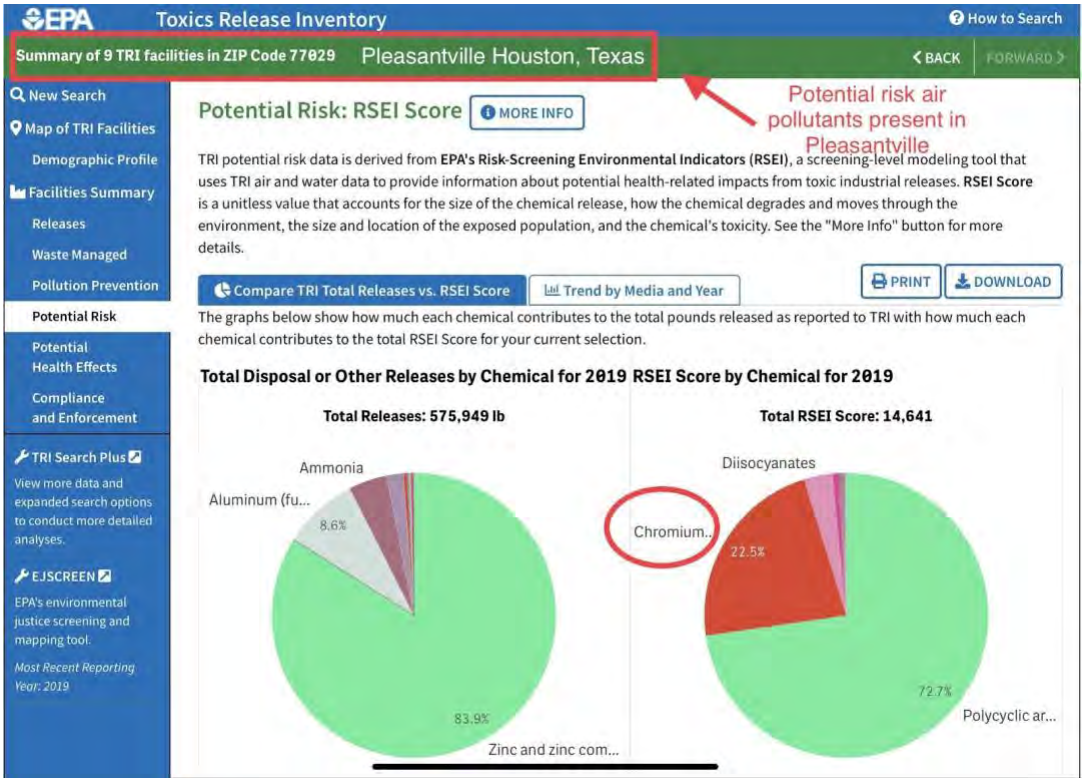
Approximate Population: 3,096

Input Area (sq. miles): 3.51

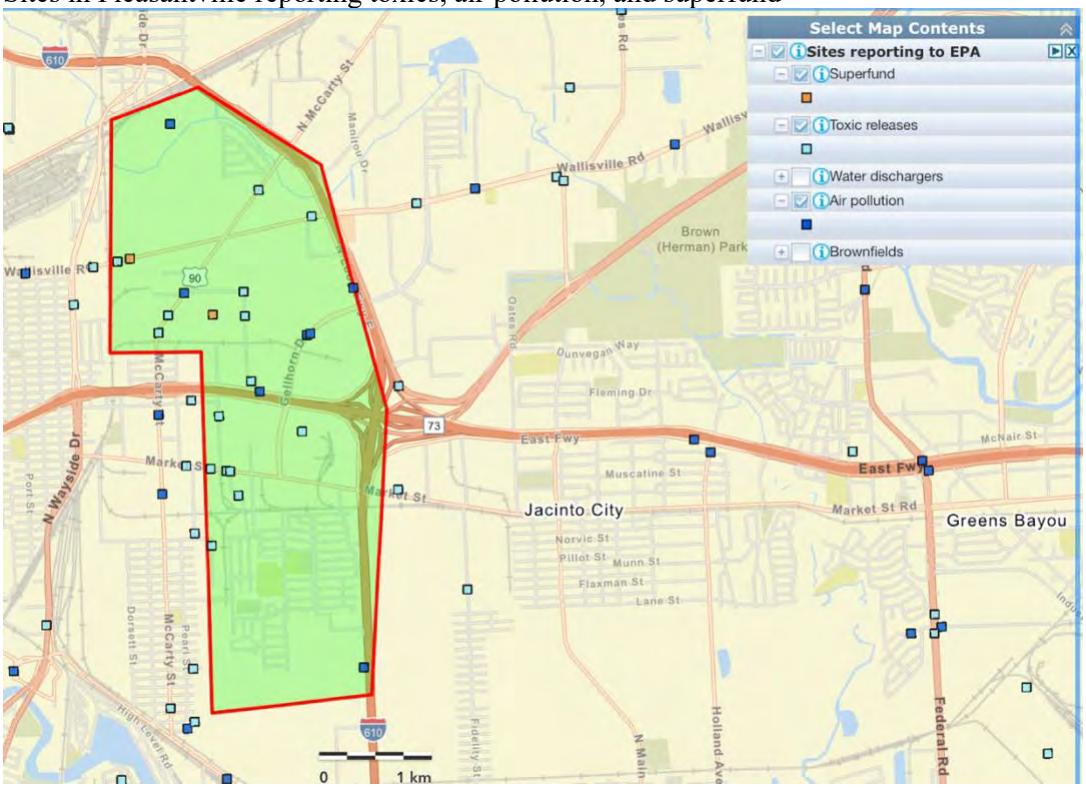
Pleasantville

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	77	83	90
EJ Index for Ozone	73	78	86
EJ Index for NATA* Diesel PM	91	94	94
EJ Index for NATA* Air Toxics Cancer Risk	83	87	93
EJ Index for NATA* Respiratory Hazard Index	84	87	91
EJ Index for Traffic Proximity and Volume	91	93	91
EJ Index for Lead Paint Indicator	98	98	97
EJ Index for Superfund Proximity	89	91	93
EJ Index for RMP Proximity	93	95	97
EJ Index for Hazardous Waste Proximity	92	93	86
EJ Index for Wastewater Discharge Indicator	94	95	95

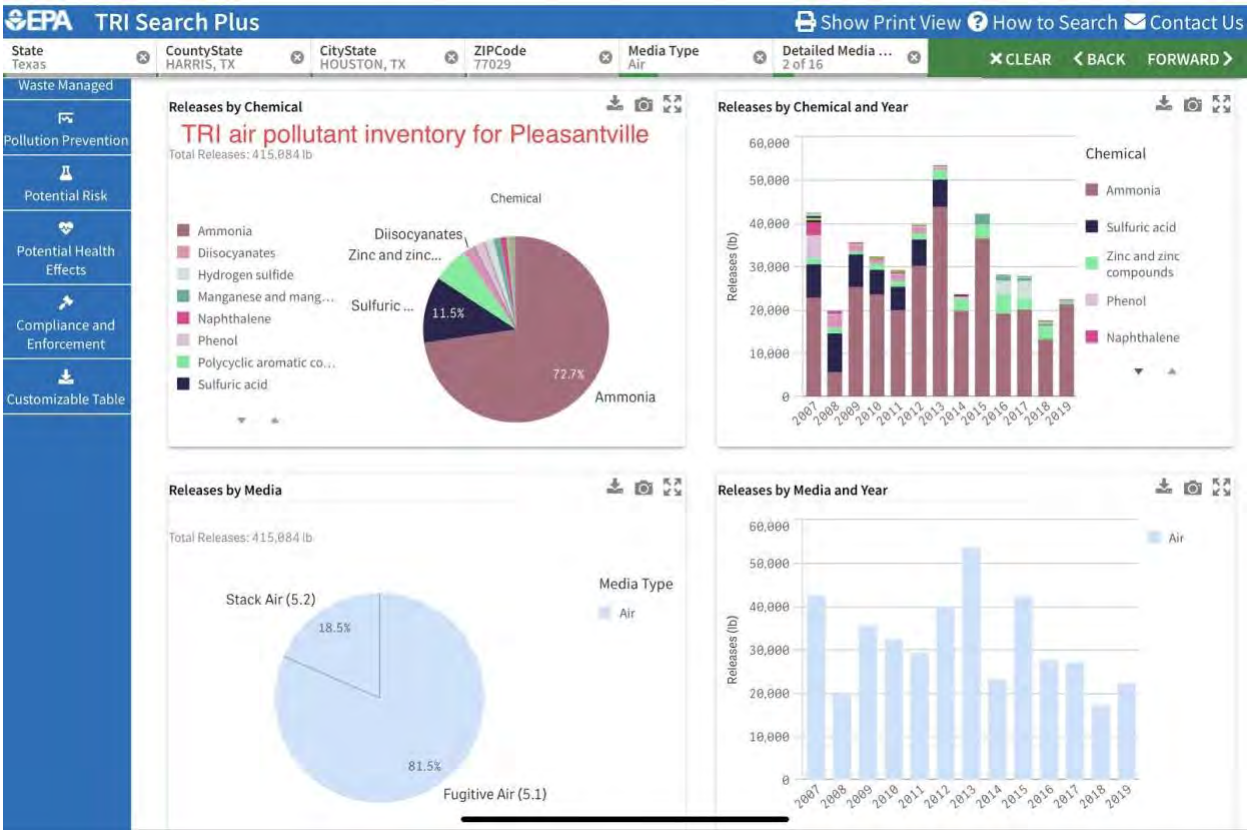
Air pollutant health risk TRI assessment showing the need for Chromium air monitoring in Pleasantville



- Sites in Pleasantville reporting toxics, air pollution, and superfund



- TRI air pollutant inventory for Pleasantville with most recent data (2019)



C. Proposed Gregory-Portland area in San Patricio County

Gregory is the impending site of EXXON SABIC, the world largest Ethylene cracker[4] and unprecedented emissions in the area. We strongly recommend that any air monitor placed measure continuous emissions for enhanced VOCS Air Toxics VOC monitoring. The contested case hearing recently concluded for Gulf Coast Growth Ventures Asset Holding LLC ("GCGV"), an ExxonMobil and SABIC joint venture, for the construction of the largest ethane cracker in North America to be sited in Gregory, Texas—a predominantly low-income Latino community.[5] The Administrative Law Judge has issued a Proposal for Decision recommending issuance of the permits and the TCEQ General Counsel is accepting exceptions to the Proposal until May 29, 2019. At the hearing, consulting engineering expert Dr. Ranajit Sahu testified that plant wide allowable emission totals for this facility will be:[6]

Pollutant	Tons per year (tpy)
Volatile organic compounds	976.33
Nitrogen dioxide	525.03
Particulate matter	185.82
Particulate matter of 10 micrometers or less	176.35
Particulate matter of 2.5 micrometers or less	167.51
Sulfur dioxide	38.49

Further, that permitted limits for this facility alone were very close to exceeding their respective NAAQS, especially the nitrogen dioxide standard. New emissions of VOCs will far exceed new emissions of PM10 by a factor of greater than five. Based on this information, it is possible that emissions from this facility alone will cause exceedances of applicable NAAQS.

III. Existing Monitors (Baytown & Houston East)

A. Baytown Garth 8622 Garth Road Unit A (pg 53/B-25)

- Should have CO, SO2, H2S, TNMOC
    - This area ranks in the 80th percentile for NATA Respiratory Hazard Index

[4] https://corporate.exxonmobil.com/News/Newsroom/News-releases/2019/0613_ExxonMobil-and-SABIC-to-proceed-with-Gulf-Coast-Growth-Ventures-project

[5] Application of GCGV Asset Holding, LLC, for Air Quality Permit Nos. 146425/PSDTX1518 & 146459/PSDTX1520 in San Patricio County, Texas, SOAH Docket Nos. 582-18-4846, 582-18-4847; TCEQ Docket Nos. 2018-0899-AIR, 2018-0900-AIR.

[6] 14 Id., Direct Testimony of Ranajit Sahu, PH.D., QEP, CEM (Nevada) at 21-22 (Dec. 7, 2018)

- 82nd percentile for Traffic Proximity and Volume

EJSCREEN Report (Version 2020)

3 miles Ring Centered at 29.823919,-94.984108, TEXAS, EPA Region 6

Approximate Population: 20,218

Input Area (sq. miles): 28.27

Baytown Garth

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	62	69	80
EJ Index for Ozone	59	65	77
EJ Index for NATA* Diesel PM	66	72	79
EJ Index for NATA* Air Toxics Cancer Risk	70	76	85
EJ Index for NATA* Respiratory Hazard Index	65	71	80
EJ Index for Traffic Proximity and Volume	77	82	82
EJ Index for Lead Paint Indicator	71	72	76
EJ Index for Superfund Proximity	84	88	89
EJ Index for RMP Proximity	78	83	89
EJ Index for Hazardous Waste Proximity	72	74	74
EJ Index for Wastewater Discharge Indicator	71	76	86

- Neighborhoods near: Springfield Estates, Meadowlake Village, Preston Place, Brad Meadows

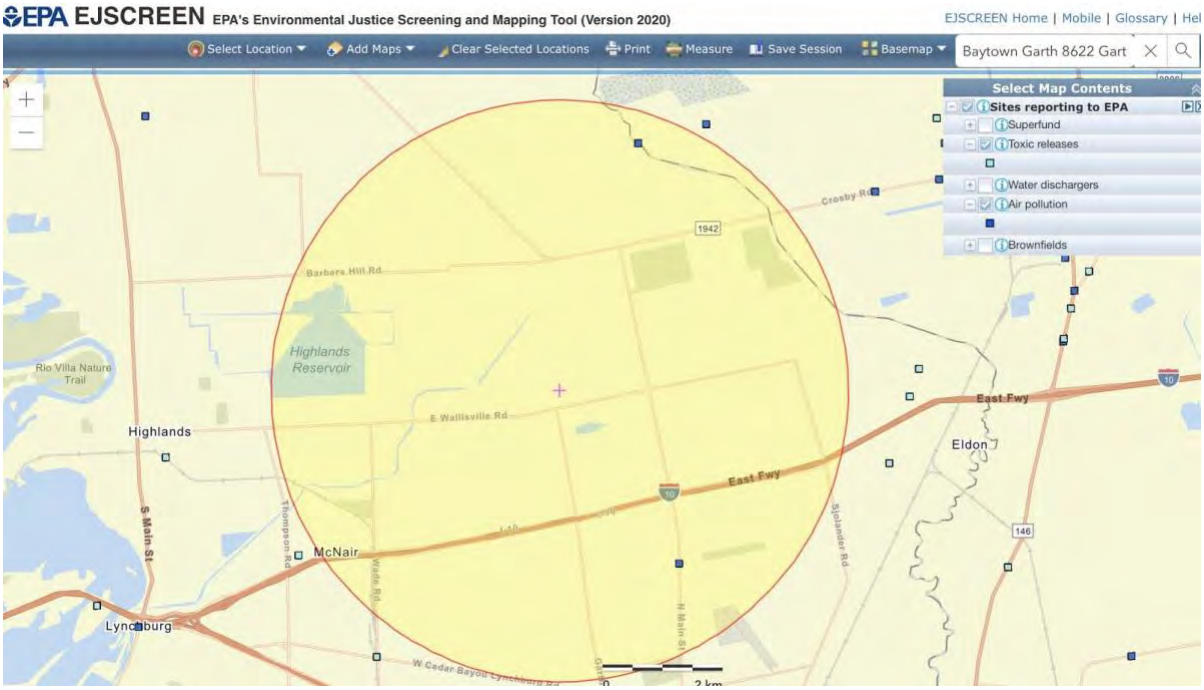
- Schools near: Goose Creek Memorial High

- Goose Creek Memorial Elementary [7]
  - 57.3% Economically Disadvantaged
  - 7.8% English Language Learner
  - 11.6% Students Receiving Special Education Services

[7] https://txschools.gov/schools/101911015/profile

- 56.9% Hispanic Student Population
- 20.3% White
- 18% African American
- Total Students (2019-2020) – 2,098

- EJSCREEN showing toxic releases and Air Pollution within a three mile radius of Baytown Garth air monitor



B. Houston East 1262 ½ Mae Drive (pg 60/B-32)

The Houston East monitor currently only monitors for nitrogen, meteorological information and PM 2.5 but not Air Toxics. The area is a concern for us because of the close proximity to schools is north of neighboring industrial entities including but not limited to Magellan Terminals, Greens Port Industrial Terminal and the American Plant Food Corporation that produces fertilizer, an herbicide adjuvant, municipal water treatment, fire inhibitor suppressant, and an animal feed supplement[8] according to their own website. Our additional concern is that both schools Harris R P Elementary and Pyburn Elementary in near the monitor have large English Language Learner populations of 66.6% and 53.4% respectively indicating a large LEP population. A population that would have linguistic barriers to participating in any Air Network Monitor Plans. We encourage TCEQ to address these issues as they have in the rulemaking for the public participation amendment for the permitting process for air, water and waste permits.

- Air Toxics VOC
  - The 3 mile radius around this air monitor ranks in the 97th percentile for Air Toxics Cancer Risk
  - This area ranks in the 97th percentile in the country for Respiratory Hazard Index

[8] https://americanplantfood.com/about-us/

EJSCREEN Report (Version 2020)

3 miles Ring Centered at 29.767875,-95.220475, TEXAS, EPA Region 6

Approximate Population: 76,587

Input Area (sq. miles): 28.27

Houston East

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	87	91	95
EJ Index for Ozone	83	87	92
EJ Index for NATA* Diesel PM	92	94	94
EJ Index for NATA* Air Toxics Cancer Risk	93	95	97
EJ Index for NATA* Respiratory Hazard Index	94	96	97
EJ Index for Traffic Proximity and Volume	91	93	91
EJ Index for Lead Paint Indicator	92	94	92
EJ Index for Superfund Proximity	92	94	94
EJ Index for RMP Proximity	97	98	98
EJ Index for Hazardous Waste Proximity	98	98	92
EJ Index for Wastewater Discharge Indicator	92	93	94

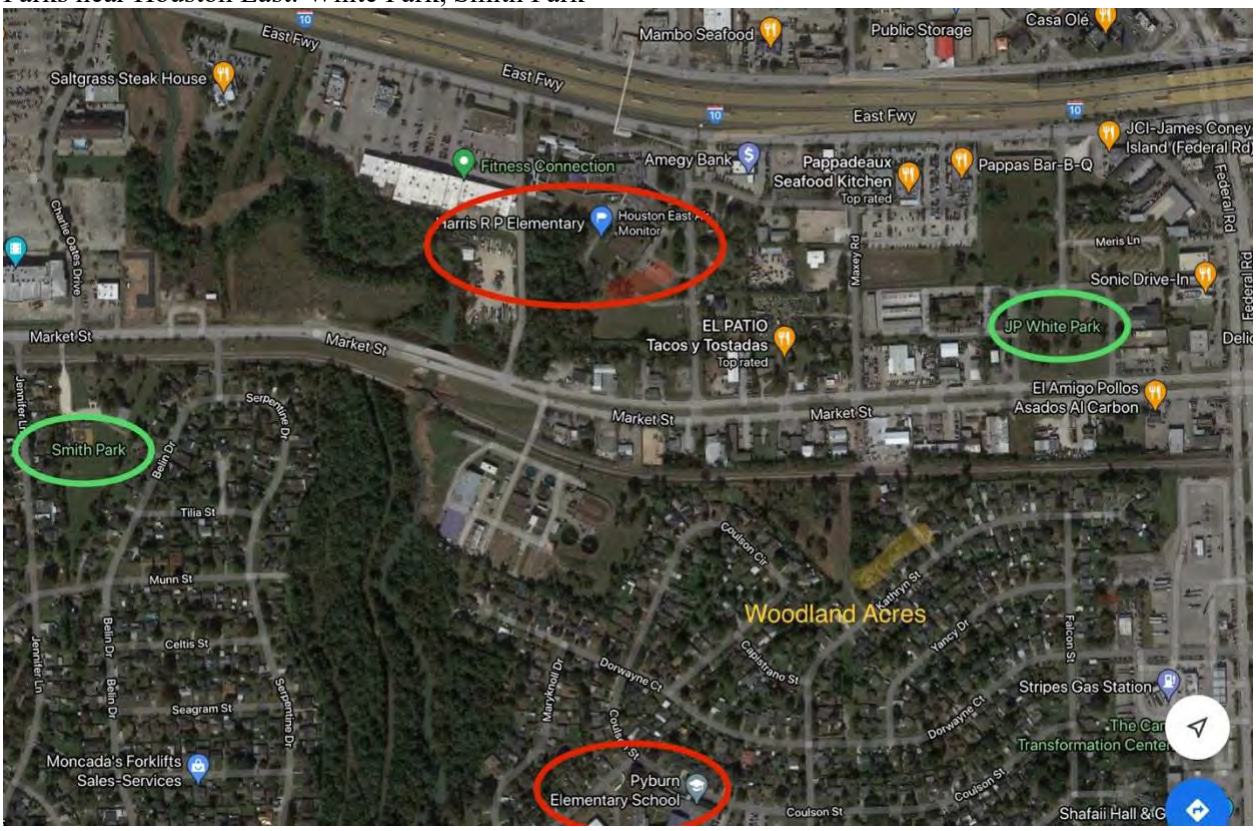
- North of Woodland Acres neighborhood
- Schools near Houston East: Harris Elementary, Pyburn Elementary
- **Harris R P Elementary** [9]
  - 97.9% Economically Disadvantaged
  - 66.6% English Language Learner
  - 6.9% Students Receiving Special Education Services
  - Total Students Enrollment (2019-2020) – 620

- **Pyburn Elementary:** [10]
  - 86% Economically Disadvantaged
  - 53.4% English Language Learner
  - 10.1% Students Receiving Special Education Services
  - 95.6% Hispanic Student Population
  - Total Students (2019-2020) - 592

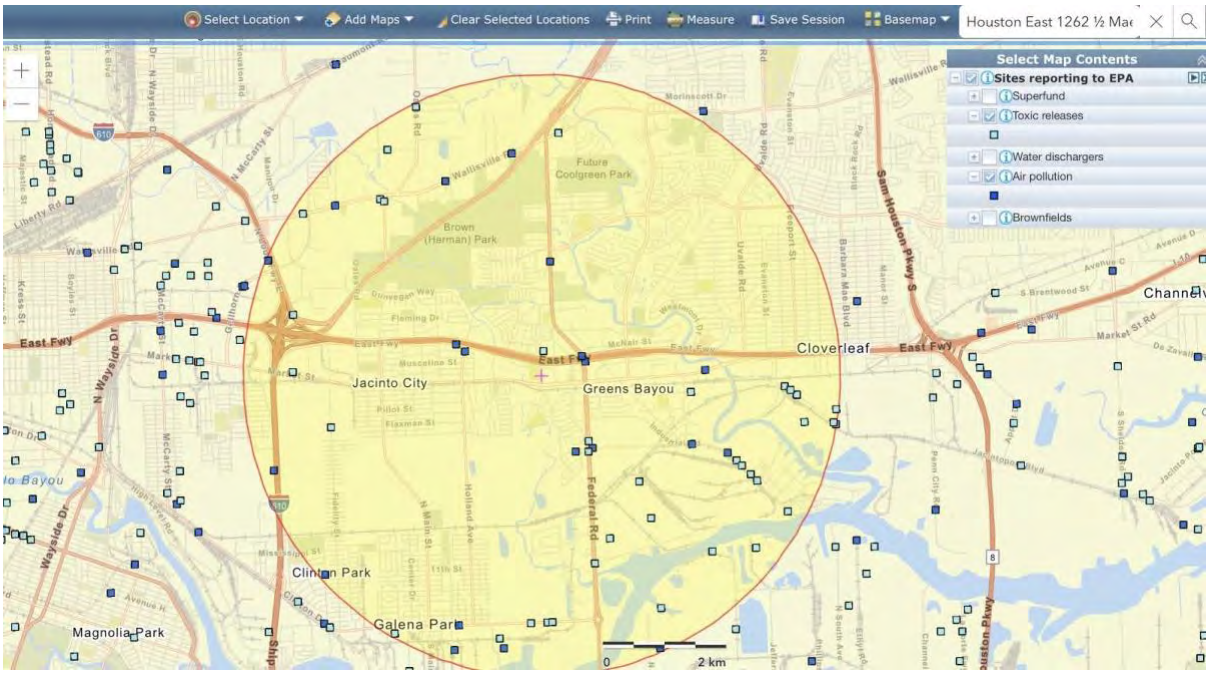
[9] https://txschools.gov/schools/101912167/profile

[10] https://txschools.gov/schools/101910109/profile

- Parks near Houston East: White Park, Smith Park



- EJSCREEN showing toxic releases and Air Pollution within a three mile radius of Houston East air monitor



C. Park Place: 7421 Park Place Blvd (pg 64/B-36)

Our recommendation is for this monitor to include air toxics and as our previous recommendation states this monitor also sits in an area with two school Goldcrest and Seguin Elementary that service large English Language Learner populations of 64.5% and 58.1% respectively. TCEQ should consider approaching this process with increased access by providing a spanish version of this plan to remove language barriers present.

- Park Place monitor should include air toxics
    - Ranks in the 95th percentile for Air Toxics Cancer Risks
    - 93rd percentile in the country for Respiratory Hazard Index

EJSCREEN Report (Version 2020)

3 miles Ring Centered at 29.685578,-95.294707, TEXAS, EPA Region 6

Approximate Population: 134,300

Input Area (sq. miles): 28.27

Park Place

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	83	87	93
EJ Index for Ozone	79	83	90
EJ Index for NATA* Diesel PM	92	94	95
EJ Index for NATA* Air Toxics Cancer Risk	89	92	95
EJ Index for NATA* Respiratory Hazard Index	87	90	93
EJ Index for Traffic Proximity and Volume	96	97	95
EJ Index for Lead Paint Indicator	96	97	95
EJ Index for Superfund Proximity	94	96	96
EJ Index for RMP Proximity	88	91	94
EJ Index for Hazardous Waste Proximity	97	97	91
EJ Index for Wastewater Discharge Indicator	88	90	93

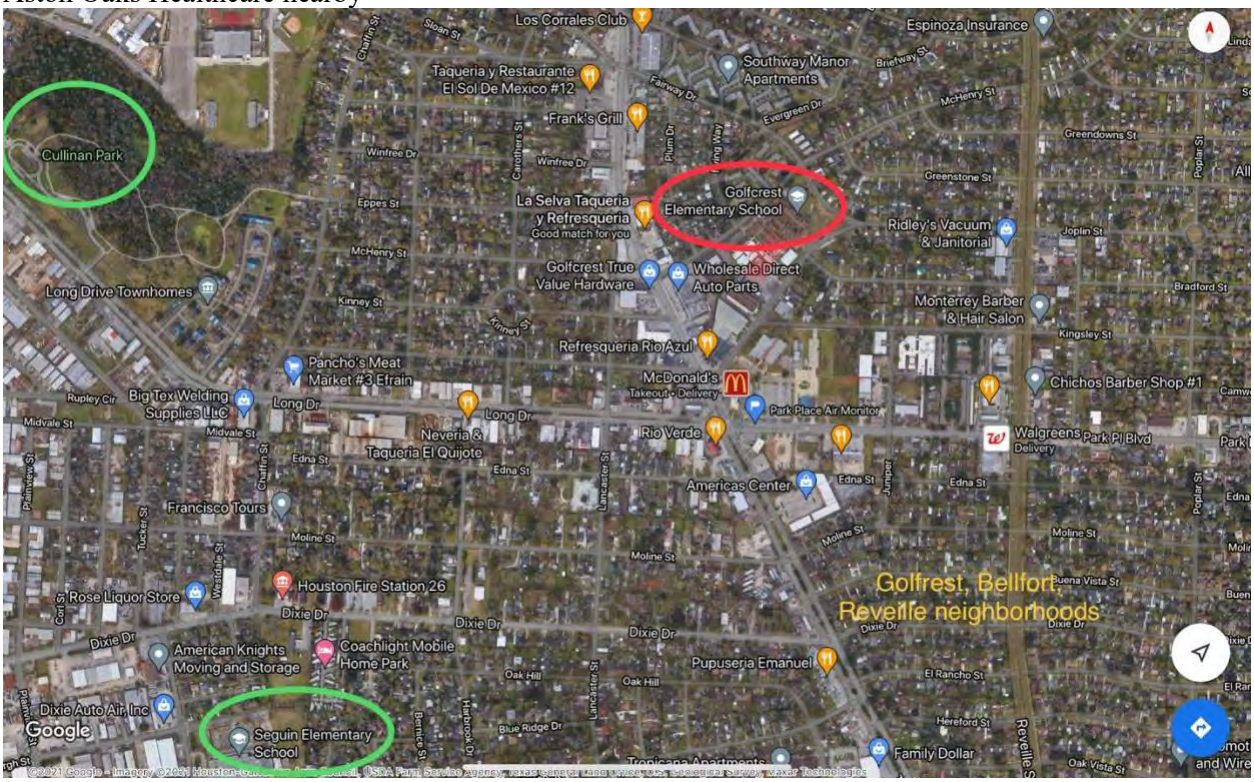
- Situated in the Golfrest, Bellfort, Reveille neighborhoods
- Parks near Park Place monitor: Cullinan Park
- Schools near Park Place:
- Golfcrest Elementary [11]
    - 98.2% Economically Disadvantaged
    - 64.5% English Language Learner
    - 9.4% Students Receiving Special Education Services
    - 95.2% Hispanic Student Population
    - 3.9% African American
    - Total Students (2019-2020) - 608
- Seguin Elementary [12]
    - 93.6% Economically Disadvantaged
    - 58.1% English Language Learner
    - 6.6% Students Receiving Special Education Services
    - 88.8% Hispanic Student Population
    - 9.7% African American

[11] https://txschools.gov/schools/101912159/profile?lang=en

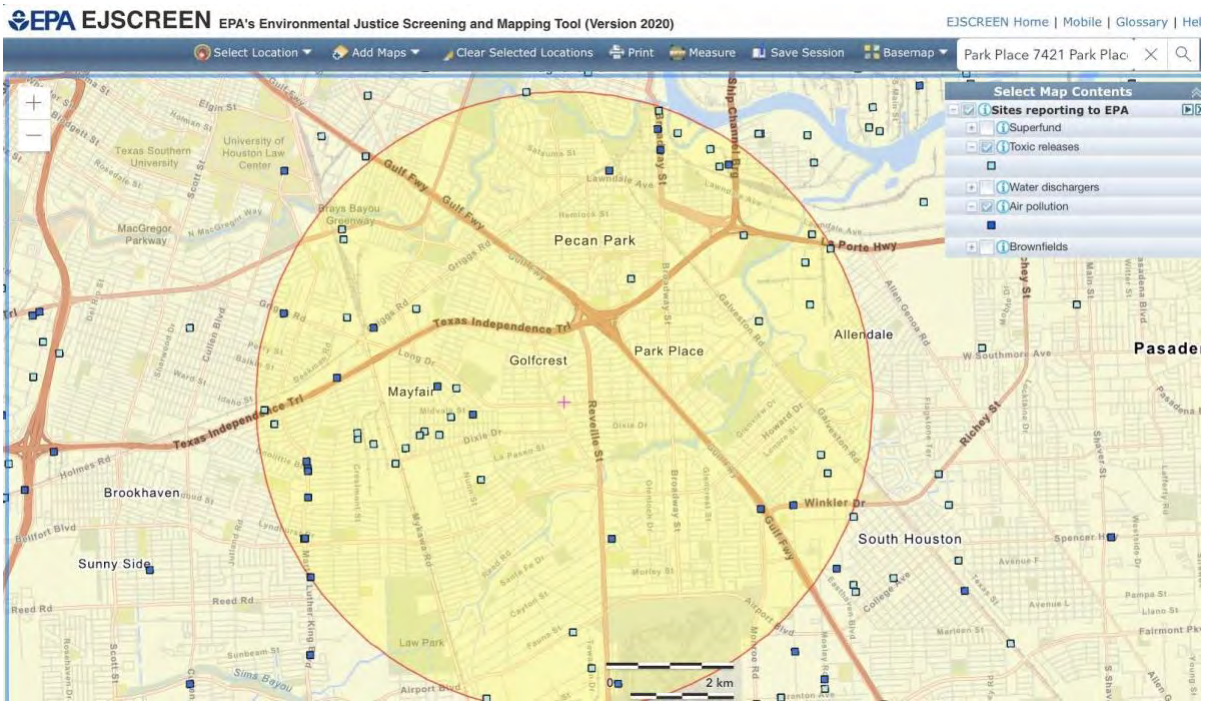
[12] https://txschools.gov/schools/101912373/profile?lang=en

- Total Students (2019-2020) - 534

- Aston Oaks Healthcare nearby



- EJSCREEN showing toxic releases and Air Pollution within a three mile radius of Park Place air monitor



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Rev. James Caldwell
Executive Director
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Yvette Arellano
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Appendix B

Ambient Air Monitoring Network Site List

Texas Commission on Environmental Quality
2021 Annual Monitoring Network Plan

Appendix B: Ambient Air Monitoring Network Site List

Texas MSA - CBSA	AQS Site Number	Site Name	Address - Location	Sampler Type	Network	Methods	Operating Schedule	Location Setting	Monitoring Objective	Spatial Scale	Latitude	Longitude
El Paso	481410693	Van Buren	2700 Harrison Avenue, El Paso	PM10 (FRM)	SPM	HiVol Gravimetric	24 Hours; 1/6 Days	Urban and Center City	Population Exposure	Neighborhood	31.81337	-106.46452
El Paso	481410693	Van Buren	2700 Harrison Avenue, El Paso	Relative Humidity	SPM	Humidity Sensor	Continuous	Urban and Center City	Population Exposure	Neighborhood	31.81337	-106.46452
El Paso	481410693	Van Buren	2700 Harrison Avenue, El Paso	Temperature (Outdoor)	SPM	Aspirated Thermister	Continuous	Urban and Center City	Population Exposure	Neighborhood	31.81337	-106.46452
El Paso	481410693	Van Buren	2700 Harrison Avenue, El Paso	Wind	SPM	Potentiometer Cup Anemometer	Continuous	Urban and Center City	Population Exposure	Neighborhood	31.81337	-106.46452
Granbury*	482210001	Granbury	200 N Gordon Street, Granbury	O3	SLAMS	UV Photometric	Continuous	Suburban	Population Exposure	Neighborhood	32.44230	-97.80353
Granbury*	482210001	Granbury	200 N Gordon Street, Granbury	Solar Radiation	SPM	Photovoltaic	Continuous	Suburban	General, Background	Middle Scale	32.44230	-97.80353
Granbury*	482210001	Granbury	200 N Gordon Street, Granbury	Temperature (Outdoor)	SPM	Aspirated Thermister	Continuous	Suburban	General, Background	Middle Scale	32.44230	-97.80353
Granbury*	482210001	Granbury	200 N Gordon Street, Granbury	Wind	SPM	Potentiometer Cup Anemometer	Continuous	Suburban	General, Background	Middle Scale	32.44230	-97.80353
Houston-The Woodlands-Sugar Land	482010058	Baytown	7210 1/2 Bayway Drive, Baytown	PM2.5 (Beta)	SLAMS	Beta Attenuation	Continuous	Suburban	Population Exposure	Neighborhood	29.77070	-95.03123
Houston-The Woodlands-Sugar Land	482010058	Baytown	7210 1/2 Bayway Drive, Baytown	Temperature (Outdoor)	SPM	Aspirated Thermister	Continuous	Suburban	Highest Concentration	Neighborhood	29.77070	-95.03123
Houston-The Woodlands-Sugar Land	482010058	Baytown	7210 1/2 Bayway Drive, Baytown	Wind	SPM	Potentiometer Cup Anemometer	Continuous	Suburban	Highest Concentration	Neighborhood	29.77070	-95.03123
Houston-The Woodlands-Sugar Land	482011017	Baytown Garth	8622 Garth Road Unit A, Baytown	O3	SLAMS	UV Photometric	Continuous	Suburban	Max Ozone Concentration	Neighborhood	29.82335	-94.98387
Houston-The Woodlands-Sugar Land	482011017	Baytown Garth	8622 Garth Road Unit A, Baytown	Solar Radiation	SPM	Photovoltaic	Continuous	Suburban	Population Exposure	Neighborhood	29.82335	-94.98387
Houston-The Woodlands-Sugar Land	482011017	Baytown Garth	8622 Garth Road Unit A, Baytown	Temperature (Outdoor)	SPM	Aspirated Thermister	Continuous	Suburban	Population Exposure	Neighborhood	29.82335	-94.98387
Houston-The Woodlands-Sugar Land	482011017	Baytown Garth	8622 Garth Road Unit A, Baytown	Wind	SPM	Potentiometer Cup Anemometer	Continuous	Suburban	Population Exposure	Neighborhood	29.82335	-94.98387
Houston-The Woodlands-Sugar Land	482010026	Channelview	1405 Sheldon Road, Channelview	Dew Point	SPM	Derived at site	Continuous	Suburban	Highest Concentration	Neighborhood	29.80271	-95.12549

Baytown Garth should monitor CO_SO2_H2S_TNMOC. Area ranks in 80th percentile for NATA Respiratory Hazard Index. See Attached.

Appendix B: Ambient Air Monitoring Network Site List

Texas MSA - CBSA	AQS Site Number	Site Name	Address - Location	Sampler Type	Network	Methods	Operating Schedule	Location Setting	Monitoring Objective	Spatial Scale	Latitude	Longitude
Houston-The Woodlands-Sugar Land	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Temperature (Outdoor)	NCORE, PAMS, SLAMS	Aspirated Thermister	Continuous	Urban and Center City	Max Precursor Emissions Impact	Neighborhood	29.67003	-95.12851
Houston-The Woodlands-Sugar Land	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	TNMOC (AutoGC)	PAMS, SLAMS	GC	Continuous	Urban and Center City	Max Precursor Emissions Impact; Population Exposure	Neighborhood	29.67003	-95.12851
Houston-The Woodlands-Sugar Land	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	UV Radiation	PAMS, SLAMS	Photovoltaic	Continuous	Urban and Center City	General, Background	Neighborhood	29.67003	-95.12851
Houston-The Woodlands-Sugar Land	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Wind	NCORE, PAMS, SLAMS	Potentiometer Cup Anemometer	Continuous	Urban and Center City	Max Precursor Emissions Impact	Neighborhood	29.67003	-95.12851
Houston-The Woodlands-Sugar Land	482011034	Houston East	1262 1/2 Mae Drive, Houston	NO/NO2/NOx	SLAMS	Chemilumine-scence	Continuous	Suburban	Highest Concentration; Population Exposure	Middle Scale, Neighborhood	29.76800	-95.22058
Houston-The Woodlands-Sugar Land	482011034	Houston East	1262 1/2 Mae Drive, Houston	O3	SLAMS	UV Photometric	Continuous	Suburban	Population Exposure	Neighborhood	29.76800	-95.22058
Houston-The Woodlands-Sugar Land	482011034	Houston East	1262 1/2 Mae Drive, Houston	PM2.5 (Beta)	SPM	Beta Attenuation	Continuous	Suburban	Population Exposure	Neighborhood	29.76800	-95.22058
Houston-The Woodlands-Sugar Land	482011034	Houston East	1262 1/2 Mae Drive, Houston	Temperature (Outdoor)	SPM	Aspirated Thermister	Continuous	Suburban	Population Exposure	Urban Scale	29.76800	-95.22058
Houston-The Woodlands-Sugar Land	482011034	Houston East	1262 1/2 Mae Drive, Houston	Wind	SPM	Potentiometer Cup Anemometer	Continuous	Suburban	Population Exposure	Neighborhood	29.76800	-95.22058
Houston-The Woodlands-Sugar Land	482010417	Houston Harvard Street	160 Harvard Street, Houston	NO/NO2/NOx	SPM	Chemilumine-scence	Continuous	Urban and Center City	Population Exposure	Neighborhood	29.77292	-95.39578
Houston-The Woodlands-Sugar Land	482010417	Houston Harvard Street	160 Harvard Street, Houston	O3	SPM	UV Photometric	Continuous	Urban and Center City	Population Exposure	Neighborhood	29.77292	-95.39578
Houston-The Woodlands-Sugar Land	482010060	Houston Kirkpatrick	5565 Kirkpatrick, Houston	Temperature (Outdoor)	SPM	Aspirated Thermister	Continuous	Suburban	Population Exposure	Neighborhood	29.80741	-95.29362
Houston-The Woodlands-Sugar Land	482010060	Houston Kirkpatrick	5565 Kirkpatrick, Houston	Wind	SPM	Potentiometer Cup Anemometer	Continuous	Suburban	Population Exposure	Neighborhood	29.80741	-95.29362
Houston-The Woodlands-Sugar Land	482010062	Houston Monroe	9726 1/2 Monroe, Houston	O3	SLAMS	UV Photometric	Continuous	Suburban	Population Exposure	Neighborhood	29.62556	-95.26722
Houston-The Woodlands-Sugar Land	482010062	Houston Monroe	9726 1/2 Monroe, Houston	PM10 (FRM)	SLAMS	HiVol Gravimetric	24 Hours; 1/6 Days	Suburban	Population Exposure	Neighborhood	29.62556	-95.26722

Houston East should include monitoring for Air Toxics VOC. 97th percentile in countryfor Air Toxics Cancer Risk. See attached for more information.

Appendix B: Ambient Air Monitoring Network Site List

Texas MSA - CBSA	AQS Site Number	Site Name	Address - Location	Sampler Type	Network	Methods	Operating Schedule	Location Setting	Monitoring Objective	Spatial Scale	Latitude	Longitude
Houston-The Woodlands-Sugar Land	482010029	Northwest Harris County	16822 Kitzman, Tomball	Solar Radiation	PAMS, SLAMS	Photovoltaic	Continuous	Rural	Extreme Downwind; Upwind Background	Urban Scale	30.03952	-95.67395
Houston-The Woodlands-Sugar Land	482010029	Northwest Harris County	16822 Kitzman, Tomball	Temperature (Outdoor)	PAMS, SLAMS	Aspirated Thermister	Continuous	Rural	Extreme Downwind; Upwind Background	Urban Scale	30.03952	-95.67395
Houston-The Woodlands-Sugar Land	482010029	Northwest Harris County	16822 Kitzman, Tomball	Wind	PAMS, SLAMS	Potentiometer Cup Anemometer	Continuous	Rural	Extreme Downwind; Upwind Background	Urban Scale	30.03952	-95.67395
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	Barometric Pressure	SPM	Barometric pressure transducer	Continuous	Urban and Center City	General, Background	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	Dew Point	SPM	Derived at site	Continuous	Urban and Center City	General, Background	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	NO/NO2/NOx	SPM	Chemilumine-scence	Continuous	Urban and Center City	Population Exposure	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	O3	SPM	UV Photometric	Continuous	Urban and Center City	Population Exposure	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	Precipitation	SPM	Rain Gauge	Continuous	Urban and Center City	General, Background	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	Relative Humidity	SPM	Humidity Sensor	Continuous	Urban and Center City	General, Background	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	SO2	SPM	Pulsed Fluorescence	Continuous	Urban and Center City	Population Exposure	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	Solar Radiation	SPM	Photovoltaic	Continuous	Urban and Center City	General, Background	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	Temperature (Outdoor)	SPM	Aspirated Thermister	Continuous	Urban and Center City	General, Background	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	UV Radiation	SPM	Photovoltaic	Continuous	Urban and Center City	General, Background	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482010416	Park Place	7421 Park Place Blvd, Houston	Wind	SPM	Potentiometer Cup Anemometer	Continuous	Urban and Center City	General, Background	Neighborhood	29.68639	-95.29472
Houston-The Woodlands-Sugar Land	482011050	Seabrook Friendship Park	4522 Park Rd, Seabrook	NO/NO2/NOx	SLAMS	Chemilumine-scence	Continuous	Suburban	Population Exposure	Middle Scale, Neighborhood	29.58305	-95.01554

Park Place air monitor should include Air Toxics. Ranks 95th percentile for Air Toxics Cancer Risks. 93rd percentile in country for Respiratory Hazard Index

Appendix M

2021 Additional Monitoring Considerations

Texas Commission on Environmental Quality
2021 Annual Monitoring Network Plan

Appendix M: 2021 Additional Monitoring Considerations

Proposed Fifth Ward air monitor should include CO, SO2, H2S, TNMOC, Ozone in addition to PM2.5 and Air Toxics VOC

Proposed Gregory-Portland air monitor should include Air Toxics VOC. See attached.

Air Monitoring Site Name or Area of Interest	Monitoring Consideration	Parameter(s)
Houston Bayland Park	Deploy monitor	$PM_{2.5}$ FEM continuous
Houston Fifth Ward area	Deploy new site	$PM_{2.5}$ FEM continuous and volatile organic compounds by canister
Houston Pleasantville area	Deploy new site	$PM_{2.5}$ FEM continuous Proposed Pleasantville air monitor should include Air Toxic VOC, CO, SO2, H2S, TNMOC, Chromium. See ~~attached.~~
Gregory-Portland area in San Patricio County	Deploy new site	$PM_{2.5}$ FEM continuous and volatile organic compounds by canister

FEM – federal equivalent method

$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

From:	Charles McPhedran
To:	tceqamnp
Subject:	Comments on 2021 Annual Monitoring Network Plan
Date:	Friday, May 21, 2021 4:18:55 PM
Attachments:	2021-5-21 Comments on TCEQ AMNP 2021.pdf Exhibit 1 Harrington Station Power Plant TX .pdf Exhibit 2 Petition for Reconsideration_Odessa Texas SO2 NAAQS_Oct2020.pdf

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Dear Holly Landuyt:

Attached please find comments on the TCEQ Air Monitoring Network Plan for 2021. We appreciate your consideration of these comments.

Charles McPhedran, Esq.
(215) 206-0352

EARTHJUSTICE

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May 21, 2021

Submitted by E-Mail

Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087
Attention: Holly Landuyt, MC-165
tceqamnp@tceq.texas.gov

Re: Draft 2021 Monitoring Network Plan

On behalf of our members and supporters who live, work, and recreate in Texas, Sierra Club, Environmental Defense Fund, Air Alliance Houston, Environmental Integrity Project, Public Citizen, and Earthjustice ("Commenters") respectfully submit these comments regarding the Texas Commission on Environmental Quality ("TCEQ") Draft Annual Monitoring Network Plan for 2021 ("Draft 2021 Plan").

Because the Draft 2021 Plan is a revision to Texas's State Implementation Plan, it should be subject to notice and comment rulemaking. Commenters request that Texas Commission on Environmental Quality ("TCEQ") withdraw the draft, publish the plan in both English and Spanish, and allow the public to provide additional comment on the Draft 2021 Plan through the notice and comment rulemaking process. Further, Commenters request that TCEQ hold public hearings in Houston and El Paso.

There is a pressing need for additional monitoring stations across Texas. Due to concentrated industrial operations and persistent unauthorized emissions, Houston communities urgently need enhanced volatile organic compound air quality monitoring. Other Houston communities face historic pollution that is little understood, in part, because of a lack of air quality data. Similarly, West Texas communities know they are subject to ozone and sulfur dioxide pollution but lack air quality data to protect their health and to require stronger protections from polluting industries.

Communities along the Gulf Coast, including in the Corpus Christi area and the Rio Grande Valley, are facing new air quality challenges with a refining and petrochemical industry expansion. These communities deserve to know what is in the air, too.

Growth in San Antonio and El Paso has exacerbated ozone, carbon monoxide, and nitrogen dioxide pollution – these Texas communities need more air quality data, too. Lastly, staggering sulfur dioxide emissions across Texas pose a serious public health threat that warrants not just enhanced monitoring, but a reconsideration of Texas' sulfur dioxide modeling. We are urging TCEQ to address the lack of monitoring in communities where oil and gas drilling – the "upstream" oil and gas industry – continue to flare and vent air pollution at unprecedented and dangerous levels.

Commenters urge TCEQ not simply to look at federal standards, which provide mere minimum criteria, but also pressing public health threats to assess the air quality monitoring needs of all Texans.

Respectfully submitted,

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COMMENTS OF SIERRA CLUB, ENVIRONMENTAL DEFENSE FUND, AIR ALLIANCE HOUSTON, ENVIRONMENTAL INTEGRITY PROJECT, PUBLIC CITIZEN, AND EARTHJUSTICE ON THE DRAFT 2021 ANNUAL MONITORING NETWORK PLAN

I. Clean Air Act background.

A. Texas must maintain an air quality monitoring network.

The federal Clean Air Act ("CAA" or "Act") requires Texas to establish and maintain an air quality monitoring network. This monitoring plan must be included in the applicable State Implementation Plan ("SIP"). 42 U.S.C. § 7410(a)(2)(B). Texas's network must meet three criteria: "(a) Provide air pollution data to the general public in a timely manner . . . . (b) Support compliance with ambient air quality standards and emissions strategy development . . . . (c) Support for air pollution research studies . . . ." 40 C.F.R. Part 58 App. D ¶ 1.1.

Crucially, monitoring data are used to determine whether areas are in compliance with National Ambient Air Quality Standards ("NAAQS"). 40 C.F.R. Part 58 App. A ¶ 1.1(a). The U.S. Environmental Protection Agency ("EPA") has established NAAQS for six criteria pollutants: ozone (O_3), particulate matter ($PM_{2.5}$ and PM_{10}), carbon monoxide (CO), lead (Pb), sulfur dioxide (SO_2) and nitrogen dioxide (NO_2). To determine whether an area meets a NAAQS, EPA compares monitoring data to the NAAQS. 40 C.F.R. Part 58 App. D ¶ 1.1(b). Areas that fail to meet a NAAQS are subject to more stringent public health protections under the Act. For example, monitoring data demonstrate that the Houston area failed to meet its deadline for the 2008 ozone standard. 83 Fed. Reg. 56,781 (Nov. 14, 2018). As a result, more major sources of ozone-forming pollution in Houston will have to obtain federal operating permits, and these polluters will have to reduce their ozone-forming emissions or secure offsets to more than offset the new pollution they will emit. 42 U.S.C. §§ 7503, 7511a.

Each year, Texas must demonstrate compliance with federal minimum monitoring requirements. 40 C.F.R. § 58.10(a)(1), (b). The monitoring network plan must include detailed information about the network's design, including the exact location of each monitor in the network, how each monitor operates, and proposed changes to individual monitors. 40 C.F.R. § 58.10(b)(1)-(5), Part 58 App. D. EPA determines whether the plan meets minimum network design criteria, and the Regional Administrator may require additional information. 40 C.F.R. § 58.10(a)(1). EPA also has authority to order changes to a plan. 40 C.F.R. § 58.14(b). Plans that propose new monitoring sites or other modifications must be approved or denied by the Regional Administrator within 120 days of submission. 40 C.F.R. §§ 58.10(a), (e), 58.11(c), 58.14.

Federal regulations prescribe only minimum design criteria for State and Local Area Monitoring Stations ("SLAMS") networks to monitor for criteria pollutants, leaving room for states to establish enhanced air monitoring as areas in their states may require. *See* 40 C.F.R. § 58.1; *see also* 40 C.F.R. Part 58 App. D ¶¶ 4.1-4.8.1 (establishing "Pollutant-Specific Design Criteria" for monitoring networks). SLAMS networks are a collection of devices in various

locations that sample the ambient air (or outdoor air) to detect the level of a particular pollutant.[1] The design of a monitoring network—the number of monitors, their specific placement, how frequently they take samples—is critical to getting accurate and representative results. *See generally* 40 C.F.R. Part 58 App. D (establishing mandatory "Network Design Criteria for Ambient Air Quality Monitoring"). Because different pollutants and standards are especially sensitive to particular design criteria, such as the choice of monitor location, EPA provides monitoring network design guidance documents.[2] In part, the purpose of the network is "to provide support to the [SIP], national air quality assessments, and *policy decisions*." 40 C.F.R. § 58.2(a)(5) (emphasis added). Thus, network design and operating procedures are critical to assessing compliance with the public health goals of the Clean Air Act and for state and regional air quality planning efforts.

Apart from Act compliance, there are other uses for air quality data that call on Texas to enhance its monitoring network for the protection of public health. Federal regulations envision members of the public making use of publicly available air quality data—the regulations themselves require data dissemination in urban centers, 40 C.F.R. § 58.50, and EPA maintains daily reports via AirNow, available at https://airnow.gov/. Because air quality data from Texas's network is publicly available near real-time,[3] it is crucial to community groups responding to disasters.

B. The public process afforded to the Draft 2021 Plan violates the Clean Air Act.

TCEQ's Draft 2021 Plan is a SIP revision that should be subject to notice and comment rulemaking. The CAA and its implementing regulations make it clear that a State's monitoring

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[1] A map of the Texas air monitoring network is available here: https://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=ab6f85198bda483a997a6956a8486539.

[2] *See, e.g.*, EPA, Guidance for Network Design and Optimum Site Exposure for $PM_{2.5}$ and PM_{10} at 2-7 (1997) ("A PM sampler location, especially its proximity to local sources, can play a large role in its ability to assess spatial variability and source contributions") (available at: https://www3.epa.gov/ttn/amtic/files/ambient/pm25/network/r-99-022.pdf); *see also* EPA, Guidance for Using Continuous Monitors in $PM_{2.5}$ Monitoring Networks at 6-1 to 6-2 (1998) (discussing the difference between Community Representative or "CORE" $PM_{2.5}$ monitors located where people live, work and play in comparison to hot spot monitor sites "located near an emitter with a microscale or middle-scale zone of influence" and Special Purpose Monitors ("SPMs") "used to understand the nature and causes of excessive concentrations measured at [CORE] or hot spot compliance monitoring sites.") (available at: https://www3.epa.gov/ttnamti1/files/ambient/pm25/r-98-012.pdf); *see also* EPA, Photochemical Assessment Monitoring Stations Implementation Manual at 2-6 (1994) ("Site selection is one of the most important tasks associated with monitoring network design and must result in the most representative location to monitor the air quality conditions being assessed.") (available at: https://nepis.epa.gov/Exe/ZyPDF.cgi/20011ZFW.PDF?Dockey=20011ZFW.PDF).

[3] TCEQ, AutoGC Data by Day by Site (all parameters), available at: https://www.tceq.texas.gov/cgi-bin/compliance/monops/agc_daily_summary.pl.

plan is part of its SIP.[4] Because an update to the monitoring plan is a SIP revision, federal law requires TCEQ to provide notice and undertake a public hearing before promulgating the plan. *See Hall v. EPA*, 273 F.3d 1146, 1162 (9th Cir. 2001) ("The Act requires that SIP revisions 'be adopted by the State after reasonable notice and public hearing.'") (quoting 42 U.S.C. § 7410(l)).

Further, it appears that TCEQ did not and will not hold any public meetings or hearings to explain the Draft 2021 Plan to the public. "[N]otice and comment helps to prevent mistakes, because agencies receive more input and information before they make a final decision." *Ivy Sports Medicine v. Burwell*, 767 F.3d 81, 87 (D.C. Cir. 2014).

TCEQ's lack of outreach continues to disenfranchise Texas communities long deprived of proportionate representation in environmental regulation, including native and non-English speaking communities who are deprived of critical information about air quality and public health by TCEQ's refusal to publish air quality monitoring data and the monitoring plan itself in Spanish and other languages. As discussed below, many low-income communities and communities of color throughout Texas suffer from poor air quality and would benefit from greater air quality monitoring in their area. However, TCEQ's Spanish language webpage still does not include monitoring information. This failure, along with TCEQ's failure to conduct public outreach regarding the Draft 2021 Plan, means that Texans in these communities may be wholly unaware of Texas' air quality monitoring network or that it changes every year.

Commenters request that TCEQ remand the Draft 202 Plan and revise it through notice and comment rulemaking. Further, that TCEQ hold a public hearing, with Spanish interpretation services available, in Houston or El Paso to afford the public an opportunity to ask questions about the Plan of TCEQ staff responsible for its creation and implementation.

II. Public health warrants enhanced air quality monitoring in Houston and surrounding communities

A. We strongly support TCEQ's placement of a new federal reference monitor for $PM_{2.5}$ in west Houston, but more monitors are needed in Houston

TCEQ has installed a new $PM_{2.5}$ FEM continuous monitor at the City of Houston's existing Westhollow monitoring station. We support this action, and believe TCEQ should also install a new $PM_{2.5}$ monitor at TCEQ's Bayland Park monitoring station. We also strongly recommend that TCEQ retain all existing $PM_{2.5}$ monitors.

TCEQ should also work with the City of Houston, Harris County, and the U.S. EPA to support the installation of lower cost community monitors throughout Houston. Additional community monitors can play a key role in providing communities an early warning, and can

[4] *See* 42 U.S.C. § 7410(A)(2)(b) (each SIP must "provide for establishment and operation of . . . systems . . . necessary to . . . monitor, compile, and analyze data on ambient air quality"); 40 C.F.R. § 51.17(b)(1)-(6) (each SIP "shall include a description of the . . . proposed air quality surveillance system, which shall set forth," among other things: the exact location of the monitors; how each monitor operates; and the timetable for installing any equipment needed to complete the monitoring system").

help regulators take action against polluters. TCEQ should initiate a speciation/source apportionment study to determine the sources of $PM_{2.5}$ in western Houston and develop a plan of action to reduce $PM_{2.5}$ exposure in western Houston.

1. New peer-reviewed data demonstrates high concentrations of PM pollution in Western Houston.

Peer-reviewed, published research, described in greater depth below, provides nationwide high resolution (1km x 1km) annual $PM_{2.5}$ ambient concentration data for 2000 to 2015.[5] Using this research in an ensemble model of satellite and other data, Commenters were able to identify high concentrations of particulate pollution in areas of Houston with no current EPA federal reference monitors. According to this data, there are high concentrations of $PM_{2.5}$ pollution in western Houston that have never previously been identified due to a lack of monitors. EPA requires that "monitoring stations or sites must be sited to represent area-wide air quality," and be placed in "an area of expected maximum concentration" however, there is currently no monitor in this area. 40 C.F.R. Part 58 App. D. Based on this new $PM_{2.5}$ ambient concentration data and the population density data in the area, it is clear the existing monitoring network in Houston does not meet the EPA regulatory requirements. Even though the ensemble model draws on 2000-2015 data, it is highly likely that these areas in western Houston are still most likely the areas of maximum $PM_{2.5}$ concentration. TCEQ should finalize the monitor it proposes in Westhollow and install a new monitor at Bayland Park monitoring station.

2. Overview of the data sources for Houston $PM_{2.5}$ air quality assessment

Each of the data sets described below were assembled into an interactive ArcGIS data platform. The geographical representation of the data allowed us to evaluate how well the existing FRM $PM_{2.5}$ monitors were meeting EPA's regulatory requirements for monitor placement.

Ensemble Data To conduct our assessment, we used $PM_{2.5}$ ambient concentration data from an EPA funded peer reviewed study[6] that estimated daily PM $_{2.5}$ concentrations at a resolution of 1 km x 1 km for 2000 to 2015. The study combined estimates from three different model types: 1) neural network, 2) random forest and 3) gradient boosting. Each model was run nationwide and each used a unique combination of FRM $PM_{2.5}$ monitoring, EPA CMAQ, land-use, satellite and other data. A regression was performed comparing the results of each model against FRM monitors and then a weighted average was calculated for each 1km by 1km tract. The model performed well up to 60ug/m3 with an R^2 of 0.86 for the daily $PM_{2.5}$ predictions and 0.89 for the annual results.

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[5] Di, Q, Kloog, I, Koutrakis, P, Lyapustin, A, Wang, Y and Schwartz, J (2016). Assessing $PM_{2.5}$ exposures with high spatiotemporal resolution across the Continental United States. Environ Sci Technol 50(9): 4712-4721.

[6] Qian Di, et al. *An ensemble-based model of $PM_{2.5}$ concentration across the contiguous U.S. with high spatiotemporal resolution.* Environment International 130 (2019) 104909.

EPA's *Policy Assessment for the Review of the NAAQS for Particulate Matter*[7] reviewed a wide range of new hybrid modeling methods, including the Di et al[8], approach. According to EPA, "Excellent performance in cross-validation tests suggests that hybrid methods are reliable for estimating $PM_{2.5}$ exposure in many applications."[9] While EPA noted that there are important limitations to these hybrid models, including their performance in rural areas, western U.S. and where emission concentrations are low, these limitations do not appear to be a factor for estimates in the Houston MSA area.

CMAQ Data CMAQ is the primary modeling tool used by States and EPA to support implementation of the Clean Air Act. CMAQ integrates the modeling of meteorology, emissions and chemistry to estimate ozone, PM and air toxics at the local, national and hemispheric levels. State and EPA air quality officials have used CMAQ for over 20 years and it is considered "EPA's premier modeling system for studying air pollution . . . ."[10] For our analysis, we used EPA's annual $PM_{2.5}$ CMAQ concentrations averaged over the 2014-2016 period for the Houston MSA.

Population Density Population data was taken from the 2010 US Census.

$PM_{2.5}$ Monitor Locations The latitude and longitude for the Houston MPA FRM $PM_{2.5}$ monitors was taken from the EPA AirNow web site.[11]

Major $PM_{2.5}$ Stationary Sources Data for major $PM_{2.5}$ emissions is from TCEQ State of Texas Air Reporting System.[12]

3. 2013 to 2015 $PM_{2.5}$ ambient concentrations in Houston

The maps below show the growth of a $PM_{2.5}$ plume in western Houston from 2013 to 2015. The ensemble analysis, including the satellite data, made it possible, for the first time, to identify this air pollution even though there were no FRM monitors located in western Houston.

While more research is needed, we believe the $PM_{2.5}$ in western Houston is from secondary formation of NOx emissions from industrial and marine sources around the Houston Ship Channel, along with diesel vehicles and construction equipment.

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[7] U.S. EPA, *Policy Assessment for the Review of the National Ambient Air Quality Standards for Particulate Matter*, EPA-452/R-20-002 (Jan. 2020).

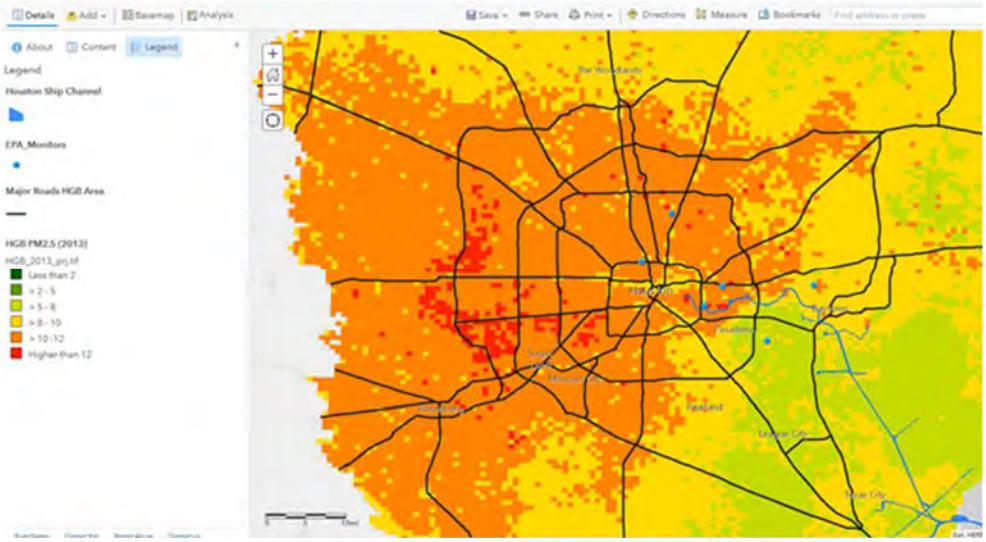
[8] Di, Q, Kloog, I, Koutrakis, P, Lyapustin, A, Wang, Y and Schwartz, J (2016). Assessing $PM_{2.5}$ exposures with high spatiotemporal resolution across the Continental United States. Environ Sci Technol 50(9): 4712-4721.

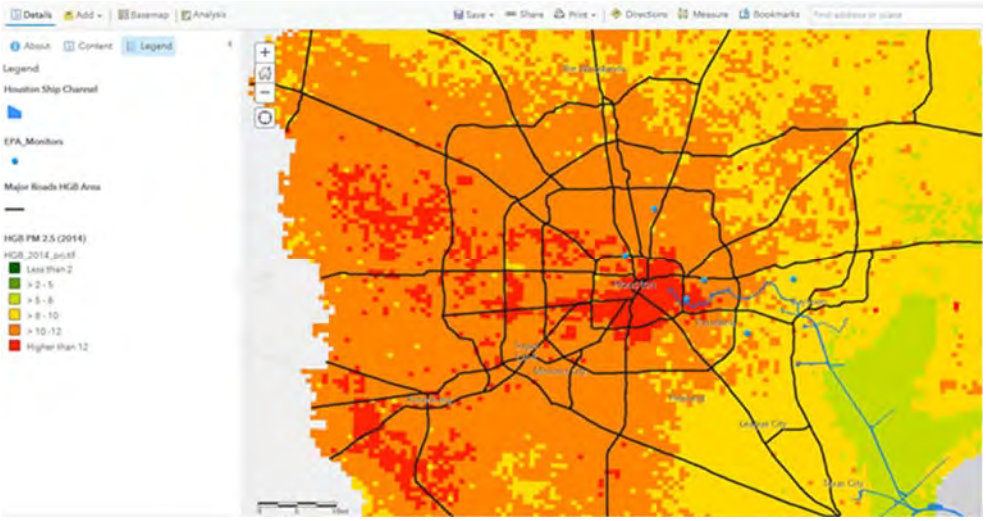
[9] U.S. EPA, *Policy Assessment for the Review of the National Ambient Air Quality Standards for Particulate Matter*, EPA-452/R-20-002 at 2-53 (Jan. 2020).

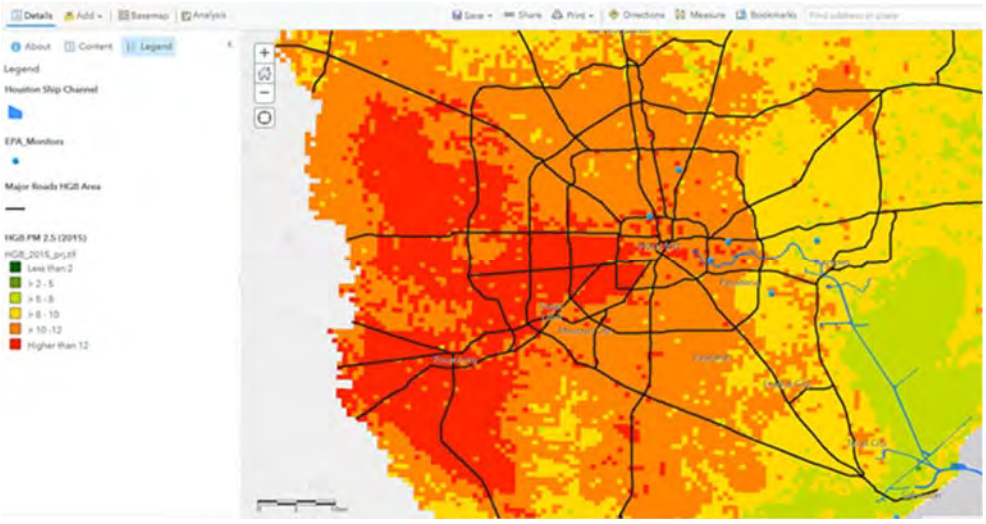
[10] U.S. EPA. Science in Action. *Community Multiscale Air Quality (CMAQ) Modeling System*. Office of Research and Development. (Aug. 2019), available at: https://www.epa.gov/sites/production/files/2018-10/documents/cmaq_factsheet_.pdf.

[11] https://www.epa.gov/outdoor-air-quality-data/download-daily-data.

[12] https://www.tceq.texas.gov/airquality/point-source-ei/psei.html.







4. Health damages from particulate matter pollution

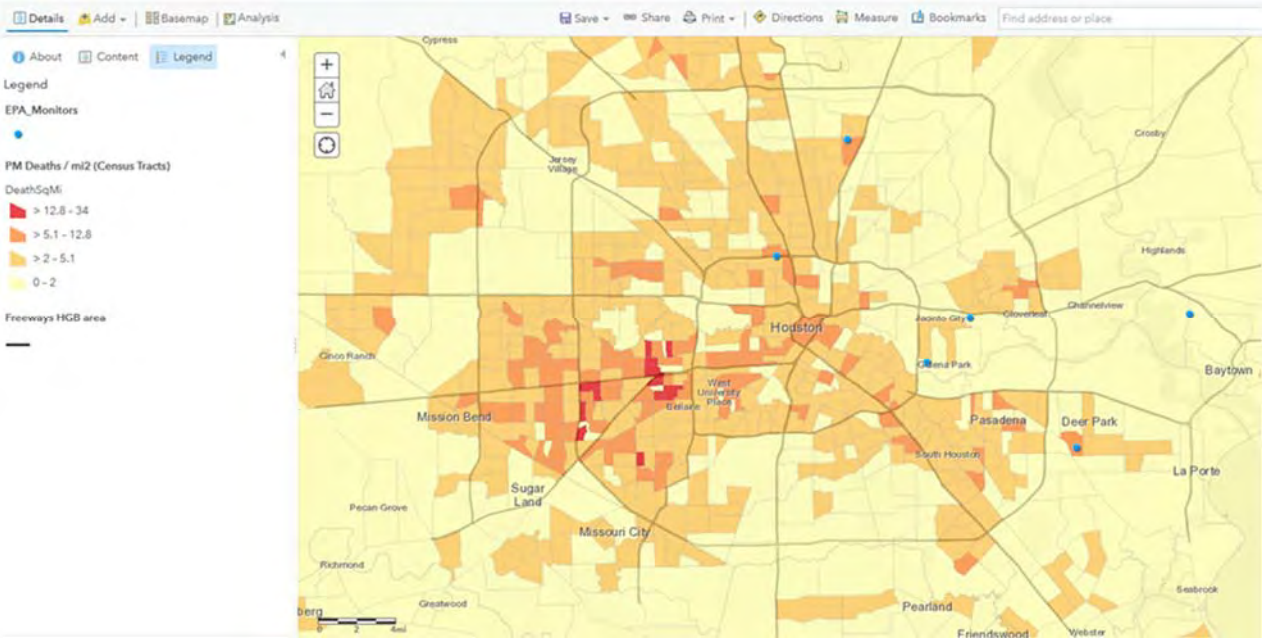
These elevated levels of $PM_{2.5}$ have major health and economic consequences for residents of Houston. An analysis[13] from the Harvard School of Public Health and EDF based on the ensemble data has found that the elevated levels of $PM_{2.5}$ in Houston were responsible for:

- Over 5,200 premature deaths, and
- Over $49 billion in economic damages.

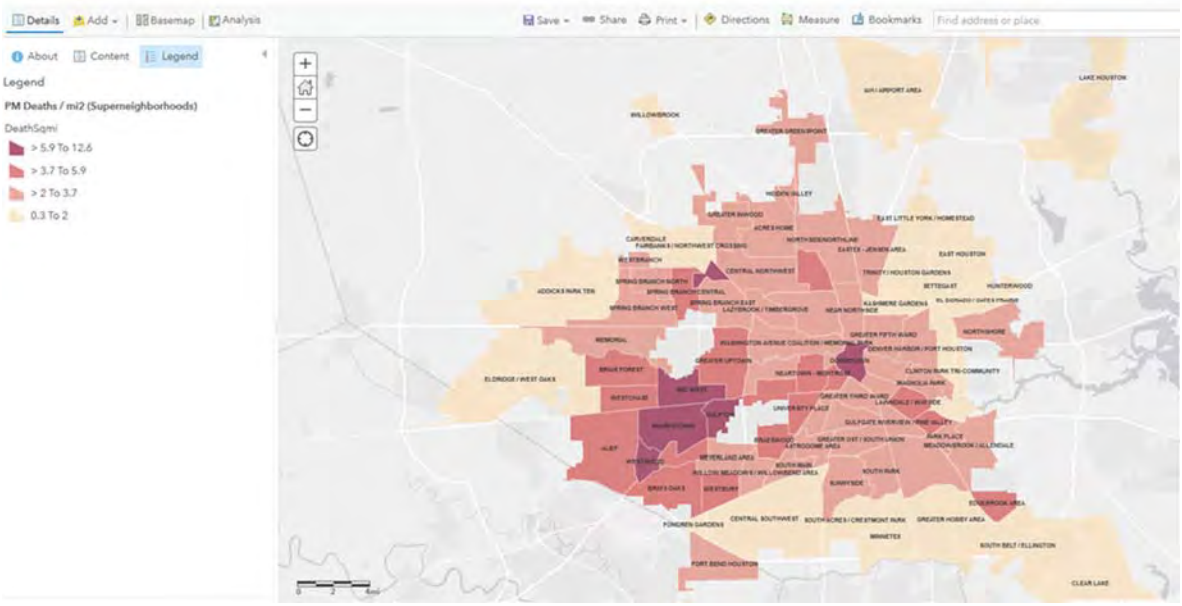
Particulate pollution is made up of small toxic airborne particles like dust, soot, and liquid particles, or aerosols. Most particulate pollution in Houston is from the chemical and petroleum industry, power generation, and diesel vehicles and construction equipment. These toxic particles penetrate deep into the lungs and are linked to heart attacks, lung disease, strokes, asthma, cancer, and can lead to early death. This pollution is particularly dangerous for young people – studies show that $PM_{2.5}$ exposure can impair childhood lung development.

The following maps show how the 5,213 deaths from $PM_{2.5}$ exposure in 2015 are distributed across Houston. The first map shows the deaths per square kilometer by census tract. The average number of deaths is 2.6 per square mile; however, in 23 census tracks the 2015 rate exceeded 10 deaths per square mile.

In Houston, residents are encouraged to work with their Super Neighborhood council to identity issues of concern that need to be raised to the City of Houston. For that reason, we have also presented the health damages from $PM_{2.5}$ for each Super Neighborhood. The white areas on the map are not currently represented by a Super Neighborhood.



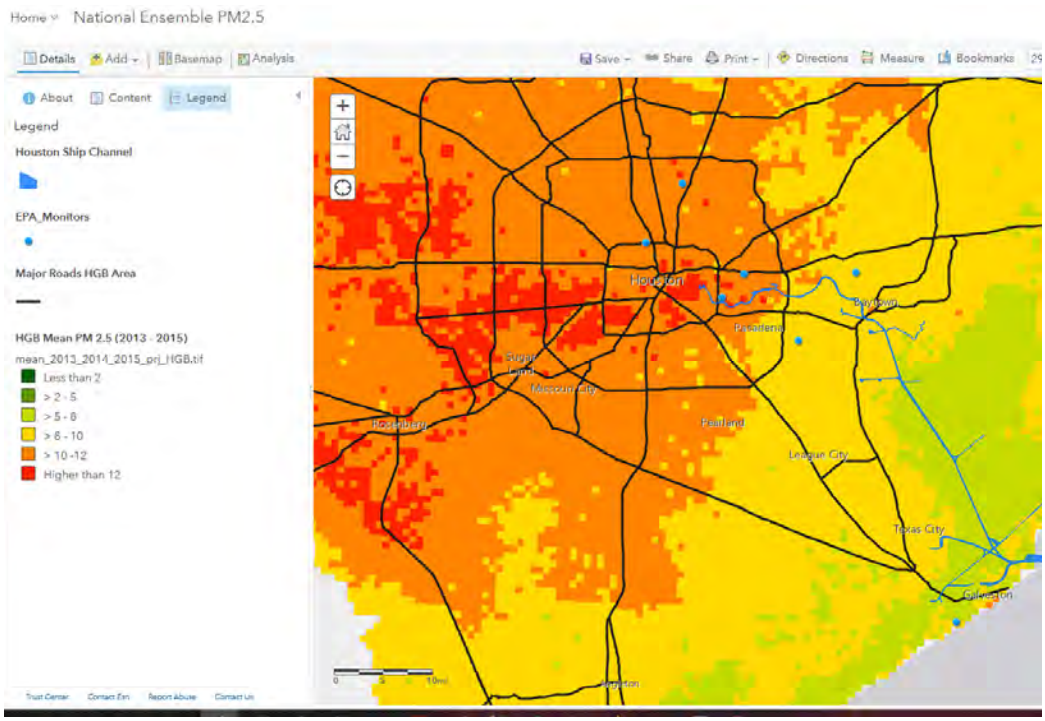
[13] http://blogs.edf.org/health/2020/05/11/pm-standards-houston-analysis/.

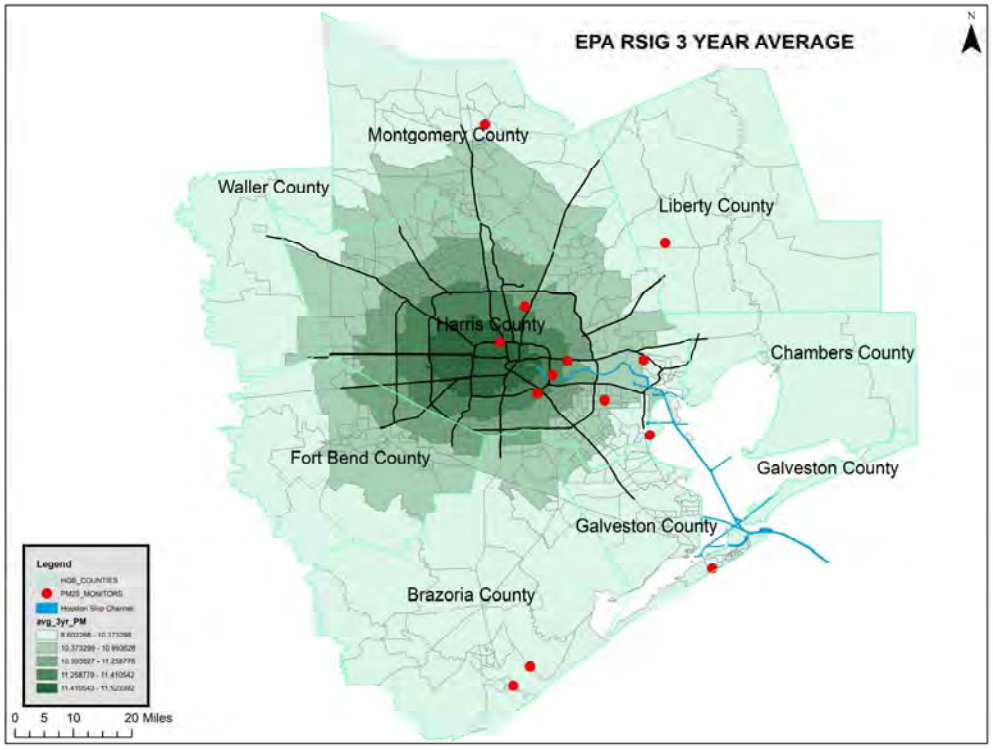


5. Assessment of federal reference monitors for $PM_{2.5}$ monitor locations in Houston

In this section, we review the co-location/spatial distribution of Houston's FRM $PM_{2.5}$ monitors and areas of elevated $PM_{2.5}$ concentration. We also review whether the FRM $PM_{2.5}$ monitors are in areas of high population density, and we compare the ensemble data with EPA's $PM_{2.5}$ CMAQ data.

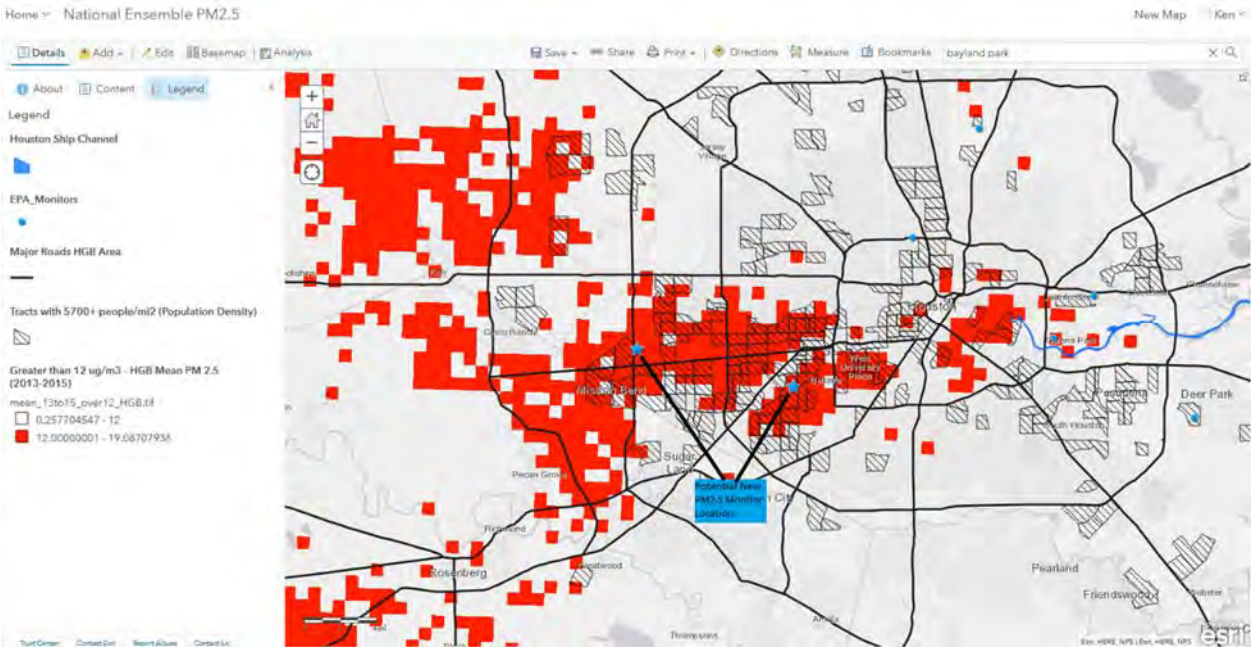
For our analysis, we defined areas of "maximum concentration" as areas where the average 2013-2015 $PM_{2.5}$ concentration exceeded the 12.0 ug/m3 NAAQS standard. As can be seen in the map below, there are currently no FRM $PM_{2.5}$ monitors (blue dots) in central and western Houston where average annual $PM_{2.5}$ concentrations exceeded 12.0 ug/m3 for 2013-15 (red areas). For comparison purposes, we have also included a map of EPA's $PM_{2.5}$ CMAQ/RSIG data for the same period. The CMAQ data also demonstrates that $PM_{2.5}$ levels in western Houston are elevated.





The second major criteria for determining the location of FRM $PM_{2.5}$ monitors is population density. The next map overlays areas in Houston where $PM_{2.5}$ is greater than

12.0ug/m3 and where population density is greater than 5,700 people per square mile.[14] As can be seen in the map, there are no existing FRM $PM_{2.5}$ monitors (blue dots) in central or western Houston where $PM_{2.5}$ is greater than 12.0ug/m3 and population density is greater than 5,700 people per square mile.



As these analyses demonstrate, there is compelling evidence for installation of at least one new FRM $PM_{2.5}$ monitor in the western or central part of Houston. Given the elevated levels of $PM_{2.5}$ and high population density, we believe TCEQ should also install a new $PM_{2.5}$ monitor at TCEQ's Bayland Park monitoring station. In addition, TCEQ should fund a speciation/source apportionment study to understand what is causing these particulate matter concentrations, and to develop an action plan to reduce the sources of emissions. Existing FRM $PM_{2.5}$ monitors should be maintained in their current location.

B. Fifth Ward and Pleasantville

The Fifth Ward is a predominantly low-income African American community in east Houston that is home a concentration of contaminated sites, including the Many Diversified Interests, Inc. ("MDI") Superfund site.[15] MDI is a nuisance to its community and a constant source of offsite, onsite, and residential lead contamination, among other pollutants. Despite ongoing remediation efforts, a new housing development is being built on top of the MDI

[14] We chose 5,700 people/mi^2 because ArcGIS identified it as a "Natural Break" in the population.

[15] EPA, Superfund Site: Many Diversified Interests, Inc. Houston, Texas, available at: https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.contams&id=0605008 (last visited May 16, 2019)

property.[16] Fifth Ward is also home to another nuisance; creosote contamination at the former Union Pacific Houston Wood Preserving Works facility.[17] Every time it rains and in hot weather, residents report strong chemical smells from this only partially remediated site. Moreover, in August 2019 and January 2020, the Texas Department of State Health Services identified cancer clusters associated with creosoted contaminated Union Pacific Railyard. (www.dshs.texas.gov/epitox/CancerClusters/Supplemental-Assessment-of-the-Occurrence-of-Cancer-Houston-Texas-2000-2016-Summary-sheet.pdf) Residents want to better understand exposures affecting their health, and installing air monitors will help provide real time data to address existing health concerns and allow for timely decision making.

There is mounting evidence of public health threats in Fifth Ward from lead and other toxic contaminants. In 2014, a study reported that almost all of Fifth Ward experiences amongst the highest probabilities for very low birth weights which could result from exposure to contaminants like lead.[18] Fifth Ward is still a lead poisoning hot spot, with blood lead levels among children were among the highest in the state of Texas. [19] The Houston Health Department, Bureau of Community and Children's Environmental Health was also awarded a grant to expand a lead poisoning prevention pilot in the Fifth Ward. [20] Residents are actively working to identify homes contaminated with lead for remediation particularly those where children under aged 6 years and pregnant women reside. With the multitude of metal recycling facilities and brownfields in the community, there is a real need to monitor particulate matter levels as industrial sites are clustered near schools and residential areas in 5th Ward.

Fifth Ward residents need air quality data so they can take action to protect their health from elevated levels of lead and volatile organic compounds ("VOC") and to alert regulatory officials when they need to take specific action against potential emitters. Currently, there are no particulate matter or VOC air quality monitors in Fifth Ward. It is not enough that TCEQ

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[16] Houston Business Journal, Houston's Fifth Ward Redevelopment Efforts Continue With Plans for Single-Family Homes, (Mar. 3, 2014), available at: https://www.bizjournals.com/houston/morning_call/2014/02/houstons-fifth-ward-redevelopment-efforts-continue.html.

[17] Union Pacific has recently applied for a modification and renewal of its remediation permit; affected residents have objected to Union Pacific's proposed cost-cutting measures. TCEQ, Notice of Receipt of Application and Intent to Obtain Hazardous Waste Permit/Compliance Plan/Major Amendment/Renewal Permit/Compliance Plan No. 50343 (Mar. 13, 2015), available at: https://www14.tceq.texas.gov/epic/eNotice/index.cfm?fuseaction=main.PublicNoticeDescResults&requesttimeout=5000&CHK_ITEM_ID=963382312015077.

[18] Thompson, J.A., et al., Evaluating geostatistical modeling of exceedance probability as the first step in disease cluster investigations: very low birth weights near toxic Texas sites.607-611 (2014), available at: https://www.ncbi.nlm.nih.gov/pubmed/24906417.

[19] Agency for Toxic Substances & Disease Registry, Public Health Statement for Lead (Aug. 2007), available at: https://www.atsdr.cdc.gov/phs/phs.asp?id=92&tid=22.

[20] National Environmental Health Association, NEHA and Partners Award HiAP and Lead Poisoning Prevention Funds (Jan. 18, 2019), available at: https://www.neha.org/news-events/latest-news/neha-and-partners-award-hiap-and-lead-poisoning-prevention-funds.

believes meeting *minimum* federal requirements is enough to meet VOC monitoring requirements, TCEQ Annual Monitoring Network Plan 24, one of the purposes of the air monitoring network is provide data for policy decisions, 40 C.F.R. § 58.2(a)(5), Commenters request that TCEQ place a lead and VOC monitor in Fifth Ward. Lead and VOC monitors in Fifth Ward will allow residents not only to access "air pollution data . . . in a timely manner," 40 C.F.R. Part 58 App. D ¶ 1.1(a), but will inform public health policy decisions affecting Fifth Ward. Metal recycling is also a serious public health concern for residents of the Fifth Ward. An analysis by the Environmental Defense Fund found levels of air pollution on roads adjacent to these facilities to be significantly elevated, comparable to being within 200 m of a highway and likely the result of diesel emissions. Some of these facilities are in close proximity to schools and other sensitive populations. There is a clear need for PM monitoring in this part of Houston.

Like the Fifth Ward, Pleasantville is a disproportionately burdened predominantly African-American and increasingly Hispanic neighborhood replete with environmental hazards. It has a history of being impacted by chemical fires, has struggled with transportation related air pollution, as well as being at risk from storms and flooding. Pleasantville is located 2.2 miles from Port Houston and demographically meets the definition of a vulnerable (fenceline) community. According to the HGB Enviroscreen (a decision support tool tailored to the Houston region and akin to CalEnviroscreen; www.HGBEnviroscreen.org) this neighborhood is among the most disadvantaged communities in our 8 county region, ranking in the top 2 % among 1090 census tracts based on environmental justice indicators. Based on the Houston State of Health, 34% of Pleasantville residents live in poverty, 13% higher than Harris County.

The Pleasantville community designed, deployed and operates their own low-cost air monitoring network calibrated with a node co-located with the Clinton Park monitor (https://openmap.clarity.io/). Data since 2019 demonstrates the need for a regulatory grade monitoring site in Pleasantville independent of the existing monitor 2 miles away in Clinton Park. While the Clinton Park monitor is close in proximity, Pleasantville's community air monitoring network's measurements consistently show higher readings including at the monitor near Holland Middle School. Children are more sensitive to pollution than adults and it is therefore imperative that we accurately characterize pollution exposures affecting the children in Pleasantville to support policies to protect public health. It is evident from air pollution literature that there can be substantial hyperlocal variation in air pollution and particulate pollution specifically. The Clinton Park monitor may not fully capture pollution sources from the 610 East Loop Frwy which is a critical divider separating the two areas and drastically effected by wind. This same freeway adjacent to Pleasantville is also Houston's and Harris County's Hazardous Chemical route for motor vehicles. Further, Pleasantville has struggled with diesel engine rail emissions, heavy duty vehicle traffic and freight related air pollution due to proximity to the port and the Anheuser Bush brewery. Placing a reference grade air monitor in this overburdened environmental justice community would provide needed data to understand residential exposures and assist in efforts to reduce population exposures and improve the health and well-being of residents.

C. Portland-Gregory Area

The Portland-Gregory Area needs additional monitors, particularly to measure PM_{10}, and potentially $PM_{2.5}$, as well as enhanced VOC Monitoring. As the Draft 2021 Plan states (at 18):

> Due to industrial and population growth in the Gregory-Portland area north of Corpus Christi, the TCEQ continues to evaluate the potential placement of a particulate matter monitor in San Patricio County, as previously recommended.

Recently, new facilities including a steel mill, an ethane cracker, several expansions of other petro-chemical plants, and a major transmission upgrade have been either proposed or approved. Increased traffic connected to the Port of Corpus Christi, and its possible expansion, are other reasons to increase monitoring. The area north of Corpus Christi is in desperate need of further monitoring for both PM and VOC, and the TCEQ should add monitors to the region as part of this plan.

While Commenters appreciate enhanced PM_{10} monitoring in the Portland-Gregory Area, recent permitting actions by TCEQ urgently warrant enhanced VOC monitoring as well. TCEQ has pointed to recent industrial and population growth in the Portland/Gregory area as justification for the new PM_{10} monitor location. However, now that TCEQ has permitted a massive ethane cracker facility, additional pollutants like VOCs should be monitored0020for as well as PM_{10}.

In 2019, TCEQ approved permits for Gulf Coast Growth Ventures Asset Holding LLC ("GCGV"), an ExxonMobil and SABIC joint venture, for the construction of the largest ethane cracker in North America to be sited in Gregory, Texas—a predominantly low-income Latino community.[21] At the hearing on the highly contested proposal, consulting engineering expert Dr. Ranajit Sahu testified that plant wide allowable emission totals for this facility will be:

Pollutant	**Tons per year (tpy)**
Volatile organic compounds	976.33
Nitrous oxides	525.03
Particulate matter	185.82
Particulate matter of 10 micrometers or less	176.35
Particulate matter of 2.5 micrometers or less	167.51
Sulfur dioxide	38.49

Permitted emission limits for this facility alone are staggering and point to the need for more monitors in the area to protect the community and ensure there are no NAAQS violations resulting from this new facility.[22] TCEQ's reasoning for a new PM monitor should apply to other pollutants emitted by this facility as emissions of VOCs will far exceed new emissions of PM_{10} by a factor of greater than five. This source alone is massive and threatens exceedances of applicable NAAQS. Because one of the purposes of the air monitoring network is to "[s]upport

[21] Application of GCGV Asset Holding, LLC, for Air Quality Permit Nos. 146425/PSDTX1518 & 146459/PSDTX1520 in San Patricio County, Texas, SOAH Docket Nos. 582-18-4846, 582-18-4847; TCEQ Docket Nos. 2018-0899-AIR, 2018-0900-AIR.
[22] *Id.*, Direct Testimony of Ranajit Sahu, Ph.D., QEP, CEM (Nevada) at 12, 33 (Dec. 7, 2018).

compliance with ambient air quality standards and emissions strategy development," 40 C.F.R. Part 58 App. D ¶ 1.1(b), the TCEQ should install new VOC monitors in the Gregory-Portland Area in addition to new PM_{10} monitoring.

D. Houston Ship Channel

The Commission has a duty "to protect the public from cumulative risks in areas of concentrated operations" and "give priority to *monitoring* and enforcement in areas in which regulated facilities are concentrated." Tex. Water Code § 5.130 (emphasis added). The Houston area is home the Houston Ship Channel – an area of concentrated operations. There is a compelling need for additional VOC monitors along the Houston Ship Channel. Recent data demonstrate that there are likely systematic underreporting errors with existing air emissions reporting at facilities along the Channel. For example, testing for VOCs and benzene along the Channel, researchers found far higher emissions levels than the estimates produced and reported by the operators themselves.[23] In fact, the study found that VOC emissions were 41% higher than emissions inventories reported, and benzene emissions were 94% higher.[24] This means that operators along the Channel are exceeding their permitted limits, and communities are paying the price with their health.

The problem of unauthorized emissions is not evenly distributed; some communities along the Channel are exposed to far greater pollution than others. Recent data demonstrate a greater total emissions burden from unauthorized emissions borne by Manchester, Pasadena, Deer Park, and Baytown—all along the Channel.[25] When compared to other Channel communities, Manchester exhibited far greater emissions density, meaning that it is a Channel community at greatest vulnerability from its surrounding industrial polluters.[26] Indeed, a 2016 study found 26 Risk Management Plan facilities sited within Manchester.[27]

Daily unauthorized emissions are compounded by the steady stream of preventable plant disasters at Channel facilities. For example, the ITC fire in Deer Park exposed local residents to unhealthy levels of benzene.[28] TCEQ there relied on the air monitoring network for data. In the wake of Hurricane, a tank at Valero's refinery also released benzene and dozens of other

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[23] Daniel Hoyt & Loren H. Raun, Measured and Estimated Benzene and Volatile Organic Carbon (VOC) Emissions at a Major U.S. Refinery/Chemical Plant: Comparison and Prioritization, 65 J AIR & WASTE MGMT. ASS'N 1020, 1021 (2015), available at: https://www.tandfonline.com/doi/pdf/10.1080/10962247.2015.1058304?needAccess=true.

[24] *Id.* at 1029.

[25] Sustainable Systems Research, LLC, Vulnerability and Stationary Source Pollution in Houston at 25 (Feb. 8, 2019).

[26] *Id.* at 25.

[27] Union of Concerned Scientist & Texas Environmental Justice Advocacy Services, Double Jeopardy in Houston, Acute and Chronic Chemical Exposures Pose Disproportionate Risks for Marginalized Communities at 19 (Oct. 2016), available at https://www.ucsusa.org/sites/default/files/attach/2016/10/ucs-double-jeopardy-in-houston-full-report-2016.pdf.

[28] EPA, High levels of benzene detected at ITC fire site (Mar. 21, 2019), available at: https://archive.epa.gov/epa/newsreleases/high-levels-benzene-detected-itc-fire-site.htm

pollutants into Manchester, but not due to hurricane damage— Valero's storage tank had previously failed an inspection and should have been decommissioned.[29] Chronic allowable emissions exceedances render the TCEQ air permit review process incapable of protecting public health because the technical assumptions upon which air permits are issued likely greatly underestimate actual pollution levels. As such, enhanced VOC monitoring in Houston Ship Channel communities is necessary to fill this regulatory gap.

Commenters request that TCEQ place additional VOC monitors along the Houston Ship Channel because of the staggering number of air polluting facilities there. Currently, there are no VOC monitors along the Channel on the southbound side of IH 610. Here, commenters recommend that TCEQ place a VOC monitor at or near J.R. Harris Elementary School—a public school where nearly all of the children are racial minorities and over two-thirds of the students are English Language Learners.

In addition to the general need for more VOC monitors in the Houston Ship Channel area, Commenters encourage the participation and inclusion of Ship Channel monitors in Federal air toxics monitoring programs such as the EPA's National Air Toxic Trends Sites (NATTS), the Urban Air Toxics Monitoring Program (UATMP), and the Community-Scale Air Toxics Ambient Monitoring (CSATAM) program. These federal ambient air toxics monitoring programs are critical tools that help evaluate inter-regional trends in hazardous air pollutant (HAP) exposure as well as providing valuable data for human exposure models and assessments, and the development of emission control strategies.

As late as 2018, the Deer Park monitor (CAMS 35) was included in the NATTS, but has since been delisted from the program. Unlike many NATTS monitors, the Deer Park monitor never had the capability to monitor for ethylene oxide, a HAP of significant emerging concern to the surrounding community. According to the 2014 National Air Toxics Assessment (NATA), several census tracts surrounding the Deer Park monitor are at significant risk for the development of cancer as a result of ethylene oxide exposure; with one tract's excess cancer risk estimated in excess of 311 in a million from exposure to this compound. The Commenters suggest that – in addition to participation in the NATTS – this monitor should be equipped with the capability to monitor ethylene oxide concentrations similar to other monitoring stations that participate in this program.

Commenters would also like to see additional monitoring in Manchester, Pasadena, and Baytown.

III. <u>TCEQ Must Increase Monitoring of Ozone Pollution in the Greater San Antonio Area.</u>

A. Ozone is a serious public health problem in the Greater San Antonio Area.

San Antonio is currently violating the 2015 ozone NAAQS. San Antonio's unhealthy air

[29] TCEQ, Investigation Report, Valero Energy Partners LP, Investigation No. 1408309 (Oct. 5, 2017 to Nov. 15, 2017).

quality has consequences for the more than 1.9 million Texans who live in Bexar County, including approximately 506,440 children and 105,811 adults suffering from asthma.[30] Recent epidemiological studies suggest that even modest reductions in ozone levels, which could be achieved by reducing pollution from a handful of large sources, would save hundreds of millions of dollars in avoided public health costs, premature deaths, and lost work and school days in the San Antonio area. Indeed, compliance with the 2015 ozone NAAQS would prevent 24 premature deaths each year in Bexar County alone, resulting in approximately $220,000,000 in avoided public health costs.[31] A modest drop in ozone levels would prevent over 38,000 lost school and work days annually in the San Antonio area. *Id.*

B. Additional monitoring is necessary to ensure San Antonio's smog problem is resolved in a prompt and cost-effective manner.

On July 25, 2018, EPA designated Bexar County as a non-attainment area for the 2015 ozone NAAQS. 83 Fed. Reg. 35,136. EPA designated Atascosa, Comal, and Guadalupe Counties as attainment/unclassifiable, even though EPA determined that these three counties were responsible for approximately 31 percent of the total ozone precursor emissions in the San Antonio area, that air-flow modeling showed air moving from these counties to violating monitors in Bexar County on exceedance days, and that these counties had no ozone monitors of their own, and thus might themselves be violating the NAAQS

TCEQ must add additional ozone monitors in the San Antonio area. Among other things, TCEQ's monitoring network must be designed to "[p]rovide air pollution data to the general public in a timely manner" and "[s]upport compliance with ambient air quality standards and emissions strategy development." 40 C.F.R. Pt. 58, App. D, Section 1 (a), (b). Monitoring sites "*must* be capable of informing managers about . . . air pollution transported into and outside of a city or region." *Id.*, Section 1.1.1. Sites must also be designed "to determine the impact of significant sources or source categories on air quality." *Id.*

To support these goals, and to ensure that emission control strategies designed for the greater San Antonio area *solve* the region's smog problem—rather than simply causing industries to migrate from Bexar County to areas that are currently designated as attainment—TCEQ should add ozone monitors in surrounding counties. At minimum, monitors should be added in New Braunfels—to ensure that the approximately 300,000 people who live in Guadalupe and Comal counties have localized air quality data. Adding an additional monitor in New Braunfels is especially appropriate given that Comal County had the second highest growth rate of any county in the United States between 2017 and 2018, increasing by 5.4 percent.[32]

In addition, TCEQ should add an additional monitor north of the San Miguel Electric Plant, to help evaluate this plant's impact on Bexar County's ozone levels. According to EPA's 2014 National Emission Inventory, this 500 MW coal-fired power plant is responsible for nearly

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[30] https://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/states/texas/bexar.html.
[31] https://www.sanantonio.gov/Portals/0/Files/Sustainability/OzoneHealth/final-report.pdf.
[32] *See New Census Bureau Estimates Show Counties in South and West Lead Nation in Population Growth* (Apr. 18, 2019), available at: https://www.census.gov/newsroom/press-releases/2019/estimates-county-metro.html.

2,400 tons of NOx a year. Consistent with its obligation to "determine the impact of significant sources or source categories on air quality," TCEQ should install an ozone monitor north of the San Miguel plant to help assess the impact of this plant on Bexar County's air quality.

IV. TCEQ must add additional monitors in the Permian Basin

Applying 40 C.F.R. Part 58, App. D, TCEQ is required to operate, at minimum, one ozone monitor in the Midland-Odessa CSA. In fact, more than one ozone monitoring site is required to achieve basic monitoring objectives.

A. Because the Midland-Odessa MSA Has a Population Greater than 350,000, Table D-2 Requires TCEQ to Operate At Least One Ozone Monitor There.

The Midland-Odessa CSA is one of the fastest growing regions in the United States.[33] According to the Texas Demographic Center, Midland had a population of 193,408 in 2020, while Odessa had a population of 193,408.[34] Accordingly, the combined population of this metropolitan area is 378,249.

Sources in the region—primarily from oil and gas production—are emitting significant amounts of pollution. For many pollutants, emissions of TCEQ Region 7 (which includes Midland-Odessa) rival or exceed emissions from Texas's largest metropolitan areas:[35]

Region (All Sources)	VOC (tons per year)	NOx (tons per year)
R7-Midland	362,139	85,550
R4-DFW	157,840	123,979
R12-Houston	175,802	132,696
R13-San Antonio	96,083	67,327

As these data show, the Midland-Odessa area is responsible for more VOC emissions than Dallas-Fort Worth and Houston *combined*. Midland-Odessa also emits more NOx than San

[33] New Census Bureau Estimates Show Counties in South and West Lead Nation in Population Growth (Apr. 18, 2019), https://www.census.gov/newsroom/press-releases/2019/estimates-county-metro.html. (from 2017 to 2018, Midland experienced the greatest percentage growth in of any metropolitan area in the nation—growing by 4.3 percent—while Odessa grew by 3.2 percent).

[34] See TCEQ 2020 Five-Year Ambient Monitoring Network Assessment at 20 (citing data from Texas Demographic Center), https://www.tceq.texas.gov/assets/public/compliance/monops/air/annual_review/historical/2020-5yrAAMNA.pdf.

[35] *Id.* at Tables 10, 31, 58, & 74.

Antonio. In fact, Midland-Odessa's emissions are likely much greater than reflected here; researchers have found that emissions from oil-and-gas operations in the Permian Basin are dramatically underreported.[36]

Midland and Odessa are part of the same metropolitan area, and should be treated as such for purposes of air quality monitoring network design. Together, the Midland-Odessa CSA includes three counties—Martin, Midland, and Ector Counties—which have an area of about 2,700 square miles. Odessa's north-east border (near Mission Blvd) is about 3 miles away from the Midland airport—which is incorporated within the city limits of Midland. About 20 miles separate the centers of each city. Under longstanding EPA regulations, Midland and Odessa are included in the same Intrastate Air Quality Control Region. *See* 40 C.F.R. § 81.137.

Where a metropolitan area is divided into multiple MSAs, EPA regulations require regulators to consider the entire CSA for purposes of designing the air quality monitoring network. *See* 40 C.F.R. Part 58, App. D, § 4.1(b) ("Within an O_3 network, *at least one O_3 site for each MSA, or CSA if multiple MSAs are involved,* must be designed to record the maximum concentration for that particular metropolitan area.") (emphasis added). Here, although the U.S. Census Bureau has characterized Midland-Odessa as a CSA, it is clear that the two cities comprise a single metropolitan area. The combined population of the CSA exceeds the threshold above which an ozone monitor is required under Table D-2. Accordingly, under section 4.1(b), TCEQ must operate "at least one O_3 site for . . . [the] CSA" for the purpose of "record[ing] the maximum concentration for that particular metropolitan area."

Any other result would be arbitrary and capricious. Other metropolitan areas that span much greater distances are treated as a single unit for the purpose of Table D-2. The Houston MSA spans nine counties and has an area of 9,444 square miles. One can drive for 110 miles along I-10 (from Sealy to Winnie) without leaving the MSA. The Dallas-Fort Worth-Arlington MSA is over 9,000 square miles. About 30 miles separate downtown Dallas from downtown Fort Worth. The San Antonio MSA includes eight counties and has an area of 7,340 square miles. It would be arbitrary and capricious to treat these large urban conglomerations as single units under Table D-2, while refusing to do the same for the much smaller Midland-Odessa CSA.

B. The Draft 2021 Plan Unlawfully Ignores Regulatory Language Providing that the Total Number of Ozone Monitors *Must Exceed* the Minimum Required by Table D-2.

[36] Notably, a recent study analyzing satellite observations of the Permian Basin from 2018-2019 estimated that methane emissions from oil and natural gas production in the Basin are approximately 2.7 ± 0.5 Tg a−1, more than two times higher than bottom-up inventory-based estimates, and equivalent to 3.7% of the gross gas extracted in the Permian. Because VOCs are co-emitted with methane during oil and gas production, this study suggests significant VOC emissions. Zhang, et al, *Quantifying methane emissions from the largest oil-producing basin in the United States from space*, Science Advances (April 22, 2020), *available at* https://advances.sciencemag.org/content/6/17/eaaz5120.

EPA regulations at 40 C.F.R. Part 58, App. D, § 1.1.2 provide that "[t]he total number of monitoring sites . . . *will be substantially higher* than these minimum requirements provide." (emphasis added) Similarly, section 4.1 provides that "[t]he total number of ozone sites needed to support the basic monitoring objectives of public data reporting, air quality mapping, compliance, and understanding ozone-related atmospheric processes *will include* more sites than the minimum number required in Table D-2." (emphasis added).

Installing at least one ozone monitor in Midland-Odessa is necessary to meet basic monitoring objectives of public data reporting, air quality mapping, compliance, and understanding ozone-related atmospheric processes. There are hundreds of thousands of people living in the Midland-Odessa area who have no idea whether the air they are breathing is safe. Indeed, there are no ozone monitors at all in the Midland-Odessa-San Angelo Intrastate Air Quality Control Region established by C.F.R. § 81.137. With no ozone monitors, it is impossible for the State of Texas to fulfill its responsibility for assuring that the ozone NAAQS "will be achieved and maintained within each air quality control region" in the state. 42 U.S.C. § 7407(a).

C. Even if Midland and Odessa are Considered Separately, TCEQ is Required to Install one Monitor in Each City

Regardless of whether TCEQ treats Midland and Odessa as separate units for purposes of Table D-2, the end result is the same: two ozone monitors must be added in the area. That is because both the Midland MSA and the Odessa MSA have more than 50,000 people. As explained, neither city has an existing ozone monitor. As such, TCEQ must look to data that is available at the regional scale—which, pursuant to EPA's regulations, may require looking at "areas with dimensions of as much as hundreds of kilometers." *See* 40 C.F.R. Part 58, App. D, ¶ 4(c)(3). The nearest monitor is in Hobbs, New Mexico, which, like Midland-Odessa, is located in the Permian Basin region. The most recent, 3-year design value for this monitor is 0.071 ppm—more than 100 percent of the 2015 eight-hour ozone NAAQS.[37] Absent some other data for Midland-Odessa, TCEQ must use this as the best estimate available for Midland-Odessa's design value. If TCEQ does have other information about the likely design value, it must provide this information and allow the public the opportunity to comment on it.

In prior years, TCEQ has responded to this argument by stating that: "Hobbs, New Mexico, is delineated by the OMB as micropolitan statistical area and is not associated with the Midland or Odessa MSAs." TCEQ misunderstands the point. While Hobbs is not part of the Midland-Odessa metropolitan area, it is the nearest ozone monitor. As we explained, TCEQ must use the best available estimate of regional ozone values in applying Table D-2. EPA's regulations make clear that this may entail looking at "areas with dimensions of as much as hundreds of kilometers." *See* 40 C.F.R. Part 58, App. D, ¶ 4(c)(3). The best data at the regional level is provided by Hobbs.

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[37] https://www.env.nm.gov/air-quality/wp-content/uploads/sites/2/2021/01/O3-Monitoring-FS-7.7.2020.pdf.

Applying Table D-2, the result is the same regardless of whether the cities are treated as belonging to the same MSA or not. Table D-2 provides that two monitors are required for a metropolitan area with a population greater than 350,000 if the most recent 3-year design value is greater than or equal to 85 percent of any ozone NAAQS. The best available estimate for Midland-Odessa's design value comes from the monitor in Hobbs, which has a 3-year ozone design value of 0.071 ppm. Other nearby monitors, in Carlsbad, NM, are also exceeding the NAAQS. Accordingly, the best available estimate indicates that Midland-Odessa's ozone levels exceed 85 percent of an ozone NAAQS.

If Midland and Odessa are treated as separate MSAs, each with a population greater than 50,000 but less than 50,000, the result is the same. Table D-2 requires cities with more than 50,000 people to have at least one ozone monitor if the most recent 3-year design value is greater than or equal to 85 percent of any ozone NAAQS. Again, the best available estimate for the ozone design value in either city exceeds 85 percent of the eight-hour ozone NAAQS. Accordingly, if this approach is used, TCEQ would be required to install one ozone monitor in Midland and a second in Odessa.

D. TCEQ must monitor and model sulfur dioxide and hydrogen sulfide emissions in the Permian Basin.

We appreciate and support TCEQ's recent deployment of additional monitoring sites in Ector County, including the sulfur dioxide monitor at DCP's Goldsmith Gas Plant, in response to our previous 2019 and 2020 AMNP Comments. However, due to widespread flaring throughout the Permian Basin concentrated heavily in TCEQ's Odessa Region, the existing monitoring network is plainly inadequate to protect air quality and ensure compliance with the SO_2 NAAQS.

On October 22, 2020, several Texas organizations petitioned the EPA Administrator to reconsider the decision to designate Ector County as unclassifiable/attainment for the Sulfur Dioxide Primary (Health-Based) NAAQS, based on modeling of industry self-reported flaring emissions obtained from TCEQ's publicly accessible Emissions Events (STEERS) database.[38] The Petition demonstrates, based on the modeled actual emissions, that sulfur dioxide levels in Ector County exceed the NAAQS.

TCEQ must model SO_2 levels in Ector County and the remainder of the Permian Basin and install monitors at expected SO_2 hotspots to serve the purposes of air pollution monitoring. If those modeling and monitoring efforts reveal violations of the NAAQS, TCEQ must take action to fix them, including requesting designation as nonattainment if the data so show.

In addition to the TCEQ Emission Event data, sources under the Texas Railroad Commission's ("RRC") jurisdiction release even more air pollution. Based on the most recent available data from the Texas Railroad Commission, oil and gas drillers likely flared more than

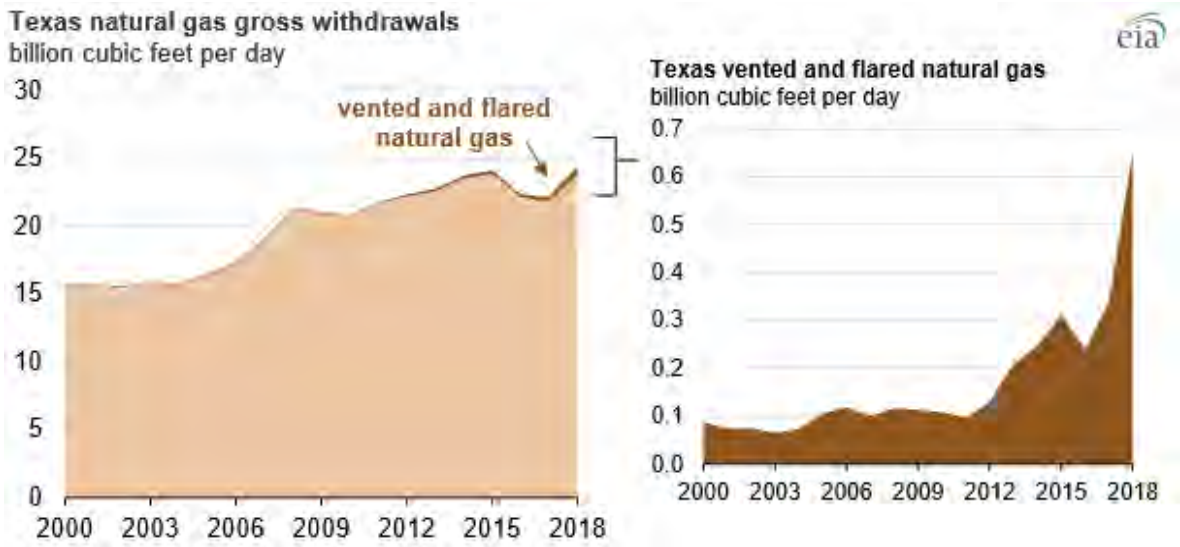
[38] Petition of the Odessa, Texas Chapter of the National Association for the Advancement of Colored People (Odessa NAACP), Environmental Integrity Project, Environmental Defense Fund, the Lone Star Chapter of the Sierra Club, Texas Campaign for the Environment, Environment Texas, Public Citizen, Inc., and Earthworks (Ex. 2).

48,000 TONS of sulfur dioxide into the air. We urge the TCEQ to revise the Draft 2021 Plan to include monitoring of air quality around oil and gas production, where rampant flaring and venting is well-documented. The current oil bust only heightens the need for monitoring.

E. Railroad Commission flaring data reinforces the need for enhanced Sulfur Dioxide monitors in the Permian Basin.

The SO_2 monitor in Big Spring shows at times concerning levels associated most probably with the Alon Big Springs Refinery. The addition of SO2 monitors in Ector County are admirable, but additional monitoring is needed. There are no ozone monitors in the area despite the relatively large population, vast truck traffic and oil and gas activities. While we believe the most immediate need is for additional VOC, SO_2 and Hydrogen Sulfide monitors, placing an ozone monitor in the Odessa-Midland area and an additional PM monitor are also important.

According to the U.S. Energy Information Administration, in 2018, vented and flared gas from oil and gas wells in Texas reached over 0.65 Bcf/d, nearly double the 2017 level:



Source: U.S. E.I.A., available at https://www.eia.gov/todayinenergy/detail.php?id=42195

This rise in flared and vented gas tracks the rise in the Texas Railroad Commission's granting of flaring permits (or Rule 32 flaring exceptions). Flaring permits approved by RRC increased from slightly more than 300 in fiscal year 2010 to nearly 5,500 in fiscal year 2018. As Texas Railroad Commissioner Ryan Sitton has documented, oil and gas producers are currently flaring gas roughly at levels similar to those seen in the 1950s.[39]

Recent data indicate that flaring at upstream oil and gas sites has not declined. In fact, TCEQ-regulated operators in the Permian Basin continue to file Emission Events reports which

[39] *See* Table 1, page 3, available at: https://www.rrc.state.tx.us/media/vhhj43cq/sitton-texas-flaring-report-q1-2020.pdf.

show continued flaring as a result of upsets and unplanned maintenance. At the same time, Railroad Commission-regulated sources continue to seek exceptions to that agency's flaring rules as a matter of routine practice.

TCEQ requires operators to report their annual point source emissions inventories. But oil and gas drillers who are regulated by the Railroad Commission do not report directly to TCEQ. Instead, oil and gas drillers report the annual amount of gas that is vented or flared at each oil and gas lease to the Railroad Commission, and then TCEQ obtains this data and uses it to develop area source emission estimates. These emissions are required to be included in the State's Emissions Inventory, and are also included in the State Implementation Plan for achieving and maintaining the national ambient air quality standards.

TCEQ reports detailing the oil and gas emissions estimates, i.e., TCEQ's upstream oil and gas "area source" emissions estimates do not include sulfur dioxide emissions from the RRC-regulated flares. TCEQ's estimates do include emissions from other, much smaller sources at well sites, including drilling rig engines, tanks, and other equipment. But emissions from the flares themselves – the source of most combustion pollution in the oil fields – is not included in the TCEQ's emissions estimates.

To demonstrate the magnitude of the oil and gas well flaring emissions that TCEQ failed to consider, we reviewed RRC flare data for the period from October 2018 through September 2019,[40] for the Railroad Commission's District 8 (which covers a portion of the Permian Basin including Ector and Midland Counties. We relied on the Railroad Commission's Hydrogen Sulfide Fields Concentrations Listings for an average hydrogen sulfide concentration per field.[41] We acknowledge that we do not have access to the industry data that TCEQ and the Railroad Commission have, notably the hydrogen sulfide content of all the gas flared, which drives the sulfur dioxide emissions estimates. Therefore, our emission estimates rely on the Railroad Commission's published Fields Concentrations Listings for an average hydrogen sulfide concentration per field. Should TCEQ, RRC, or industry object to our methodology, we welcome your critique and invite you to provide your estimate of sulfur dioxide emissions from these oil and gas well flares. We assumed 98% conversion of hydrogen sulfide to sulfur dioxide, which is commonly used in the industry, although we acknowledge that 100% destruction of hydrogen sulfide is typically expected.

We used the following standard engineering calculations to determine how much hydrogen sulfide and sulfur dioxide oil and gas drillers emitted in the Railroad Commission District 8 over the one-year study period:

Flared Calculations:[42]

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[40] TX RRC Production Report Queries, available at: http://webapps.rrc.texas.gov/PR/publicQueriesMainAction.do.
[41] TX RRC Hydrogen Sulfide (H2S) Fields & Concentrations Listings, available at: https://www.rrc.texas.gov/oil-and-gas/research-and-statistics/field-data/hydrogen-sulfide-h2s/ .
[42] *Id.*

$$\boldsymbol{tons\ H_2S} = \frac{field\ concentration\ H_2S\ ppm}{1{,}000{,}000\ ppmv} \times Volume\ Vented\ (MCF) \times 1{,}000\ \left(\frac{scf}{MCF}\right) \times \frac{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}}{379.3\frac{scf}{mol}} \times \frac{ton}{2{,}000\ lb} \times 0.02\ (gas\ not\ combusted)$$

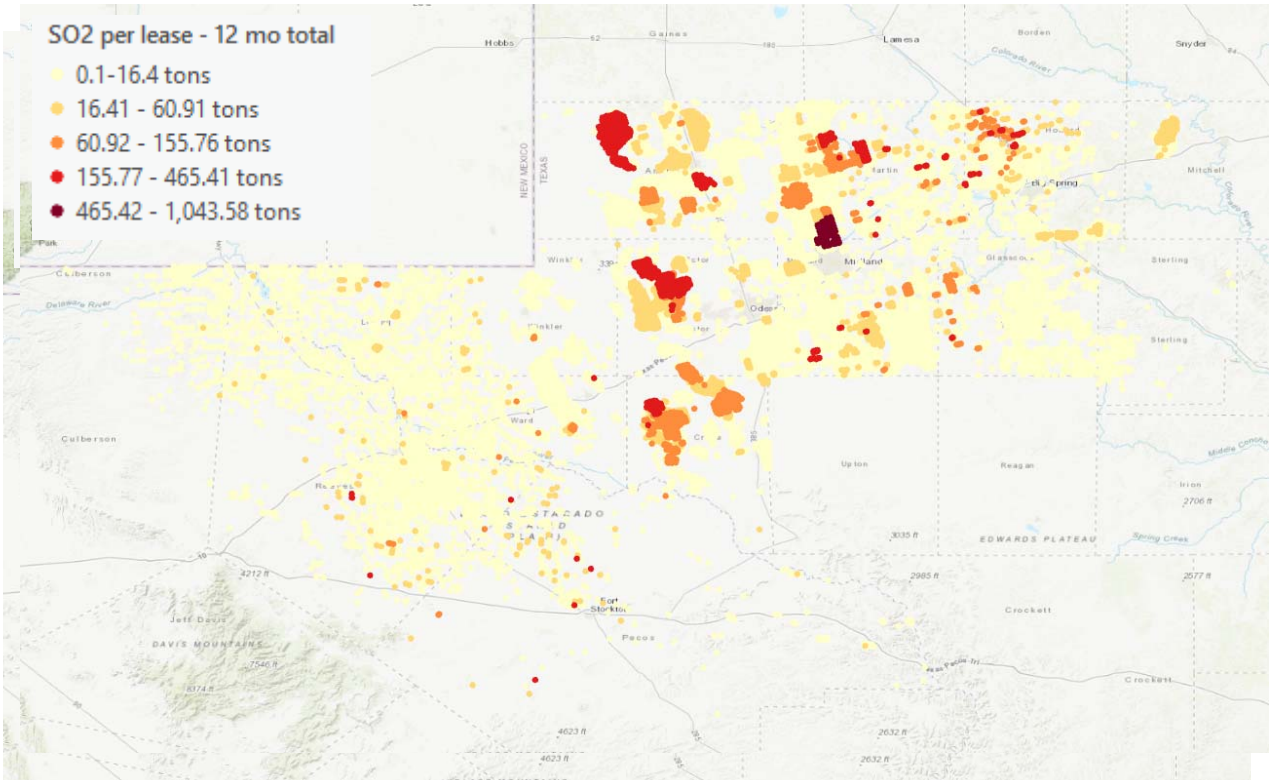
$$\boldsymbol{tons\ SO_2} = \frac{field\ concentration\ H_2S\ ppm}{1{,}000{,}000\ ppmv} \times Volume\ Vented\ (MCF) \times 1{,}000\ \left(\frac{scf}{MCF}\right) \times \frac{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}}{379.3\frac{scf}{mol}} \times \frac{64.1\ molar\ weight\ SO_2\ \frac{lb}{lb-mol}}{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}} \times \frac{ton}{2{,}000\ lb} \times 0.98\ (gas\ combusted)$$

Vented Calculation:[43]

$$\boldsymbol{tons\ H_2S} = \frac{field\ concentration\ H_2S\ ppm}{1{,}000{,}000\ ppmv} \times Volume\ Vented\ (MCF) \times 1{,}000\ \left(\frac{scf}{MCF}\right) \times \frac{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}}{379.3\frac{scf}{mol}} \times \frac{ton}{2{,}000\ lb}$$

Based on these calculations using the publicly available data, oil and gas operators in RRC District 8 flared roughly 141 BCF of gas between October 2018 and September 2019, and vented about 3,213 thousand cubic feet during that period. Flaring this much gas, much of it high in hydrogen sulfide content, would have resulted in an estimated 48,459 tons of SO_2 and 1,466 tons of H_2S. Venting and flaring on oil and gas leases located in Martin and Howard counties likely resulted in the highest estimated emissions of SO_2 and H_2S, as shown in the following map:

[43] TCEQ, Air Permits Division, New Source Review (NSR) Emission Calculations, available at: https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss_calc_flares.pdf.



This new information demonstrates that oil and gas drillers regulated by the Texas Railroad Commission flared even more pollution than the TCEQ-regulated sources that report Emission Events.

We appreciate that the TCEQ has to make hard choices about where to measure air quality in Texas. As Texas now faces another oil bust, we urge you to take action to protect air quality in the oil and gas producing regions of the state. Permian Basin residents, especially, need your protection due to the massive and dangerous emissions of sulfur dioxide and hydrogen sulfide prevalent in that region.

V. <u>TCEQ's SO_2 monitoring network is insufficient to support compliance with the 1-Hour SO_2 NAAQS.</u>

To reflect the most current science on SO_2 impacts, in 2010, EPA set the new ambient standard at 75 ppb (196 µg/m3) as an hourly average.[44] Due both to its shorter averaging time (1-hour versus 24-hour) and significantly lower allowable concentration (75 ppb versus 140 ppb), the new standard is considerably more stringent than the prior SO_2 NAAQS. In adopting the 1-hour SO_2 NAAQS, EPA recognized the "strong source-oriented nature of SO_2 ambient impacts." 75 Fed. Reg. at 35,370. Unlike regional pollution problems, short term SO_2 air pollution

[44] 40 C.F.R. § 50.17(a); Primary NAAQS for Sulfur Dioxide, 75 Fed. Reg. 35,520, 35,520-21 (June 22, 2010).

problems are caused by single sources and occur in the near vicinity of that source. Thus, EPA concluded that the appropriate methodology for purposes of determining compliance, attainment, and nonattainment with the new NAAQS is *modeling*, since it would be virtually impossible to site sufficient monitors around each individual source of SO_2 pollution. *See* 75 Fed. Reg. at 35,551. EPA also determined in the final SO_2 NAAQS rule that it did "not expect monitoring to become the primary method by which ambient concentrations are compared to the new 1-hour SO2 NAAQS."[45]

Aside from the difficulties EPA has recognized are inherent in using monitoring to determine compliance with the SO_2 NAAQS at each individual source in the country, Texas's monitoring and modeling plan is insufficient to demonstrate compliance with the NAAQS, for several reasons.

A. Monitors alone cannot accurately evaluate compliance with the SO2 NAAQS.

As EPA explained in the final 2010 SO_2 NAAQS Rule, "even if monitoring does not show a violation," that absence of data is not determinative of attainment status absent modeling, and that monitoring in general is "less appropriate, more expensive, and slower to establish."[46] Moreover, TCEQ's monitoring network plan continues to suffer from a number of drawbacks that render this approach too slow, too impractical, and too ineffective for monitoring to replace modeling as the primary means of implementing the 1-hr SO_2 NAAQS.

First, a single monitor may not be sufficient to characterize SO_2 air quality or to determine compliance with the 1-hr SO_2 standard. For any area with fewer than three SO_2 monitors positioned to capture peak concentrations from a large SO_2 source, monitoring will be inadequate to establish 1-hr SO_2 compliance. If only one monitor is located near a large source, that source has a clear invitation to game the system by, for example, slightly adjusting its stack or operating parameters to ensure that high impacts will not occur at the one monitor.

Second, even if TCEQ were to have the resources to deploy a sufficient number of monitors, the state may not be able to locate a monitor where the modeling indicates the highest impacts are likely to occur for technical reasons, such as an inability to gain physical or legal access to the site, or lack of access to power supply.[47]

Third, even if a sufficiently extensive monitoring network were established, EPA generally requires three full years of monitoring data to establish a certified design value; assuming

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[45] 75 Fed. Reg. at 35,551.
[46] 75 Fed. Reg. at 35,551.
[47] An inability to place monitors at appropriate locations is another argument in favor of a modeling approach, as EPA has long recognized: "Although siting criteria may preclude the placement of ambient monitors at certain locations, this does not preclude the placement of model receptors at these sites." U.S. EPA 1994 SO_2 Guideline Document at 2-6, *available at* http://www.epa.gov/ttn/naaqs/aqmguide/collection/cp2/19940201_oaqps_epa-452_r-94-008_so2_guideline.pdf [hereinafter, "1994 SO_2 Guideline Document"].

violating monitors are designated as being in nonattainment, the state then has 18 months to submit a nonattainment plan, 81 Fed. Reg. 89,870, at 89,871 (Dec. 13, 2016), and then another five years to come into compliance with the NAAQS, 42 U.S.C. § 7514. Thus, full implementation of the NAAQS through monitoring would take up to a decade, which presents unacceptable risk to vulnerable Texans. Not only would this delay be a disservice to the public, it would also be a disservice to the regulated entities, especially owners of coal-fired power plants, which must make critical decisions now about future operations. Many of these sources are already in distress due to a number of factors, including low natural gas prices, declining demand for energy, an increasing availability of zero- or low- SO_2 generating sources, and the age of the existing coal-fired power plant fleet. Evaluating and achieving compliance through more expeditious and cost-effective air dispersion modeling can thus provide the regulatory clarity needed to make prudent decisions about those plants now that reliance on increased monitoring alone cannot.

Finally, EPA itself has acknowledged that, for medium to large sources, monitoring is "less appropriate, more expensive, and slower to establish."[48] Moreover, the cost of modeling compliance with the SO_2 NAAQS is modest, particularly in comparison to the costs of installing and operating an adequate SO_2 monitoring network. This is particularly true where, as here, the vast majority of SO_2 pollution comes from a relatively small group of very large sources. If TCEQ does not have sufficient in-house modeling resources, the agency would incur some costs charged by third-party modelers, but even these costs are comparatively nominal. Independent third-party modelers could conduct AERMOD time series modeling for SO_2 for less than $5,000 per source, and in most instances less than $3,000. In stark contrast, simply purchasing and installing a single monitor can cost upwards of $100,000 per site. By focusing on modeling the sources subject to the DRR, TCEQ could ensure that the protections promised by the NAAQS are met in a cost-effective and expeditious manner.

B. TCEQ's proposed SO2 monitoring network is inadequate to determine whether some of the largest pollution sources are causing unhealthy levels of SO2.

The 25 Texas coal-burning power plants subject to the Data Requirements Rule emit more sulfur dioxide than all of the sources in Arkansas, Louisiana, Oklahoma, Arizona, Colorado, Kansas, New Mexico, and Mississippi, *combined*.[49] Nevertheless, TCEQ operates SO_2 ambient air monitors in the vicinity of only nine of those plants.[50] And four of those plants—Big Brown, Monticello, Sandow, and J.T. Deely—have ceased operations. By focusing on a subset of sources that is responsible for only a fraction of Texas's staggering SO_2 emissions, TCEQ undermines the core purposes of EPA's monitoring regulations: provide the public with accurate data on air pollution.[51]

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[48] 75 Fed. Reg. at 35,570.
[49] *Id*.
[50] TCEQ has SO2 monitors near Harrington, Gibbons Creek, Big Brown, Martin Lake, Welsh, J.K. Spruce, J.T. Deely, Monticello, and Sandow.
[51] 40 C.F.R. Pt. 58 App. D ¶ 1.1.

The Draft 2021 Plan also fails to demonstrate that the current SO_2 monitors are placed in a location and manner that captures the peak predicted emissions concentrations, as required by EPA regulations.[52] By way of example, air dispersion modeling conducted according to EPA's SO_2 modeling protocol demonstrates that TCEQ's monitoring placements for the Harrington power plant does *not* capture peak predicted impacts from that source. Instead, the modeling demonstrates that the highest SO_2 concentrations—concentrations that violate the 2010 SO_2 NAAQS—caused by emissions from Harrington are in significantly different areas than the existing monitors. Ex. 1 at 6-8. EPA regulations require TCEQ to place monitors in a location that will capture the peak pollution concentrations caused by a particular source.[53] TCEQ must consider relocating or adding a monitor that will capture peak impacts from this source.

C. TCEQ has unlawfully failed to take action to protect the public from monitored violations of the NAAQS.

Even if TCEQ correctly sited its SO_2 monitors in locations with the highest predicted concentration of SO_2 pollution (and it did not), the agency's own *monitoring* data indicates that air quality at multiple monitors located near very large coal-burning power plants is regularly exceeding the health-based SO_2 NAAQS. In fact, TCEQ monitoring data demonstrates that the design values for the air quality monitors near Martin Lake in Rusk County and Harrington Station in Potter County are violating the 2010 standard.

The 2010 SO_2 NAAQS requires that the three-year average of the 99th percentile 1-hour daily maximum SO_2 concentration—*i.e.*, the average of the fourth highest maximum one-hour reading for three years—must not exceed 75 ppb. 40 C.F.R. § 50.17(b). Applying this standard, TCEQ's Martin Lake monitor will have a minimum 2017-2019 design value of 82.03 ppb, well above the NAAQS.[54] To calculate the design value, Sierra Club averaged the fourth-highest 1-hour daily maximum values from available data for 2017, 2018, and 2019. The fourth-highest value for 2018 was 109.1 ppb. The fourth-highest value for 2019 was 114.8 ppb. And although the monitor operated for just 32 days of 2017, the fourth-highest reading for that period was 22.2 ppb. The average of 109.1 ppb, 114.8 ppb, and 22.2 ppb is 82.03 ppb,[55] making clear that the area is failing the NAAQS. Significantly, the 82.03 ppb design value for 2017-2019 is almost certainly conservative because the Martin Lake monitor was not operable until November 2017, and thus the 82.03 ppb design value essentially assumes *zero* emissions for the first ten months of 2017. It is likely the design value for 2017 would have been comparable to the other two years (i.e., greater than 100 ppb) if the monitor had operated for the entire year.

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[52] *Id.* at ¶ 1.1(c).
[53] *Id.* at ¶ 1.1.
[54] *See* CAMS 1082 monitoring data for Tatum CR 2181d Martin Creek Lake, EPA Site Number: 484011082, available at: https://www17.tceq.texas.gov/tamis/index.cfm?fuseaction=report.view_site&CAMS=1082.
[55] 109.1 ppb (2018 fourth highest hourly reading) + 114.8 ppb (2019 fourth highest hourly reading) + 22.2 ppb (2017 fourth highest hourly reading) = 246.1 ppb. 246.1 ppb ÷ 3 = 82.03 ppb.

Monitoring data is now available through 2020. The fourth-highest 1-hour daily maximum value was **83.9 ppb** for the year 2020.[56] Paired with the fourth-highest 2018 and 2019 values of **109.1 ppb** and **114.8 ppb**,[57] respectively, the newly-available data thus yields a minimum 2018-2020 design value of **102.6 ppb,** well above the NAAQS of 75 ppb. This design value is likely extremely conservative because, as noted above, the Martin Lake monitor is not sited so as to capture peak hourly SO_2 impacts.

Air quality in the area surrounding Xcel Energy's coal-burning Harrington Station similarly fails to meet EPA's health-based SO_2 standard. In fact, according to the state's own EPA-certified monitor, the design value for the monitor at Harrington is 114 ppb.[58] Thus, even though these monitors do not actually capture the highest SO_2 concentrations near either plant, the areas surrounding both Martin Lake and the Harrington power plants are violating the health-based NAAQS, exposing those communities to significant risk.

TCEQ must take steps to redesignate those areas as being in nonattainment with the 2010 SO_2 NAAQS. 40 C.F.R. § 51.1205(d); *see also* 30 Tex. Admin. Code § 101.21 ("The National Primary and Secondary Ambient Air Quality Standards as promulgated pursuant to section 109 of the Federal Clean Air Act, as amended, will be enforced throughout all parts of Texas."). At a minimum, TCEQ must take appropriate action, including requiring adoption of enforceable emission limits to ensure attainment of the 2010 SO_2 NAAQS near both power plants, or recommend that EPA redesignate the areas to nonattainment. Sierra Club also urges TCEQ to install additional air quality monitors in those areas to properly characterize ambient air quality near those plants and to inform the affected communities.

D. TCEQ should conduct additional modeling to reevaluate compliance with the SO2 NAAQS at W.A. Parish, San Miguel, and Coleto Creek, or adopt enforceable emissions limitations to ensure attainment.

In its Sulfur Dioxide Ongoing Data Requirements Annual Report, TCEQ notes total annual SO2 pollution from the San Miguel Electric Plant, W.A. Parish Electric Generating Station, and Coleto Creek Power Station ,among others.

However, the annual emissions reported by TCEQ do not ensure compliance with the *one-hour* NAAQS. In setting the 2010 standard, EPA explicitly recognized that short-term exposure to SO2 concentrations above 75 ppb were harmful to human health. Accordingly, the 2010 standard imposes a shorter averaging time (1-hour versus 24-hour), which is designed to protect against dangerous short-term exposureTCEQ's reference to total annual emissions does not ensure—nor is it even relevant to—compliance with the *hourly* standard. TCEQ should

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[56] *See* (CAMS 1082 Monthly Monitoring Data, Tatum CR 2181d Martin Creek Lake C1082 - EPA Site: 484011082, available at*:* https://www.tceq.texas.gov/cgi-bin/compliance/monops/monthly_summary.pl?cams=1082).

[57] Newly-available data from September through December 2019 confirms 114.8 ppb as the fourth-highest daily maximum value for 2019.

[58] https://www.epa.gov/sites/production/files/2020-05/so2_designvalues_2017_2019_final_05_05_20.xlsx

conduct additional modeling, based on the most-recent three years of actual hourly emissions and meteorological data to ensure compliance with the NAAQS at San Miguel, W.A. Parish, and Coleto Creek. Alternatively, the agency should impose more stringent emissions limitations under 40 C.F.R. § 1204 to ensure compliance with the standard.

VI. TCEQ Should Install Additional Monitors in El Paso.

Western Refining Company, L.P., plans to double the allowable amount of hydrogen cyanide emissions from its fluidized catalytic cracking unit. Residents of neighboring communities are currently being exposed to HCN emissions in amounts that can be expected to cause significant public health impacts. Modeling conducted in connection with Western Refining's application showed numerous exceedances of the one-hour Effects Screening Level for HCN at the fenceline directly north of the Sambrano neighborhood. This modeling raises serious concerns about potential health impacts on residents. TCEQ should require Western Refining to implement real-time emissions monitoring at the fence-line, so that residents and emergency personnel can be alerted of emissions exceedances in time to take appropriate response measures. TCEQ should also require Western Refining to conduct a health impact study of the Sambrano neighborhood to determine if residents are suffering adverse health effects as a result of HCN or other emissions.

TCEQ should also deploy a near-road NO_2/CO monitor at Zavala Elementary School. EPA regulations require "one near-road NO_2 monitoring station in each [core-based statistical area] with a population of 1,000,000 or more persons to monitor a location of expected maximum hourly concentrations sited near a major road with high [annual average daily traffic] counts . . . ." 40 C.F.R. Part 58, App. D, Section 4.3.2(a). In selecting the appropriate site for this station, a monitoring agency must rank all road segments and "identify[] a location or locations adjacent to those highest ranked road segments, considering fleet mix, roadway design, congestion patterns, terrain, and meteorology, where maximum hourly NO_2 concentrations are expected to occur . . . ." *Id.* If there are multiple acceptable candidates, the agency "shall consider the potential for population exposure" as a tie-breaking factor. *Id.* The monitor should be designed to reflect "the maximum expected NO_2 concentration . . . [at] the microscale." *Id.*, section 4.3.5(a). A CO monitor must generally be collocated with any near-road NO_2 site. *Id.*, section 4.2(b).

El Paso does not currently have a near-road monitoring station, and TCEQ lists the required number of near-road monitors as zero in Appendix D of this proposal. TCEQ has misread the regulations. The El Paso-Las Cruces CBSA, which includes El Paso and Hudspeth Counties, Texas, and Dona Ana County, New Mexico, has a population in excess of 1,000,000.[59] This understates the population using this area, however, as many residents of Ciudad Juarez (a city with over 1.3 million residents) use the roadways near Zavala. At minimum, TCEQ must install one near-road monitor in this CBSA.

A natural candidate for such a monitor would be Zavala Elementary School. The school is located directly adjacent to the Interstate 110 spur, which connects Interstate 10 with the

[59] https://www.epa.gov/sites/production/files/2017-12/documents/nm_tsd_final.pdf at page 15; https://www2.census.gov/geo/maps/metroarea/stcbsa_pg/Feb2013/cbsa2013_TX.pdf

Cordova International Bridge. Heavy-duty trucks—many of which are Mexican-domiciled and thus not required to comply with U.S. emission standards—often idle on this spur for an extended period of time. Monitoring the emissions at this location would provide important data to residents in the Chamizal community who are concerned about the impact of these vehicle emissions on their children.

VII. Conclusion

For the reasons discussed above, the Draft 2021 Plan is inadequate and will not properly characterize peak pollution concentrations in many of the most vulnerable communities across the state. To protect the health of Texas citizens, TCEQ must enhance its air monitoring network as discussed above. Commenters further request that Texas Commission on Environmental Quality ("TCEQ") withdraw the draft, publish the plan in both English and Spanish, and allow the public to provide additional comment on the agency's network plan through the notice and comment rulemaking process.

Thank you for the opportunity to comment. If you have any questions or need additional information, please do not hesitate to contact us.

Harrington Station Power Plant

Amarillo, Texas

Evaluation of Compliance with the 1-hour NAAQS for SO_2

September 18, 2020

Conducted by:

Steven Klafka, P.E., BCEE

Wingra Engineering, S.C.

Madison, Wisconsin

1. Introduction

Wingra Engineering, S.C. was hired by the Sierra Club to conduct an air modeling impact analysis to confirm that the Harrington Station Power Plant located in Amarillo, Texas is causing monitored exceedances of the 1-hour sulfur dioxide (SO_2) national ambient air quality standard (NAAQS), and to identify the likely extent of those exceedances.[1] This document describes the results and procedures for evaluating the extent and concentration of SO_2 impacts from Harrington Station Power Plant.

The dispersion modeling analysis predicted ambient air concentrations for comparison with the 1-hour SO_2 NAAQS. The modeling was performed using the most recent version of AERMOD, AERMET, and AERMINUTE, with data provided to the Sierra Club by regulatory air agencies and through other publicly-available sources as documented below. The analysis was conducted in adherence to all available USEPA guidance for evaluating source impacts on attainment of the 1-hour SO_2 NAAQS via aerial dispersion modeling, including the AERMOD Implementation Guide; USEPA's Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010; modeling guidance promulgated by USEPA in Appendix W to 40 CFR Part 51; USEPA's March 2011 Modeling Guidance for SO_2 NAAQS Designations;[2] and, USEPA's August 2016 SO_2 NAAQS Designations Technical Assistance Document.[3]

To improve the accuracy of this modeling analysis, it incorporates the following procedures:

a) The most current versions of the AERMOD modeling system v. 19191 were used for the analysis.

b) Actual hourly emission rates were used for the modeling analysis. Because emission rates from the facility's continuous emissions monitoring system (CEM) were not publicly available, this report relies on hourly emissions data from EPA's *Clean Air Markets Program Database (CAMD)* for the 2017-19 period.[4]

c) Stack parameters including location, height, diameter and temperature were obtained from the annual survey compiled by the U.S. Energy Information Administration.[5] Stack locations were verified using aerial photographs, air modeling EPA conducted for evaluating the facility's impacts under the Clean Air Act's regional haze program,[6] and a modeling protocol

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[1] On May 5, 2020, EPA determined that the 2017-2019 design value for the Amarillo Xcel El Rancho monitor AQS Site ID 483751077 is 114 ppb.
[2] http://www.epa.gov/scram001/so2_modeling_guidance.htm
[3] https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf
[4] http://ampd.epa.gov/ampd/
[5] http://www.eia.gov/electricity/data/eia860/
[6] Technical Support Document Our Strategy for Assessing which Units are Subject to BART for the Texas Regional Haze BART Federal Implementation Plan (BART Screening TSD), November 2016.

provided to TCEQ earlier this year for evaluating SO_2 emissions from the Harrington Station.[7]

d) Since actual hourly SO_2 emissions were used for the modeling analysis, hourly stack exit velocities and temperatures were also employed. This approach is recommended by USEPA[8] and has been used for prior modeling analyses to determine compliance with the NAAQS. Actual hourly stack flow rates, exit velocities and temperatures from the facility CEM were not publicly available. These were instead estimated based on information available for Harrington Station using the following steps: Step 1) The hourly heat input and exhaust flow rates provided by USEPA for 2012-14 period in its Emissions Modeling Clearinghouse were used to calculate a standard cubic feet (scf) per mmbtu ratio for each of the units at Harrington Station. For Units 061B, 062B and 063B, the calculated ratios were 15,267, 14,617, and, 15,096, respectively. Step 2) These flow to heat input ratios were applied to the hourly heat input for the 2017-19 period provided by the USEPA CAMD to determine the hourly flow rates. Step 3) The temperature calculated for each hour was applied to the flow rate in standard cubic feet for each hour to determine the flow rate in actual cubic feet. Stack exit temperatures at 100% and 50% load were provided by the USEIA annual power plant survey. For Units 061B, 062B and 063B, these temperatures were: 326 and 263 ºF; 313 and 250 ºF; and, 300 and 240 ºF, respectively. All loads below 50% were assumed to have the same temperature as 50% load. Between 50% and 100% load, the temperature was assumed to increase proportionally with load. The % load for each hour was calculated from the heat input provided in the USEPA CAMD.

e) The downwash effects of nearby buildings and structures were used for the modeling analysis. Photographs of Harrington Station show the three boiler stacks are relatively short and likely affected by downwash effects from nearby buildings and structures. No building dimensions were publicly available. To incorporate downwash effects, these dimensions were estimated using aerial and facility photographs.

f) Concurrent meteorology for the 2017-19 period were used for the modeling analysis. These were processed using the current version of AERMET following similar procedures used by TCEQ for the meteorology data it provides for modeling analyses. As recommended by TCEQ for Potter County, meteorology data for the Amarillo International Airport were used for the analysis.

g) The background SO_2 concentration used for the modeling analysis is the lowest design value for the 2017-19 period from all ambient monitors in Texas. This is the concentration of 1.8

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[7] AER, Modeling Protocol, Southwestern Public Service Company Harrington Station Power Plant in Potter County Texas, Task 3: Site-Specific Modeling Protocols for the 2010 One-Hour SO_2 NAAQS, February 7, 2020.
[8] USEPA, SO_2 NAAQS Designations Modeling Technical Assistance Document, August 2016 (Draft).

ppb or 4.7 µg/m^3 which was measured at the Milam County monitor identified as the Rockdale John D. Harper Road Monitor located at 3990 John D Harper Road (Coordinates: 30.569534, -97.076294). It has USEPA ID #483311075. Based on measured actual hourly emissions, stack temperatures, and variable stack velocities Harrington Station is estimated to cause SO_2 concentrations which exceed the 1-hour NAAQS under all scenarios. Harrington Station is predicted to exceed the NAAQS regardless of the background concentration used for this analysis.[9]

2. Compliance with the 1-hour SO_2 NAAQS

2.1 1-hour SO_2 NAAQS

The 1-hour SO_2 NAAQS takes the form of a three-year average of the 99th percentile of the annual distribution of daily maximum 1-hour concentrations, which cannot exceed 75 parts per billion (ppb).[10] Compliance with this standard was verified using USEPA's AERMOD air dispersion model, which produces air concentrations in units of µg/m^3. The 1-hour SO_2 NAAQS of 75 ppb equals 196.2 µg/m^3, and this is the value used for determining whether modeled impacts exceed the NAAQS.[11] The 99th percentile of the annual distribution of daily maximum 1-hour concentrations corresponds to the fourth-highest value at each receptor for a given year.

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[9] There are two monitors in Potter County. The Amarillo 24th Avenue monitor has ID #483751025 and is located in Amarillo at 4205 NE 24th Avenue (Coordinates: 35.236736, -101.787405) approximately 7.8 km southwest of Harrison State. The Amarillo Xcel El Rancho monitor has ID #483751077 and is located in Amarillo at Folsom and El Rancho Roads (Coordinates: 35.316500, -101.741800) approximately 2.0 km northeast of Harrington Station. Based on prevailing wind directions, the Amarillo 24th Avenue monitor is generally upwind of the plant and the Amarillo Xcel El Rancho monitor is downwind of the plant. Neither monitor was used to obtain a background concentration due to likely influence from SO_2 emissions from Harrington Station.

[10] USEPA, Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010.

[11] The ppb to µg/m^3 conversion is found in the source code to AERMOD v. 19191, subroutine Modules. The conversion calculation at 25 °C is 75/0.3823 = 196.2 µg/m^3. This conversion has been used for consistency with prior modeling reports. While USEPA has recently converted the 75 ppb standard to 196.5 µg/m^3, the alternative USEPA concentration does not change the conclusions of this report.

2.2 Modeling Results

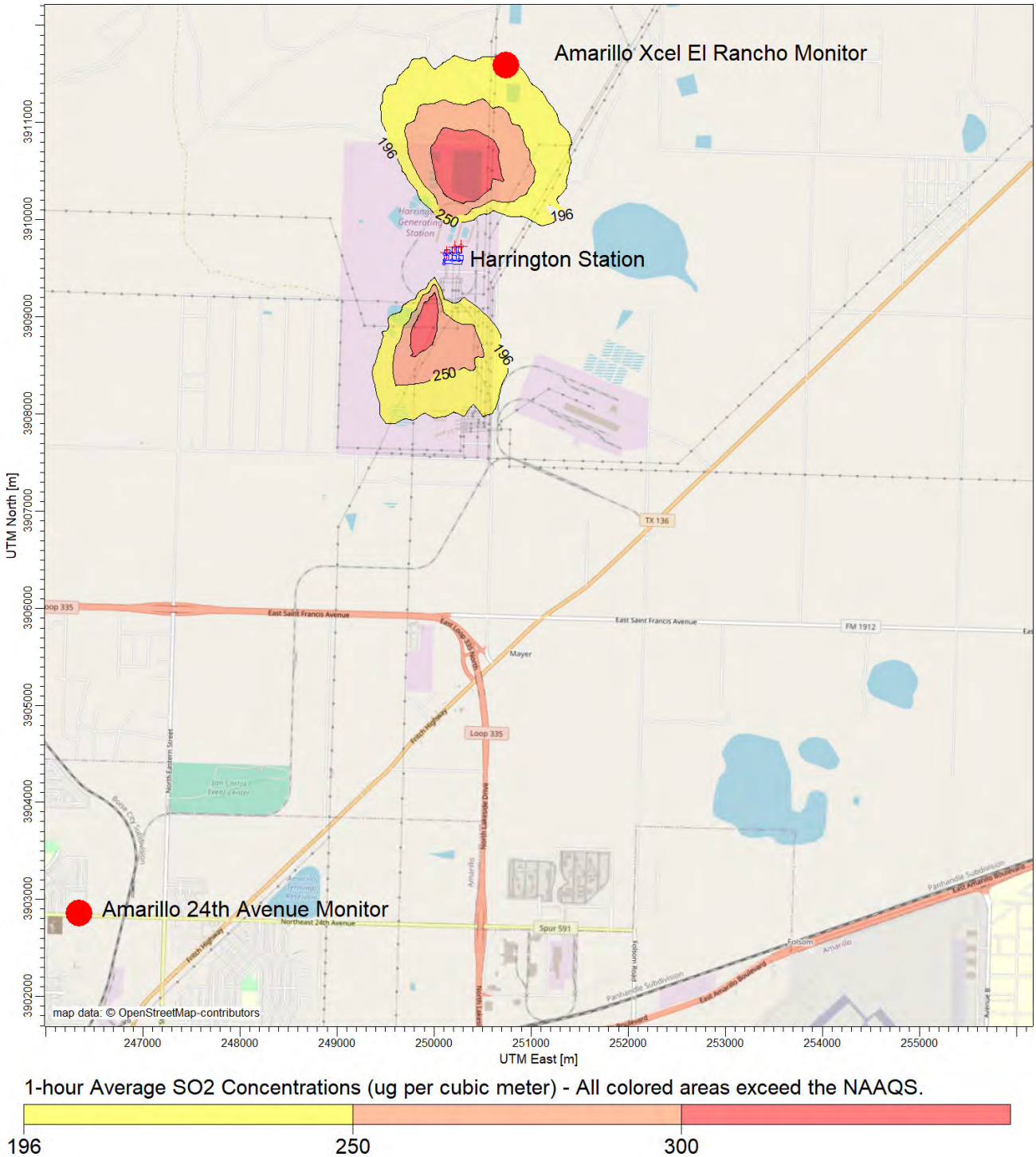
Modeling results for Harrington Station are summarized in Tables 1.

Table 1 - SO_2 Modeling Results for Harrington Station

Emission Rates	Averaging Period	99th Percentile 1-hour Daily Maximum (µg/m³)				Complies with NAAQS?
		Impact	Background	Total	NAAQS	
Actual 2017-19	1-hour	385.9	4.7	390.6	196.2	No

Figure 1 shows the full extent of predicted exceedances of the 1-hour NAAQS for SO_2, the locations of the two monitoring stations and Harrington Station.

Figure 2 shows the highest predicted exceedances close to Harrington Station.



1-hour Average SO2 Concentrations (ug per cubic meter) - All colored areas exceed the NAAQS.

196 250 300

Figure 1 – Regional View of NAAQS Exceedances for 2017-19 Period

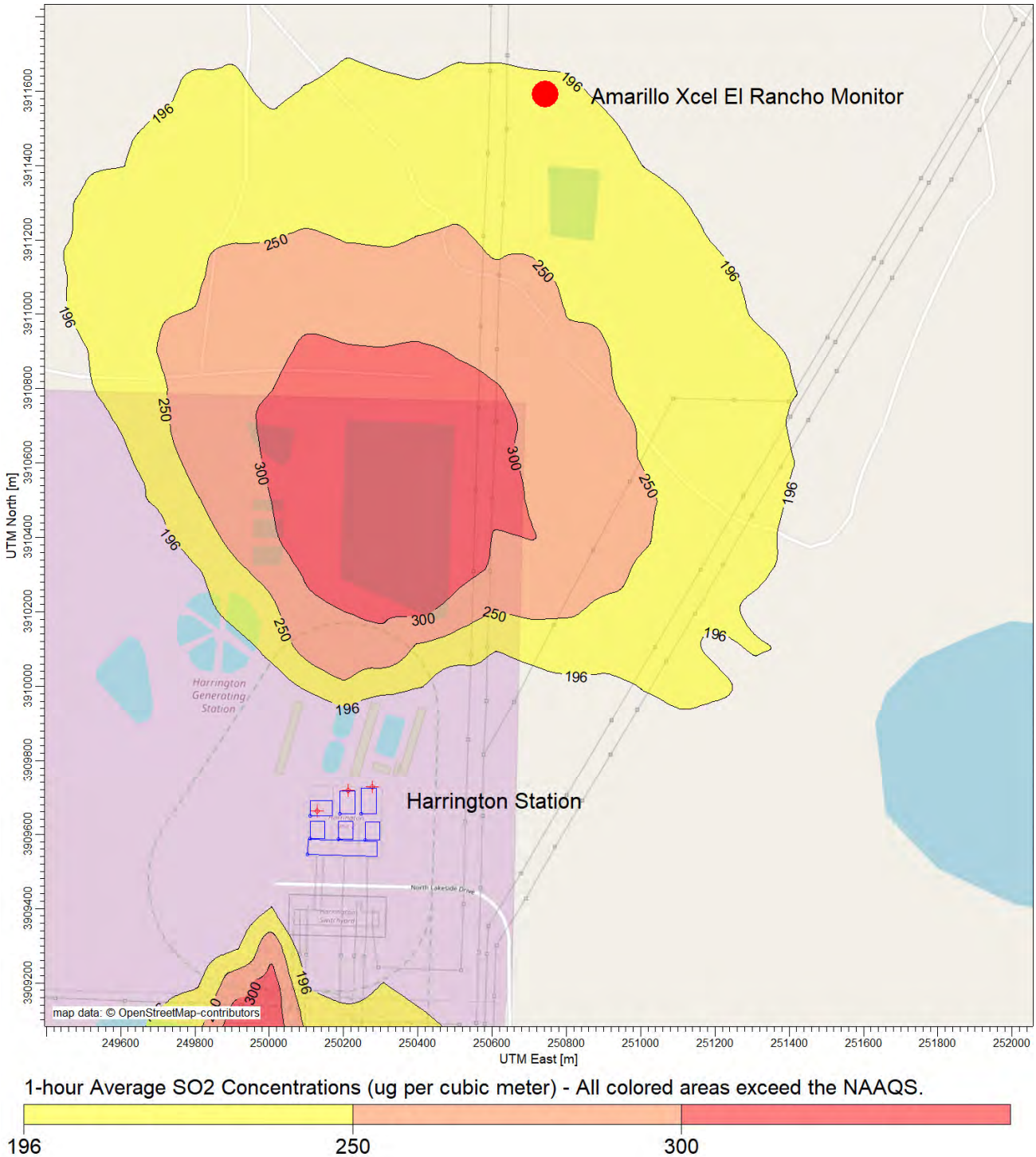


Figure 2 – Close-up View of NAAQS Exceedances for 2017-19 Period

2.3 Comparison with Ambient Monitoring Measurements

Predicted Concentration at Monitor Location - For the 2017-19 period, the downwind Amarillo Xcel El Rancho monitor located 2.0 km northeast from Harrington Station measured a design value of 298.2 $\mu g/m^3$, well above the 1-hour NAAQS for SO2 of 196.2 $\mu g/m^3$. The modeling analysis predicted a design value of 201.9 $\mu g/m^3$ at this monitor location, approximately 96.3 $\mu g/m^3$ and 32% less than the actual monitored value. This suggests the modeling analysis is under-predicting the impacts of SO_2 emission from Harrington Station.

Predicted Maximum Concentration - The maximum design value predicted by the modeling analysis is 390.6 $\mu g/m^3$. This occurs approximately 1.6 km southeast of the Amarillo Xcel El Ranch monitor. This suggests the Amarillo Xcel El Rancho monitor is not located where the maximum impacts of SO_2 emissions from Harrington Station occur.

2.4 Conservative Modeling Assumptions

A dispersion modeling analysis requires the selection of numerous parameters which affect the predicted concentrations. Some were selected which under-predict facility impacts.

Assumptions used in this modeling analysis which likely under-estimate concentrations include the following:

- Hourly stack exit velocity and temperature as measured by the facility CEM were not publicly available. Instead these were estimated using publicly available information. If the actual exit velocities and temperatures are lower than those estimated for this analysis, the modeled concentrations would be conservatively low.
- Dimensions of facility buildings and structures were not publicly available. Instead these were estimating using publicly available photographs. If the actual dimensions are larger than those estimated for this analysis, the modeled concentrations would be conservatively low.
- To evaluate the full extent and concentration of impacts caused by Harrington Station, it is recommended that USEPA obtain building parameters, actual values for hourly emissions, exit velocities, and temperatures from the CEM measurements collected at Harrington Station, and incorporate those inputs into AERMOD. As noted, the use of actual hourly temperature and exit velocity would likely result in decreased plume dispersion and higher modeled impacts over a larger geographic area.

3. Modeling Methodology

3.1 Air Dispersion Model

The modeling analysis used the most recent version of USEPA's AERMOD program, v. 19191. AERMOD, as available from the Support Center for Regulatory Atmospheric Modeling (SCRAM) website, was used in conjunction with a third-party modeling software program, *AERMOD View*, sold by Lakes Environmental Software.

3.2 Control Options

The AERMOD model was run with the following control options:

- 1-hour average air concentrations
- Regulatory defaults
- 1.5 meter flag pole receptor height

An evaluation was conducted to determine if the modeled facility was located in a rural or urban setting using USEPA's methodology outlined in Section 7.2.3 of the Guideline on Air Quality Models.[12] For urban sources, the URBANOPT option is used in conjunction with the urban population from an appropriate nearby city and a default surface roughness of 1.0 meter. Methods described in Section 4.1 were used to determine whether rural or urban dispersion coefficients were appropriate for the modeling analysis.

3.3 Output Options

The AERMOD analysis was based on recent meteorological data. The modeling analysis was conducted using sequential meteorological data from the 2017-19 period. Consistent with USEPA's Modeling Guidance for SO_2 NAAQS Designations, AERMOD provided a table of fourth-high 1-hour SO_2 impacts concentrations consistent with the form of the 1-hour SO_2 NAAQS.[13]

Please refer to Table 1 for the modeling results.

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[12] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005.
[13] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, pp. 24-26.

4. Model Inputs

4.1 Geographical Inputs

The air dispersion modeling analysis used a coordinate system for identifying the geographical location of emission sources and receptors. These geographical locations are used to determine local characteristics (such as land use and elevation), and also to ascertain source to receptor distances and relationships.

The Universal Transverse Mercator (UTM) NAD83 coordinate system was used for identifying the easting (x) and northing (y) coordinates of the modeled sources and receptors.

The facility was evaluated to determine if it should be modeled using the rural or urban dispersion coefficient option in AERMOD. A GIS was used to determine whether rural or urban dispersion coefficients apply to a site. Land use within a three-kilometer radius circle surrounding the facility was considered. USEPA guidance states that urban dispersion coefficients are used if more than 50% of the area within 3 kilometers has urban land uses. Otherwise, rural coefficients are used.[14]

USEPA's AERSURFACE v. 20060 was used to develop the meteorological data for the modeling analysis. This model was also used to evaluate surrounding land use within 3 kilometers of Harrington Station. Based on the output from the AERSURFACE, approximately 6% of surrounding land use around the station was of urban land use types including Types 22, 23 and 24 which are Low, Medium and High Intensity Development.

This is less than the 50% value considered appropriate for the use of urban dispersion coefficients. Based on the AERSURFACE analysis, it was concluded that the rural option would be used for the modeling summarized in this report. Please refer to Section 4.5.3 for a discussion of the AERSURFACE analysis.

4.2 Emission Rates and Source Parameters

Actual hourly emission rates were used for the modeling analysis. Emission rates from the facility continuous emissions monitoring system (CEM) were not publicly available. These were instead obtained from EPA's Clean Air Markets Program Database (CAMD) for the 2017-19 period.

Stack parameters including location, height, diameter and temperature were obtained from the annual survey compiled by the U.S. Energy Information Administration. Stack locations were

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[14] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005, Section 7.2.3.

verified using aerial photographs, air modeling EPA conducted for evaluating the facility's impacts under the Clean Air Act's regional haze program, and a modeling protocol provided to TCEQ earlier this year for evaluating SO_2 emissions from the Harrington Station.

Hourly stack exit velocities and temperatures were used for the modeling analysis. Actual hourly stack flow rates, exit velocities and temperatures from the facility CEM were not publicly available. These were instead estimated based on information available for Harrington Station.

Table 2 – Facility Stack Parameters

Facility	Harrington Station		
Stack	S01 (061B)	S02 (062B)	S03 (063B)
Description	Unit 1	Unit 2	Unit 3
X Coord. [m]	250129.00	250211.82	250277.97
Y Coord. [m]	3909662.00	3909718.89	3909727.94
Base Elevation [m]	1085.7	1084.93	1084.82
Release Height [m]	76.2	91.44	91.44
Inside Diameter [m]	5.7912	5.7912	5.7912
Gas Exit Temperature [°K]	Hourly Values		
Gas Exit Velocity [m/s]			
Actual Emission Rate [g/s]			

4.3 Building Dimensions and GEP

The downwash effects of nearby buildings and structures were used for the modeling analysis. Photographs of Harrington Station show the three boiler stacks are relatively short and likely affected by downwash effects from nearby buildings and structures. No building dimensions were publicly available. To incorporate downwash effects, these dimensions were estimated using aerial and facility photographs.

4.4 Receptors

For Harrington Station, three receptor grids were employed:

1. A 100-meter Cartesian receptor grid centered on the station and extending out 5 kilometers.
2. A 500-meter Cartesian receptor grid centered on the station and extending out 10 kilometers.
3. A 1,000-meter Cartesian receptor grid centered on the station and extending out 50 kilometers. 50 kilometers is the maximum distance accepted by USEPA for the use of the

AERMOD dispersion model.[15]

To reflect a representative inhalation level, a flagpole height of 1.5 meters was used for all modeled receptors. Although EPA has, in the past, expressed concern about using a elevated receptor height, it does not materially affect the outcome of the modeling.

Elevations for Receptor Grid #1 receptors were obtained from National Elevation Dataset (NED) GeoTiff data. GeoTiff is a binary file that includes data descriptors and geo-referencing information necessary for extracting terrain elevations. These elevations were extracted from 1 arc-second (30 meter) resolution NED files. The software program AERMAP v. 18081 is used for these tasks.

4.5 Meteorological Data

To ensure the accuracy of the modeling analysis, recent meteorological data for the 2017-19 period were prepared using the USEPA's program AERMET which creates the model-ready surface and profile data files required by AERMOD. Required data inputs to AERMET included surface meteorological measurements, twice-daily soundings of upper air measurements, and the micrometeorological parameters surface roughness, albedo, and Bowen ratio. One-minute ASOS data were available so USEPA methods were used to reduce calm and missing hours.[16] The USEPA software program AERMINUTE v. 15272 is used for these tasks.

This section discusses how the meteorological data was prepared for use in the 1-hour SO_2 NAAQS modeling analyses. The USEPA software program AERMET v. 19191 is used for these tasks.

4.5.1 Surface Meteorology

Surface meteorology was obtained for Amarillo International Airport located near the Harrington Station. Integrated Surface Hourly (ISH) data for the 2017-19 period were obtained from the National Climatic Data Center (NCDC). The ISH surface data was processed through AERMET Stage 1, which performs data extraction and quality control checks.

4.5.2 Upper Air Data

Upper-air data are collected by a "weather balloon" that is released twice per day at selected locations. As the balloon is released, it rises through the atmosphere, and radios the data back to the

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[15] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, Section A.1.(1), November 9, 2005.
[16] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, p. 19.

surface. The measuring and transmitting device is known as either a radiosonde, or rawindsonde. Data collected and radioed back include: air pressure, height, temperature, dew point, wind speed, and wind direction. The upper air data were processed through AERMET Stage 1, which performs data extraction and quality control checks.

For Harrington Station, the concurrent 2017-19 upper air data from twice-daily radiosonde measurements obtained at the most representative location were used. This location was the measurement station at the Amarillo International Airport. These data are in Forecast Systems Laboratory (FSL) format and were downloaded in ASCII text format from NOAA's FSL website.[17] All reporting levels were downloaded and processed with AERMET.

4.5.3 AERSURFACE

AERSURFACE is a program that extracts surface roughness, albedo, and daytime Bowen ratio for an area surrounding a given location. AERSURFACE uses land use and land cover (LULC) data in the U.S. Geological Survey's National Land Cover Dataset to extract the necessary micrometeorological data. The current version of AERSURFACE v. 20060. It was used with National Land Cover Database for 2016 including land cover, canopy and impervious surfaces.

AERSURFACE was used to develop surface roughness, albedo, and daytime Bowen ratio values in a region surrounding the meteorological data collection site. AERSURFACE was used to develop surface roughness in a one-kilometer radius surrounding the data collection site. Bowen ratio and albedo were developed for a 10-kilometer by 10-kilometer area centered on the meteorological data collection site. These micrometeorological data were processed for seasonal periods using 30-degree sectors.

The meteorological data for each year were processed separately. This allowed the level of precipitation suitable for each year to be process by AERSURFACE. For the years processed, 2017, 2018 and 2019, the levels of precipitation were Wet, Dry and Wet, respectively. These were based on annual levels for the Amarillo International Airport.18 For all years, winter months were assumed to have no continuous snow cover.

4.5.4 Data Review

Missing meteorological data were not filled as the data file met USEPA's 90% data completeness requirement.[19] The AERMOD output file shows there were 1.1% missing data across the entire

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[17] Available at: http://esrl.noaa.gov/raobs/
[18] https://www.ncdc.noaa.gov/cdo-web/search
[19] USEPA, Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-05, February 2000, Section 5.3.2, pp. 5-4 to 5-5.

2017-19 meteorological period.

To confirm the representativeness of the airport meteorological data, the surface characteristics of the airport data collection site and the modeled source location were compared. Since the Longview Texas Regional Airport is located close to Harrington Station, this meteorological data set was considered appropriate for this modeling analysis. [20] Additionally, this weather station provided high quality surface measurements, and had similar land use, surface characteristics, terrain features and climate.

Finally, TCEQ provides pre-processed meteorological data suitable for modeling for each county.[21] For Potter County, TCEQ recommends using data from the same surface and upper air stations used for this modeling analysis. The TCEQ data were not used for this project because TCEQ staff recommended processing the three years required for this project with AERMET.

5. Background SO_2 Concentrations

Background concentrations were determined consistent with USEPA's Modeling Guidance for SO_2 NAAQS Designations.[22, 23] To preserve the form of the 1-hour SO_2 standard, based on the 99th percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled, the background fourth-highest daily maximum 1-hour SO_2 concentration was added to the modeled fourth-highest daily maximum 1-hour SO_2 concentration.[24]

The background SO_2 concentration used for the modeling analysis is the lowest design value for the 2017-19 period from all ambient monitors in Texas. This is the concentration of 1.8 ppb or 4.7 $\mu g/m^3$ which was measured at the Milam County monitor identified as the Rockdale John D. Harper Road Monitor located at 3990 John D Harper Road (Coordinates: 30.569534, -97.076294). It has USEPA ID #483311075.

6. Reporting

All files from the programs used for this modeling analysis are available to regulatory agencies. These include analyses prepared with AERSURFACE, AERMET, AERMAP, and AERMOD.

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[20] USEPA, AERMOD Implementation Guide, March 19, 2009, pp. 3-4.
[21] Texas Commission on Environmental Quality, Meteorological Data for Air Dispersion Modeling, https://www.tceq.texas.gov/permitting/air/nav/datasets.html Last updated April 29, 2020.
[22] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, pp. 20-23.
[23] USEPA, SO_2 NAAQS Designations Modeling Technical Assistance Document, August 2016, DRAFT.
[24] USEPA, Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010, p. 3.

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October 22, 2020

Andrew Wheeler, Administrator
U.S. Environmental Protection Agency
Mail Code 1101A
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460
wheeler.andrew@epa.gov

VIA ELECTRONIC AND U.S. MAIL

Re: Petition for Reconsideration of Air Quality Designation for Ector County, Texas for the 2010 Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard – Round 3; Final Rule, EPA–HQ–OAR–2017–0003; FRL–9972–73–OAR

Dear Administrator Wheeler:

Pursuant to Sections 307(d)(7)(B) and 107(d)(3)(A) of the Clean Air Act, the Odessa, Texas Chapter of the National Association for the Advancement of Colored People (Odessa NAACP), Environmental Integrity Project, Environmental Defense Fund, the Lone Star Chapter of the Sierra Club, Texas Campaign for the Environment, Environment Texas, Public Citizen, Inc., and Earthworks ("Petitioners") hereby petition the Administrator of the Environmental Protection Agency ("EPA" or "Agency") to reconsider the decision to designate the Ector County, Texas area as unclassifiable/attainment for the Sulfur Dioxide Primary (Health-Based) National Ambient Air Quality Standard ("NAAQS"). 83 Fed. Reg. 1098 (Jan. 9, 2018).

As this Petition clearly demonstrates, air quality in and around the city of Odessa, in Ector County, Texas, is failing to meet EPA's primary, health-based, sulfur dioxide standard. Flaring at oil and gas production, gathering, and processing facilities in the Permian Basin is the main culprit for the dangerous levels of sulfur dioxide in the Odessa region's air. Flaring in the Permian Basin releases thousands of tons of excess illegal pollution, including toxics like benzene and hydrogen sulfide, and greenhouse gases including methane and carbon dioxide. In addition, the Permian Basin is a hotspot for sulfur dioxide flaring emissions. Sulfur dioxide is a potent air pollutant that

harms the respiratory system even in brief exposures. As few as five minutes of breathing airborne SO_2 can cause coughing, tightness in the chest, and difficulty breathing that lasts for hours.

This Petition demonstrates that oil and gas flaring causes unsafe SO_2 levels in Ector County's air. In fact, based solely on "emission events," as that term is defined by the Texas Commission on Environmental Quality, these industry self-reported emissions cause levels of SO_2 in and around Odessa, Texas far in excess of the primary health-based NAAQS limit set by EPA. This pollution damages the health and disrupts the lives of the county's residents and visitors.

EPA created this Primary (also called the "1-hour," or "short-term exposure") Sulfur Dioxide national ambient standard in 2010 to protect people from the dangers posed by short-term exposure to SO_2. We urge EPA to reconsider its prior decision to classify Ector County, Texas as unclassifiable/attainment for the 2010 one-hour sulfur dioxide primary NAAQS, as determined in 83 Fed. Reg. 1098 (Jan. 9, 2018). EPA should instead propose and move to finalize a nonattainment designation for Ector County, based on the overwhelming evidence in this Petition demonstrating that the county's air quality fails to meet this minimum national standard. This important first step will put EPA, the State of Texas, and Ector County on the path toward achieving cleaner air in Odessa, Texas.

I. Air Quality in Ector County Fails to Meet the National Health-Based Ambient Standard for Sulfur Dioxide.

A. Modeling of Actual Sulfur Dioxide Emissions Shows Clear NAAQS Violations for Every Averaging Period From 2014-2019.

Industrial sources in Texas are required to self-report emission events, which are unauthorized upsets, startups, and shutdowns that release pollution above reportable quantities. Based solely on these industry self-reported emissions, levels of SO_2 are well above those likely to cause adverse health impacts and contribute to an unacceptable level of risk for local residents and visitors.

The attached air dispersion modeling study shows that even a fraction of Ector County's total sulfur dioxide emissions (i.e., merely a subset of industry-reported SO_2 emissions) cause violations of the 1-hour SO_2 NAAQS at multiple receptors.[1] The modeling study analyzes a subset

[1] H. Andrew Gray, Ph.D., Modeling the SO_2 Impacts From Intermittent Flare Events in Ector County, Texas (October 2020) Attachment 1.

of data comprised of reportable emission events, which Texas defines as "[a]ny emissions event that in any 24-hour period, results in an unauthorized emission from any emissions point equal to or in excess of the reportable quantity as defined in this section."[2] These unauthorized emission events are pollution releases distinct from routine emissions authorized by permit at these sources. Modeled sources include Ector County oil and gas facilities regulated by the Texas Commission on Environmental Quality ("TCEQ"), such as gas plants, tank batteries, compressor stations, booster stations, and storage units, as well as oil and gas exploration and drilling operations.

The study modeled hourly SO_2 concentrations at 961 gridded receptors placed every 1 mile based on emission event reports for these sources from 2014 through 2019. The results, as shown in the following Table, demonstrate that the 3-year average design value for the 1-hour SO_2 NAAQS – which corresponds to the 99th percentile, or 4th highest, maximum daily 1-hour SO_2 concentration –exceeded the acceptable standard of 196 µg/m3 (equivalent to 75 parts per billion) at between 164 and 252 receptors for each 3-year period during the six years.

Table 1. Modeled 3-Year Average Design Values for 1-Hour SO_2 NAAQS[3]

Modeled 3-Year Average	Maximum Receptor (µg/m3)	Grid Cells > 196 µg/m3	Grid Cells > 400 µg/m3
2014-2016	2,687.1	252	80
2015-2017	2,091.5	229	73
2016-2018	1,908.8	164	52
2017-2019	2,050.0	187	60

This means that for any given three year period, between 17% and 26% of Ector County, from 164 to 252 square miles, experienced air quality that violated the NAAQS. Even more disturbing, 52 to 80 receptors show design values more than twice the allowable concentration, and the maximum receptor exceeds that concentration by a factor of 10. These violations are most prevalent in the northern central part of the county, which is mostly rural and several miles west of Odessa, near the town of Goldsmith.

[2] 30 Tex. Admin. Code § 101.1(88).
[3] Table 3, H. Andrew Gray, Ph.D., Modeling the SO_2 Impacts From Intermittent Flare Events in Ector County, Texas (October 2020).

The following map of Ector County, taken from Fig. 23 of the modeling study, shows the extent of modeled SO_2 violations for the most recent averaging period, 2017-2019. The red overlay represents the area where modeled design value concentrations exceed the standard of 196 µg/m3.

Figure 1. Modeled SO_2 Concentrations Exceeding 196 µg/m^3, 2017-2019

In this map, 187 of 961 receptors, 187 square miles or approximately 19% of the total area of Ector County, show air quality that violates the SO_2 NAAQS. The town of Goldsmith lies entirely within the red violation area.

In addition to the gridded receptors, the study modeled SO_2 levels at 20 discrete receptors where people live, work, and worship, including residences, businesses and churches. Because much of Ector County is sparsely populated, these receptors were chosen to represent a geographically diverse set of locations where human exposure is highly likely. The study shows NAAQS violations at many of these receptors, demonstrating that people are being exposed to dangerous levels of SO_2 as a direct result of the modeled events.

Table 2. Modeled 3-Year Average Design Values for 1-Hour SO_2 NAAQS at Discrete Receptors (µg/m3)[4]

Location	2014-2016	2015-2017	2016-2018	2017-2019
Goldsmith Grocery, W Gulf Ave., Goldsmith	**731.2**	**902.8**	**845.2**	**583.5**
Odessa City Hall, W 8th St., Odessa	98.3	71.2	86.5	75.9
Residence, N Aster Ave., Gardendale	145.0	150.1	92.9	95.2
Western Skies RV Campground, Hwy 20, Penwell	143.1	140.3	62.9	64.6
Residence, Larchmont Pl., Odessa	160.8	155.0	101.1	118.3
Ranch, Boys Ranch Rd., west of Marion Flint	189.8	**205.7**	**207.2**	**197.4**
Goldsmith Community Church, N. Goldsmith Ave.	**818.5**	**975.8**	**823.7**	**530.7**
Residence, W 40th St., West Odessa	**224.8**	100.9	97.3	153.6
Residence, W Berry St., Odessa	80.8	56.8	51.8	57.7
University of Texas Permian Basin, Odessa	60.2	57.4	56.7	75.1
Ranch, Cottonwood Dr., west of Wire Line Rd.	187.8	179.8	158.3	177.9
Ranch, YT Ranch Rd., west of Chapel Hill Rd.	**293.2**	**241.5**	**210.9**	**325.2**
Residence, N Carter Ave., West Odessa	**201.6**	**215.0**	119.3	146.9
Ector College Prep Success Academy, Odessa	104.0	84.5	48.0	55.3
Faith Community Baptist Church, West Odessa	**217.0**	**199.8**	83.1	89.8
Residence, W Ivory St., Pleasant Farms	52.0	54.3	20.9	32.2
Odessa Meteor Crater Museum, Odessa	96.7	101.9	45.6	50.2
Ranch, YT Ranch Rd., east of James Lake	**452.3**	**512.5**	**448.5**	**524.4**
Residence, 3rd St., Notrees	165.6	159.5	104.5	118.1
Ranch, W Apple St., Pleasant Farms	37.4	34.0	15.5	31.3

As shown in the above table, 3-year average design value for the 1-hour SO_2 NAAQS, which corresponds to the 99th percentile (4th highest) maximum daily 1-hour SO_2 concentration, exceeds the standard of 196 µg/m3 (equivalent to 75 parts per billion) at between five and seven locations (out of the 20 modeled discrete receptor locations), depending on the three-year averaging period. Levels are highest in Goldsmith, Texas, which has a population of 277.[5] At both Goldsmith Grocery and Goldsmith Community Church, the 3-year average design value is more than double the health-based standard, and depending on the averaging period, it is as high as five times the health-based standard.

Modeling results unambiguously demonstrate that Ector County is not attaining the 1-hour SO_2 standard. This is especially concerning because the modeling study is based on only a subset of actual emissions in and around the county.

[4] Data from 2 and 5, H. Andrew Gray, Ph.D., Modeling the SO_2 Impacts From Intermittent Flare Events in Ector County, Texas (October 2020).
[5] United States Census Bureau, Population and Housing Unit Estimates, July 1, 2019.

B. The Modeling Study Follows EPA Guidelines.

The modeling study for this Petition was completed by H. Andrew Gray for Environmental Integrity Project. Dr. Gray received his Ph.D. in environmental engineering from the California Institute of Technology and has over 40 years of experience performing air dispersion modeling and related analyses. The modeling was conducted in AERMOD, with additional processing of weather and surface geographic data, which is EPA's preferred dispersion modeling tool for regulatory assessments of industrial point sources, including determinations of compliance with national ambient air quality standards like the SO_2 standard at issue here.[6]

The modeling protocol for the study followed EPA's modeling guidelines and the AERMOD implementation guide.[7] Emission information was obtained from industry self-reports of emission events, which sources submit to TCEQ through the State of Texas Environmental Electronic Reporting System ("STEERS"). Reports include information adequate to accurately model the emissions, including the location of the event, total amount of each pollutant released, start and end times of the event, and more. Additional source parameters, such as stack height and exit temperature, were obtained from publicly available TCEQ files, and conservative values were assumed where necessary data was unavailable.

C. The Modeling Study Conservatively Underrepresents Actual SO_2 Emissions.

The modeling study is conservative and underrepresents actual SO_2 concentrations because it models only a subset of emissions: reportable emission events from sources regulated by the TCEQ. As discussed above, these emission events are unauthorized pollution releases. Thus, this data does not include emissions from routine flaring or other combustion processes authorized by permit for the 173 modeled sources, which are a significant source of air pollution in Ector County. Nor does it contain unauthorized emission events below the reportable threshold. Further, the

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[6] Factors to be used in determining whether areas are in violation of the 1-hour SO_2 NAAQS include: (1) Air quality characterization via ambient monitoring or dispersion modeling results; (2) emissions-related data; (3) meteorology; (4) geography and topography; and (5) jurisdictional boundaries. Air Quality Designations for the 2010 Sulfur Dioxide (SO2) Primary National Ambient Air Quality Standard—Round 2, 81 Fed. Reg. 45039 at 45043 (July 12, 2016) (citing Memorandum from Stephen D. Page, Director, U.S. EPA, Office of Air Quality Planning and Standards, to Air Division Directors, U.S. EPA Regions 1–10 (March 10, 2015)).

[7] U.S. Environmental Protection Agency. Guideline on Air Quality Models, 40 CFR Part 51, Appendix W. Published in the Federal Register, Vol. 70, No. 216, November 9, 2005; U.S. Environmental Protection Agency. AERMOD Implementation Guide. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. 2009.

modeling study does not take into account any background levels of SO_2, and does not include emissions from any other sources in or out of the county (with the exception of 5 sources in southern Andrews County), meaning that all modeled levels are incremental and attributable entirely to the modeled sources. As demonstrated in Map 1 below, there is significant flaring in the adjacent Permian Basin counties of Andrews, Martin, Midland, and Crane, which likely contributes to SO_2 concentrations in Ector County. None of these emissions are included in the modeling study.

Despite relying on only a limited subset of actual emissions, the study still shows much of Ector County in violation of the NAAQS. For residents of Ector County, these modeled levels of SO_2 correspond to real-world harm.

II. Sulfur Dioxide Levels in Ector County Are Harming People.

SO_2 is a potent air pollutant that harms the respiratory system and makes breathing difficult from exposures as short as a few minutes. Children, the elderly, and those who suffer from asthma are particularly vulnerable to the effects of SO_2. SO_2 also reacts with other pollutants in the atmosphere to form fine particulate matter, a distinct pollutant that can penetrate deep into the lungs and cause additional harm.

A. SO_2 Exposure Causes Adverse Health Effects.

In its in-depth review of SO_2 studies, including controlled human exposure, epidemiologic, and toxicological evidence, EPA found a causal relationship between respiratory morbidity and short-term exposure to SO_2.[8] A causal relationship is the most definitive finding the EPA can make regarding pollutant effects on human health. The immediate effect of SO_2 exposure to the respiratory system is bronchoconstriction, which then triggers mucus secretion, mucosal vasodilation, cough, and apnea followed by rapid shallow breathing.[9] The strongest evidence showed that short-term (5-minutes to 24-hours) exposure to ambient SO_2 caused respiratory morbidities including "lung function decrements, respiratory symptoms, hospital admissions, and emergency department visits."[10]

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[8] Environmental Protection Agency, Integrated Science Assessment ("ISA") for Sulfur Oxides – Health Criteria (September 2008) at 5-2.
[9] *Id.*
[10] Primary National Ambient Air Quality Standard for Sulfur Dioxide; Proposed Rule, 74 Fed. Reg. 64810 at 64816 (Dec. 8, 2009) (citing ISA).

For example, in numerous free-breathing chamber studies, asthmatic individuals exposed to SO_2 concentrations as low as 200–300 parts per billion ("ppb") for 5–10 minutes during exercise experienced moderate or greater bronchoconstriction, measurable loss of lung function, and respiratory effects including coughing, wheezing, chest tightness, and substernal irritation.[11] In the epidemiologic studies, SO_2-related effects on respiratory morbidity were observed in areas where the mean 24-hour average SO_2 levels ranged from 1 to 30 ppb, with maximum values ranging from 12 to 75 ppb.[12] EPA found that children, adults over 65 years old, and asthmatics are more sensitive to SO_2 exposure.[13] The strongest epidemiologic evidence of an association between short-term SO_2 concentrations and respiratory symptoms was in children. Asthmatics are also more sensitive to the effects of SO_2, likely resulting from preexisting inflammation associated with this disease.[14]

EPA found that the data supported a strong association between ambient SO_2 concentrations and emergency room visits and hospitalizations for all respiratory causes and asthma.[15] Further, the epidemiological evidence for short term SO_2 exposure suggested a causal relationship with all-cause (nonaccidental) and cardiopulmonary mortality.[16]

In addition to the studies reviewed for the ISA, the Agency stated that "measurable negative effects of air pollution on quality of life should be considered adverse."[17] EPA also accepted guidance from the American Thoracic Society in concluding that "exposure to air pollution that increases the risk of an adverse effect to the entire population is adverse, even though it may not increase the risk of any individual to an unacceptable level."[18] This is so because even if the pollution levels are not high enough to increase any individual's risk unacceptably, it nevertheless diminishes the reserve function of the population and increases their risk of being affected by other pollutants.

SO_2 pollution also contributes to the formation of secondary fine particulate matter, which causes additional adverse respiratory and cardiac health effects. A study of county-level emission

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[11] *Id.* at 64816 - 817.
[12] ISA at 5-9.
[13] Primary National Ambient Air Quality Standard for Sulfur Dioxide; Proposed Rule, 74 Fed. Reg. at 64820.
[14] ISA at 5-2.
[15] ISA at 3-21.
[16] ISA at 3-49.
[17] Primary National Ambient Air Quality Standard for Sulfur Dioxide; Proposed Rule, 74 Fed. Reg. at 64817 (quoting American Thoracic Society, *What constitutes an adverse health effect of air pollution?,* American Journal of Respir. Crit. Care Med, 161, at 665-67(200)).
[18] *Id.*

data calculated the health costs of primary and secondary particulate matter exposure from emission events in Ector County at over $10,000,000 for 2015 alone.[19]

More recent health studies of SO_2 confirm these risks and suggest that SO_2 may cause additional adverse effects. A study based on data from the nearby Eagle Ford Shale field in south Texas found that a high number of nightly flaring events in proximity to residences was associated with a 50% increase in the chances of preterm births and shorter gestation among Hispanic women.[20] And a study of 17 cities in China found that increased ambient SO_2 levels were associated with increased total, cardiovascular, and respiratory mortality.[21]

B. EPA Created the 1-hour SO_2 NAAQS Because Short-term Exposure Is Especially Dangerous.

The potency and alacrity of SO_2's adverse health effects led the EPA in 2010 to adopt the current 1-hour, 196 µg/m3 (75 ppb) standard and revoke the prior 24-hour and annual standards.[22] The Agency determined that this standard was necessary to adequately safeguard the health and safety of Americans, including "sensitive" populations such as asthmatics, children, and the elderly, with a margin for error.[23]

EPA adopted a 1-hour standard because SO_2 causes negative health effects from exposures as brief as five minutes. In this respect SO_2 exposure is very different from other criteria pollutants with longer duration standards. Pollutants like ozone, with an 8-hour standard, or particulate matter, with 24-hour and annual standards, require longer exposures to cause harm. In contrast, SO_2 can cause adverse symptoms from much shorter exposures, and those symptoms can last for hours after the exposure ends. This is important because a vast majority of the modeled violations are from short-duration, high-intensity flaring events that cause short-term spikes in SO_2 levels. These short-term spikes lead to the kind of exposure most likely to cause harm.

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[19] Zirogiannis et. al., *Understanding Excess Emissions from Industrial Facilities: Evidence from Texas*, Environ. Sci. Technol. (Jan. 27, 2020).
[20] Cushing et. al., *Flaring from Unconventional Oil and Gas Development and Birth Outcomes in the Eagle Ford Shale in South Texas*, Environmental Health Perspectives (July 2020).
[21] Chen et. al., *Short-term exposure to sulfur dioxide and daily mortality in 17 Chinese cities: The China air pollution and health effects study (CAPES),* Environmental Research 118 (2012).
[22] Primary National Ambient Air Quality Standard for Sulfur Dioxide, 75 Fed. Reg. 35520 (June 22, 2010).
[23] *Id.* at 35526.

Unfortunately, as shown in the modeling study, dangerous spikes of SO_2 occur in Ector County, including in areas where people live, work, worship, and recreate. SO_2 levels exceed the health-based standard in multiple locations for every three-year averaging period in the six years analyzed. Many receptors—including at places inhabited by people—show three-year average design values over double the safe limit, and the worst receptors show three-year average design values over ten times the safe limit.

These modeled levels are well above the NAAQS, and firmly in the range at which SO_2 can and will cause adverse health effects. People who live, work, and travel in Ector County are being placed at an unacceptable risk of respiratory harm due to SO_2 emissions from the ongoing flaring from oil and gas facilities. Ector County's current attainment designation is incorrect, and fails to protect the 166,223 women, men, and children who live there.[24] The county desperately needs federally-enforceable program of emissions reductions to achieve compliance with the NAAQS.

C. Ector County Residents Experience Adverse Health Effects From SO_2.

The modeled NAAQS violations are consistent with the lived experiences of local residents during the frequent air pollution episodes in Ector County. During these episodes, residents are prevented from enjoying even brief periods outside their homes due to SO_2-laden air that causes a host of respiratory problems. Residents regularly see flares and smell the acrid odor indicative of SO_2, and experience negative health effects associated with SO_2 exposure, including shortness of breath, tightness in their chests, coughing, difficulty breathing, nausea, irritation of the eyes, and irritation of the throat and lungs. The adverse respiratory effects of even a short exposure can persist for hours. Many residents have been forced to take steps to reduce their exposure to air pollution by, for example, avoiding spending time outside their homes, or closing the windows and vents in their car while driving. The pollution is pervasive and frequently interferes with their lives. SO_2 pollution and its adverse health effects prevent people from gardening, enjoying a cup of coffee on the porch, grilling in the backyard, and a host of other activities that most of us take for granted. We submit this Petition in the hope that EPA will take steps to remedy this unsustainable situation.

[24] U.S. Census Bureau, Population Estimates Program, July 1, 2019.

III. Additional Evidence of Poor Air Quality in Ector County

Ector County's designation merits reconsideration on the strength of the above modeling demonstration alone. In addition to that clear evidence of NAAQS violations, this section contains further evidence that systematically under-reported emissions from oil and gas activity in the Permian Basin are causing ongoing violations of SO_2 NAAQS.

A. Ector County Residents Experience Elevated Levels of Asthma.

Ector County residents experience increased incidence of asthma, putting them at greater risk of harm from SO_2. Texas Tech University Health Sciences Center estimates that 20% of school children in Ector County have asthma, and that asthma symptoms are the leading cause of school absences here.[25] This is far above national average for childhood (age <18) asthma of 11.6%.[26]

The three year moving average for 2013-2015 for adults (age 18+) in Ector County who have ever been diagnosed with asthma was 13.5% compared to the statewide average of 11.8%.[27] Between 2013 and 2017, lifetime asthma prevalence rates in adults in Ector County increased at a rate greater than the statewide rate. In 2015-2017, the moving average for adults in Ector County who have been diagnosed with asthma increased to 15.7%, while the state-wide average increased to 12.1%.[28] For 2015-2017, the most recent period for which accurate data is available, Ector County's adult asthma rate exceeded the statewide average by 29.8%.[29]

As discussed above, people with asthma are among the most vulnerable to the adverse health impacts of breathing SO_2. They are more likely to experience respiratory symptoms from even short exposures, and their lungs are less able to cope with those symptoms, including difficulty breathing, coughing, wheezing, and irritation of the airways. The 75ppb standard was developed with such sensitive populations in mind. With both childhood and adult asthma rates

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[25] Odessa American, Open house set for renovated Texas Tech pediatric clinic (May 30, 2018) (citing Texas Tech University Health Sciences Center News Release).
[26] Centers for Disease Control and Prevention, 2018 National Health Interview Survey (NHIS) Data, Table 2-1 Lifetime Asthma Prevalence Percents by Age, United States: National Health Interview Survey, 2018 (available at https://www.cdc.gov/asthma/nhis/2018/table2-1.htm).
[27] Community Hospital Consulting, Medical Center Hospital Community Health Needs Assessment and Implementation Plan (August 2019) (citing CARES Engagement Network, Health Indicator Report: logged in and filtered for Ector County, TX, https://engagementnetwork.org/; data accessed April 9, 2019; Texas Behavioral Risk Factor Surveillance System, Center for Health Statistics, Texas Department of State Health Services; data accessed April 9, 2019).
[28] *Id.*
[29] *Id.*

significantly higher than state and national averages, Ector County residents are especially vulnerable to the NAAQS violations modeled in the study.

B. EPA Lacked Adequate Data to Classify Ector County as attainment.

Ector County was designated Unclassifiable/Attainment in the absence of any air quality data supporting that designation. Ector County lacks any single source large enough to require classification under 42 USC § 51.120. Because of this, the State of Texas did not gather ambient monitoring data or conduct any modeling to support its attainment recommendation to the EPA.[30] But modeling of expected SO_2 exposures based on a limited subset of emissions data demonstrates that Ector County regularly experiences dangerous levels of SO_2, due primarily to 173 smaller sources which collectively cause and contribute to significant SO_2 NAAQS violations.

C. The Nearest SO_2 Monitor Shows Levels Exceeding the NAAQS.

For the period covered in the study, there was no SO_2 monitor present in Ector County; the nearest monitor was in Big Spring, Texas, approximately 54 miles from Ector County's eastern border.[31] This monitor began collecting data in December 2016, and almost immediately began recording measurements above the 75ppb standard. The following table shows the dates on which the Big Spring monitor recorded an hourly concentration of SO_2 in excess of 75ppb.

Table 3. Dates of Hourly SO_2 Concentration Exceedances in Excess of 75ppb at the Big Spring Monitoring Site (2017-2020)

Date	Ambient SO_2 (ppb)
1/11/2017	78.2
1/24/2017	98.1
6/27/2017	88.3
7/24/2017	86.6
11/18/2017	84.7
11/20/2017	79.7
11/24/2017	117.3
12/23/2017	107.3
1/7/2018	77.4
1/10/2018	76.2

[30] Environmental Protection Agency, Technical Support Document: Chapter 39 - Intended Round 3 Area Designations for the 2010 1-Hour SO2 Primary National Ambient Air Quality Standard for Texas at 1.
[31] EPA Site Number: 482271072, CAMS: 107, located at 1218 N. Midway Rd, Big Spring TX,79720 (data available at: https://www17.tceq.texas.gov/tamis/index.cfm?fuseaction=report.view_site&siteAQS=482271072).

1/19/2018	133.6
1/31/2018	76.0
2/15/2018	99.7
2/16/2018	99.4
3/9/2018	460.1
3/20/2018	81.1
11/17/2018	91.7
8/2/2019	79.9
8/3/2019	108.7
8/9/2019	91.9
8/13/2019	79.6
2/27/2020	110.5
3/1/2020	81.9
3/11/2020	93.5
4/19/2020	399.8

The Big Spring monitor data represents the closest data available to Ector County, and shows a pattern SO_2 NAAQS violations, including spikes in excess of five times the standard in 2018 and 2020.

D. TCEQ Receives Frequent Complaints of SO_2 Odors in Ector County.

As the agency tasked with protecting Texas' environment, TCEQ receives and investigates environmental complaints. Since January 2014, TCEQ received 249 complaints related to air quality in Ector Country.[32] Of those, 140 complaints specifically describe odors. People in Ector County consistently complain about foul, rotten-egg, sulfur odors that cause difficulty breathing and other health issues. Many complaints identify specific oil and gas facilities as the suspected source of the pollution. These complaints are further evidence that SO_2 emissions are having direct, negative impacts on the health and quality of life of Ector County residents.

E. Oil and Gas Flares Emit Roughly Double the Emissions of Sulfur Dioxide Reported to the State's Emission Inventory.

The National Emissions Inventory and the Texas Emissions Inventory fail to include significant flaring emissions and woefully undercount the actual levels of emissions from oil and gas activity. In Texas, two state agencies have overlapping, and sometimes conflicting, jurisdiction

[32] TCEQ Complaint Status, sorted for Ector County, January 1, 2014 through October 15, 2020, available at https://www2.tceq.texas.gov/oce/waci/index.cfm.

over oil and gas flares: The Texas Railroad Commission regulates oil and gas drilling and also authorizes flaring at oil and gas wells; whereas, the Texas Commission on Environmental Quality is responsible for air permitting for all sources.

The TCEQ requires some, but not all operators to report their annual point source emissions inventories. Oil and gas drillers who are regulated by the Railroad Commission do not report routine emissions directly to the TCEQ. They report to TCEQ only unauthorized emission events for which emissions exceed reportable quantities. For routine emissions, oil and gas drillers instead report the annual amount of gas that is vented or flared at each oil and gas lease to the Railroad Commission, and then TCEQ obtains this data and uses it to develop area source emission estimates. These emissions are required to be included in the State's Emissions Inventory, and are also included in the State Implementation Plan for achieving and maintaining the national ambient air quality standards. The Texas Emission Inventory woefully undercounts oil and gas emissions.

Emissions from oil and gas production that are found in the Texas Emission Inventory come from two sources. For larger oil and gas sites that meet the emissions reporting thresholds in 30 Tex. Admin. Code Section 101.10, the owners or operators of the sites estimate the emissions and report them to the TCEQ annually in their point source emissions inventories. For smaller sites that do not meet the reporting thresholds found in 30 Tex. Admin. Code Section 101.10, the TCEQ estimates the emissions as non-point (or area) source emissions. These are county-level estimates based on production data obtained from the Texas Railroad Commission ("RRC"), such as the active number of oil and gas wells and the annual amount of crude oil and natural gas production.

Area source oil and gas emissions have been estimated using several methods. Reports that detail these methods, as well as the estimated annual emissions that have been included in the Texas SIP include:[33]

- *Characterization of Oil and Gas Production Equipment and Develop a Methodology to Estimate Statewide Emissions* (2010).[34]

[33] These and additional studies since 2001, detailing all of TCEQ's oil and gas production emission estimates found in the Texas SIP are available here: https://www.tceq.texas.gov/airquality/airmod/project/pj_report_ei.html
[34] This report is available on the TCEQ's Air Quality Research and Contract Reports website at: https://www.tceq.texas.gov/assets/public/implementation/air/am/contracts/reports/ei/5820784003FY1026-20101124-ergi-oilGasEmissionsInventory.pdf .

- *Condensate Tank Oil and Gas Activities* (2012)
- *Upstream Oil and Gas Heaters and Boilers* (2013)
- *Specified Oil and Gas Well Activities Emissions Inventory Update* (2014)

None of these studies, nor any of Texas's or EPA's regulatory actions that relied on the emissions estimates found in these studies, adequately account for all actual oil and gas flare emissions.

The TCEQ develops area source emissions inventories every three years and submits them to the EPA for the National Emissions Inventory ("NEI"). The most recent NEI was developed for calendar year 2017 per federal reporting requirements. 2017 Texas statewide SO_2 emissions from area source oil wellhead flaring were estimated to be 19,092 tpy. 2017 Texas statewide SO_2 emissions from area source gas wellhead flaring were estimated to be 4,233 tpy.

To demonstrate the magnitude of the oil and gas well flaring emissions that TCEQ and EPA have failed to consider, we reviewed the most recent available Texas Railroad Commission flare data, which covered the period from October 2018 through September 2019,[35] for the Railroad Commission's District 8 (which covers a portion of the Permian Basin including Ector and Midland Counties). We relied on the Railroad Commission's Hydrogen Sulfide Fields Concentrations Listings for an average hydrogen sulfide concentration per field.[36] We assumed 98% conversion of hydrogen sulfide to sulfur dioxide, which is a common industry practice, although we acknowledge that 100% destruction of hydrogen sulfide is typically expected.

We used the following standard engineering calculations to determine how much hydrogen sulfide and sulfur dioxide oil and gas drillers emitted in the Railroad Commission District 8 over the one-year study period:

Flared Calculations:[37]

$$\boldsymbol{tons\ H_2S} = \frac{field\ concentration\ H_2S\ ppm}{1{,}000{,}000\ ppmv} \times Volume\ Vented\ (MCF) \times 1{,}000\ \left(\frac{scf}{MCF}\right) \times \frac{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}}{379.3\frac{scf}{mol}} \times \frac{ton}{2{,}000\ lb} \times 0.02\ (gas\ not\ combusted)$$

[35] TX RRC Production Report Queries. Available at http://webapps.rrc.texas.gov/PR/publicQueriesMainAction.do.
[36] TX RRC Hydrogen Sulfide (H2S) Fields & Concentrations Listings. Available at https://www.rrc.state.tx.us/oil-gas/research-and-statistics/field-data/h2s/.
[37] *Id.*

$$\boldsymbol{tons\ SO_2} = \frac{field\ concentration\ H_2S\ ppm}{1{,}000{,}000\ ppmv} \times Volume\ Vented\ (MCF) \times 1{,}000\ \left(\frac{scf}{MCF}\right) \times \frac{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}}{379.3\ \frac{scf}{mol}} \times \frac{64.1\ molar\ weight\ SO_2\ \frac{lb}{lb-mol}}{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}} \times \frac{ton}{2{,}000\ lb} \times 0.98\ (gas\ combusted)$$

Vented Calculation:[38]

$$\boldsymbol{tons\ H_2S} = \frac{field\ concentration\ H_2S\ ppm}{1{,}000{,}000\ ppmv} \times Volume\ Vented\ (MCF) \times 1{,}000\ \left(\frac{scf}{MCF}\right) \times \frac{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}}{379.3\ \frac{scf}{mol}} \times \frac{ton}{2{,}000\ lb}$$

Based on available data, oil and gas operators in RRC District 8 flared roughly 141 BCF of gas between October 2018 and September 2019, and vented about 3,213 thousand cubic feet during that period. Flaring this much gas, much of it high in hydrogen sulfide content, would have resulted in an estimated 48,459 tons of SO_2 and 1,466 tons of H_2S. Venting and flaring on oil and gas leases located in Martin and Howard counties likely resulted in the highest estimated emissions of SO_2 and H_2S.

Our results by county are shown in the following table:

Table 4. Estimated tons of SO_2 and H_2S from wellhead flaring In RRC District 8, Q4 2018-Q3 2019

County	Total SO_2 (tons)	Total H_2S (tons)
Martin	11,309	966
Howard	11,158	121
Midland	5,373	83
Reeves	4,542	52
Andrews	3,547	70
Ector	2,675	33
Glasscock	2,520	30
Pecos	2,005	31
Crane	1,795	25
Loving	1,037	11

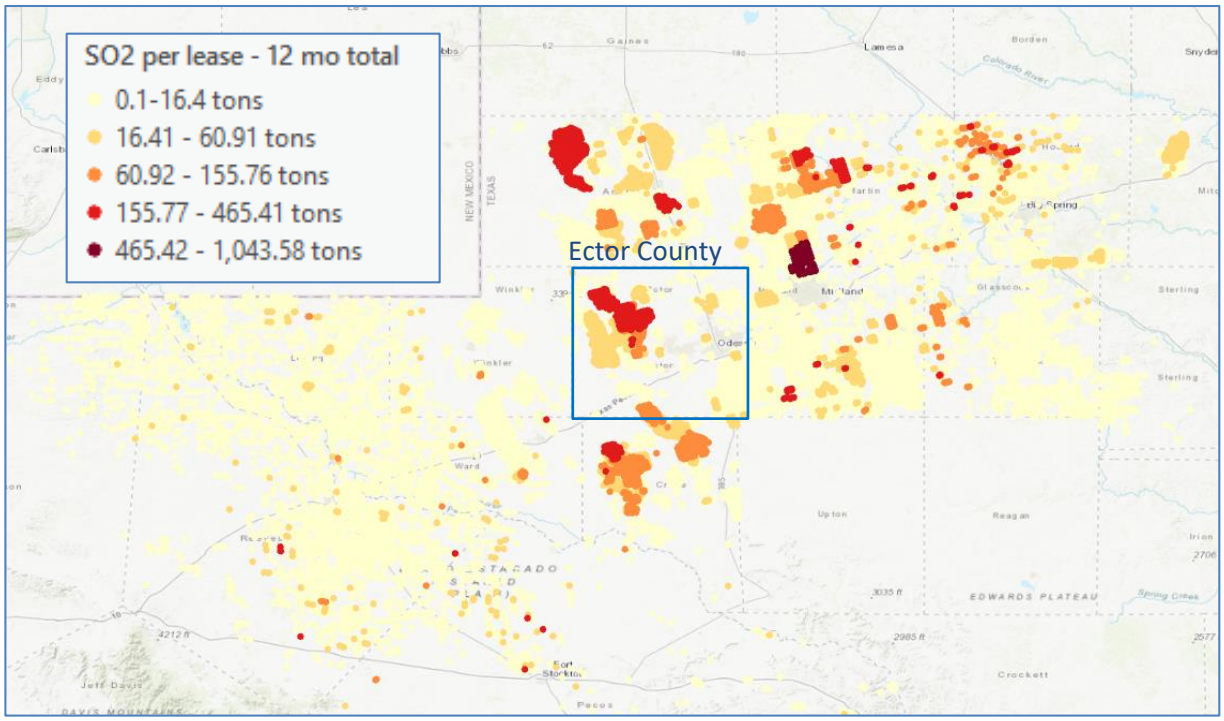
[38] Texas Commission on Environmental Quality, Air Permits Division. New Source Review (NSR) Emission Calculations. Available at: https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss_calc_flares.pdf.

Ward	886	27
Culberson	551	6
Winkler	525	6
Mitchell	45	0
Sterling	7	0
Unknown	484	5
Total	**48,459**	**1,466**

As demonstrated above, Permian Basin area flares at sources regulated by the Texas Railroad Commission emitted 48,459 tons of sulfur dioxide in the most recent year, over double the state-wide total of 23,325 tons found in TCEQ's annual Emission Inventory. This difference holds for Ector County, where flares emitted at least 2,575 tons of sulfur dioxide compared to the Emission Inventory total of 1,028 tons.

The following map illustrates the SO_2 "hot spots" based on our analysis of the RRC flaring data described above, and shows high concentrations of SO_2 flaring emissions in Ector and surrounding counties:

Figure 2. SO_2 Flaring Emissions Per Lease, 2017



IV. The Administrator Must Convene a Proceeding for Reconsideration in Accordance With § 307(d)(7)(B) of the Clean Air Act.

Petitioners present this information pursuant to § 307(d)(7)(B) of the Clean Air Act, which provides an opportunity for the public to object to an Agency designation even after the public comment period closes, provided that: 1) the grounds for such objection arose after the period for public comment and 2) the objection is of central relevance to the outcome of the rule.[39] If these requirements are satisfied, the "Administrator shall convene a proceeding for reconsideration of the rule and provide the same procedural rights as would have been afforded had the information been available at the time the rule was proposed."[40]

A. The Grounds for This Petition Arose After the Comment Period.

As discussed above, grounds for this Petition arose after the comment period, which closed in 2017. The modeling study analyzed all Ector County emission events from 2014 through the end of 2019, and was completed in October 2020. This newly available air quality information shows widespread NAAQS violations across the county and is the grounds for this objection to Ector County's attainment designation. This new information arose after the close of the comment period, and so EPA must convene a rulemaking proceeding to reconsider the erroneous designation of unclassifiable/attainment for the 2010 SO_2 Primary NAAQS for Ector County.

B. The Information in This Petition Is of Central Relevance to Ector County's Attainment Classification.

This Petition is of central relevance to the county's designation because it is evidence of severe and pervasive air quality issues that negatively impact the residents of Ector County and violate state and federal law. This Petition is based on the first and only modeling of air pollution data for the area, which shows frequent exceedances of the 1-hour SO_2 NAAQS despite modeling only a fraction of actual emissions. Had this information been available at the time the rule was proposed, Ector County would have been properly designated nonattainment.

Because the grounds for this Petition arose after the period for public comment and this objection is of central relevance to the outcome of the rule, the Administrator must convene a

[39] 42 U.S.C. § 7607(d)(7)(B).
[40] Id.

proceeding for reconsideration. Petitioners urge EPA to issue a final nonattainment designation for Ector County based on the overwhelming evidence that demonstrates that rampant flaring in the Permian Basin has caused and will continue to cause exceedances of the SO_2 NAAQS absent a comprehensive program of emissions reductions.

V. Conclusion

Excessive flaring at oil and gas facilities is poisoning the air in Ector County. Levels of sulfur dioxide exceed the health-based standard established by the EPA across large areas of the County, including areas where people live, work, pray, and recreate. These dangerous levels of air pollution harm local residents and reduce the quality of life for the entire region. Without effective regulation to bring flaring under control, West Texans will continue to breathe air that fails to meet Clean Air Act standards. To redress this harm, EPA should designate Ector County as nonattainment for the primary (one-hour) SO_2 NAAQS.

Respectfully Submitted,

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VIA ELECTRONIC MAIL

Modeling the SO_2 Impacts From Intermittent Flare Events in Ector County, Texas

H. Andrew Gray
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October 2020

Report prepared for
Environmental Integrity Project
Austin, Texas

INTRODUCTION

Scope of Work

I have been retained by the Environmental Integrity Project to address, from the perspective of an atmospheric scientist, the issue of whether sulfur dioxide (SO_2) emissions from intermittent flare releases from oil and gas facilities have substantially contributed to elevated levels of air pollution in Ector County, Texas. Using incident reports filed by these facilities as part of the State of Texas Environmental Electronic Reporting System and obtained from the Texas Commission on Environmental Quality, for the six-year period between 2014 and 2019, I evaluated the air quality impacts (SO_2 concentrations) that occurred throughout Ector County, Texas due to emissions from intermittent flare events at numerous oil and gas facilities. I address in this report the question of whether these emissions likely caused violations of the primary (health-based) national ambient air quality standards (NAAQS) for SO_2.

Methodology

Based upon my education and professional experience as an atmospheric scientist, I conducted an air dispersion modeling analysis to determine the SO_2 air quality impacts in the surrounding area due to intermittent emission events from oil and gas flares in Ector County, Texas. I compiled the necessary information to describe the SO_2 emissions between 2014 and 2019. I used this information as input to the AERMOD dispersion model which simulated the dispersion of the SO_2 into the surrounding community for every hour during the entire six-year period.

Conclusions

Based on the emission data and modeling analysis that I conducted, I conclude that SO_2 emissions from the oil and gas flares did, in fact, substantially contribute to elevated levels of SO_2 in the ambient air over a large area within Ector County. The model estimates that the 1-hour Primary NAAQS for SO_2 was violated at numerous locations throughout the county.

Qualifications

I am an environmental engineer and atmospheric scientist with over 40 years of professional experience performing air quality dispersion modeling and related analyses. I received my Bachelor of Science (BS) in civil engineering / engineering and public policy from Carnegie-Mellon University in 1979. I earned a Master of Science (MS) and a Ph.D. in environmental engineering science from the California Institute of

Technology (Caltech), with a minor emphasis in numerical methods. My doctoral thesis, on the control of atmospheric carbon particles in the Los Angeles region, includes a number of analyses that have been relied upon and cited repeatedly by atmospheric modelers, researchers, and government planners during the last thirty years.

I have developed, evaluated, and applied air pollution dispersion models in academic, regulatory and consulting environments. I developed and applied the methodologies for assessing particulate matter and visibility that were used by the South Coast Air Quality Management District (Southern California) for their air quality management plans during the 1980s and 1990s. I managed a team of researchers that evaluated the MESOPUFF model (the precursor to CALPUFF) for the US Interagency Workgroup on Air Quality Modeling (IWAQM).

As a consultant, I have modeled the air quality impacts of thousands of emission sources, using a variety of air quality models (including AERMOD, CALPUFF, CAMx, CMB, etc.) for various clients, including industry (e.g., diesel engine manufacturers and the off-shore container shipping industry), government (e.g., US EPA and US Dept. of Justice), and environmental organizations (including Sierra Club and National Parks Conservation Association).

I have authored hundreds of technical reports, many of which have been published in peer-reviewed journals and symposia. I have provided expert testimony regarding air dispersion modeling analyses at numerous hearings, depositions, and at trial. In April 2014, I was invited by the Royal Institute of International Affairs to participate in the "Balancing Global Energy Policy Objectives: A High-Level Roundtable" meeting.

I have expertise in air quality monitoring, statistical analyses, atmospheric chemistry, meteorology, particle processes, atmospheric transport and deposition, numerical methods, computer modeling, air quality control strategy design, and environmental public policy. An integral part of my research has involved developing, applying, and evaluating computer modeling tools to determine the air quality impacts of emission sources in the areas surrounding those sources. My experience and qualifications are described in detail in the attached resume (Attachment A).

MODEL APPLICATION

Model Selection

The AERMOD air quality model was used to determine the increase in ambient SO_2 concentrations in Ector County due to intermittent emissions from 173 oil and gas

facilities located around Odessa, Texas, mainly in Ector County. AERMOD[1,2,3] is a steady-state plume model that considers atmospheric dispersion based on the planetary boundary layer turbulence structure and scaling concepts. AERMOD has been adopted in federal rule by the US Environmental Protection Agency (EPA) as the preferred near-field dispersion model for regulatory assessments of industrial point sources, including determinations of compliance with the National Ambient Air Quality Standards (NAAQS), and evaluations of proposed new source emission.[4]

In addition to the AERMOD dispersion model, the AERMOD modeling system includes AERMET, a meteorological data preprocessor. The protocol that I used for this modeling analysis follows the guidance for AERMOD and AERMET applications established in US EPA's modeling guidelines[5] and the AERMOD implementation guide.[6]

This report describes the modeling exercise that I conducted using the AERMOD model to evaluate the impact of intermittent oil and gas flare emissions on ambient SO_2 concentrations in Ector County. The necessary input data including emission rates, receptor and meteorological data, and modeling options, are described below, followed by a summary of the model results.

Source Data

SO_2 is emitted from the oil and gas facilities from various emission points throughout Ector County. The Texas Commission on Environmental Quality (TCEQ) maintains records of Emissions Events, which are essentially unauthorized emissions from upsets and unplanned maintenance events, and these are the intermittent emission incidents I modeled in this study. The Incident Reports obtained from TCEQ include information such as the location of the facilities, the start date and time, end date and time, and amount of SO_2 (lbs) released during each emission event. Incident Reports for 2014 through 2019 were obtained from TCEQ for use in this study.[7] For modeling purposes,

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[1] U.S. Environmental Protection Agency. AERMOD: Description of Model Formulation. EPA-454/R-03-004. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. September 2004.
[2] U.S. Environmental Protection Agency. Addendum: User's Guide for the AMS/EPA Regulatory Model – AERMOD. EPA-454/B-03-001. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, March 2011.
[3] U.S. Environmental Protection Agency. User's Guide for the AMS/EPA Regulatory Model – AERMOD. EPA-454/B-16-011. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. December 2016.
[4] U.S. Environmental Protection Agency. Guideline on Air Quality Models, 40 CFR Part 51, Appendix W. Published in the Federal Register, Vol. 70, No. 216, November 9, 2005.
[5] Ibid.
[6] U.S. Environmental Protection Agency. AERMOD Implementation Guide. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. 2009. http://www.epa.gov/ttn/scram/7thconf/aermod/aermod_implmtn_guide_19March2009.pdf
[7] TCEQ's Emission Event Report Database, https://www2.tceq.texas.gov/oce/eer/

it was assumed that the SO_2 emissions were released at a constant rate between the start date/time and end date/time.

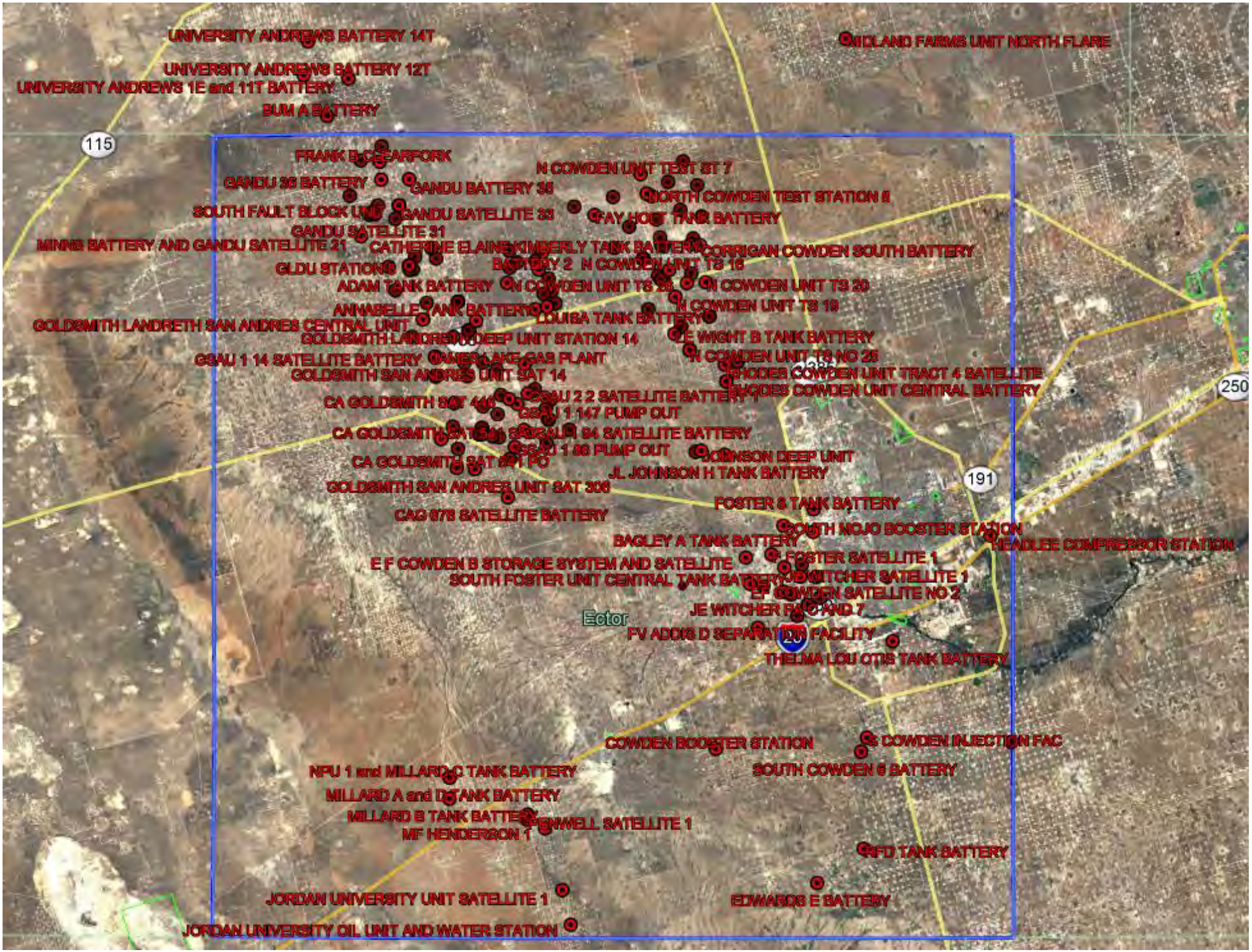
Source information required by the AERMOD model for point sources includes the location of each emission release, the height (above ground) of release, the stack diameter, stack gas temperature, exit velocity, and the pollutant emission rate.[8] Source parameters, including release height, stack diameter, exit velocity, and exit gas temperature, were obtained from publicly available TCEQ files, including TCEQ's point source database and facility-specific permit and application files. Stack heights were obtained for 48 facilities, stack diameters were obtained for 42 facilities, exit velocities were obtained for 20 facilities, and exit temperatures were obtained for 30 facilities.

The locations (UTM coordinates[9]) were estimated using information contained in permit files or the TCEQ Incident Reports, along with Google Earth maps and aerial images. Figure 1 shows the locations of the modeled emission releases.[10]

For those facilities that did not have reliable stack parameter data, conservative default values were used in the modeling (default stack height: 13.72 m, default stack diameter: 0.30 m, default exit velocity: 20.0 m/s, default exit temperature: 1273 K). It should be noted that these default stack parameter values produced higher than average plume rise for each of these sources, which resulted in somewhat lower (conservative) concentration impacts than would be expected if the actual stack parameter data (if known) had been used. The modeled locations and stack parameters for all 173 facilities are shown in Appendix A.

[8] "Pollutant emission rate" is the mass of pollutant released into the atmosphere per unit time (lb/hour).
[9] UTM (Universal Transverse Mercator) coordinates (meters) are located in UTM Zone 13.
[10] A few of the modeled emission releases affecting air quality in Ector County were located in southern Andrews County, to the north of Ector County.

Figure 1. Modeled Sources



In total, 4,347 incidents were modeled. SO_2 was emitted from all 4,347 incidents during 305,836 different source-hours between 2014 and 2019, accounting for a total duration of 301,652.5 hours. The total duration is equivalent to 5.7 "sources" running full-time for all six years. The total SO_2 emitted from incidents from all 173 sources for all six years was 46,244,565 lb (23,122 tons). Incident information by year is presented in Table 1, below.

Table 1. Number, Total Duration and Total Emissions from Modeled Incidents

Year	# of Incidents	Total Hours	SO_2 Emitted (tons)
2014	495	53,494.0	5,059
2015	669	53,511.5	4,350
2016	568	36,669.9	3,194
2017	832	36,490.7	2,669
2018	948	47,515.6	2,849
2019	835	73,970.9	5,003
Total 2014-2019	4,347	301,652.5	23,122

Overall, the average incident lasted 69.4 hours and emitted 10,638 lb, however both the incident duration and total emissions varied widely, as shown in Figures 2-13, below. The overall average emission rate for all incidents was 153.3 lb/hr (with a wide variation).

The maximum incident duration was 2,659 hours (110.8 days). 8 incidents had durations exceeding 1,000 hours.

The maximum incident total SO_2 emissions was 1,066,993 lb (533.5 tons), which began in late November 2016 and lasted for 15.5 days. 64 incidents had total SO_2 emissions exceeding 100,000 lb, or 50 tons.

The maximum incident emission rate was 39,561 lb/hr, which occurred during a two-hour period in December 2016. 424 incidents had SO_2 emission rates that exceeded 1,000 lb/hr; 37 incidents had emission rates that exceeded 10,000 lb/hr, or 5 tons/hour.

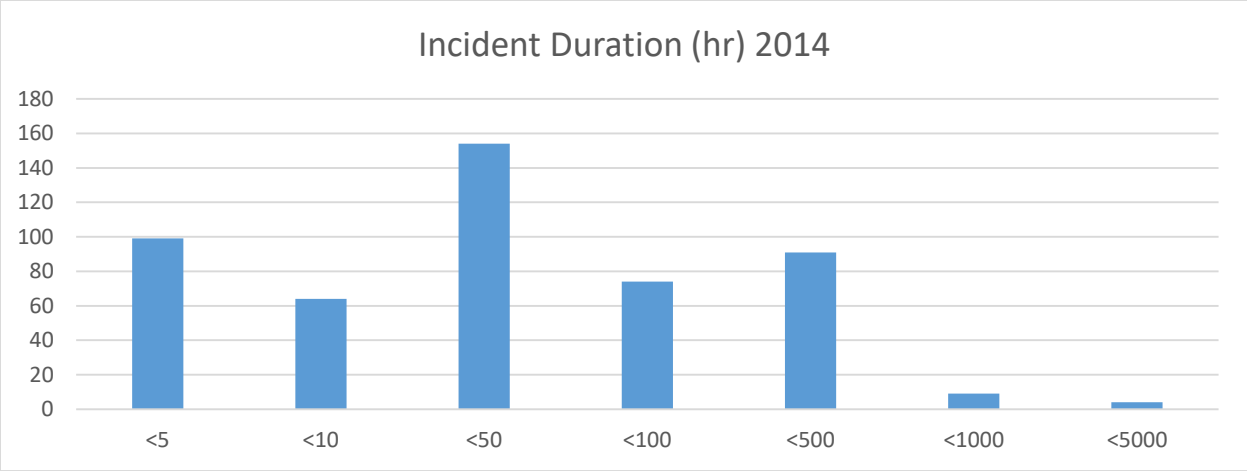


Figure 2. Incident Duration, 2014

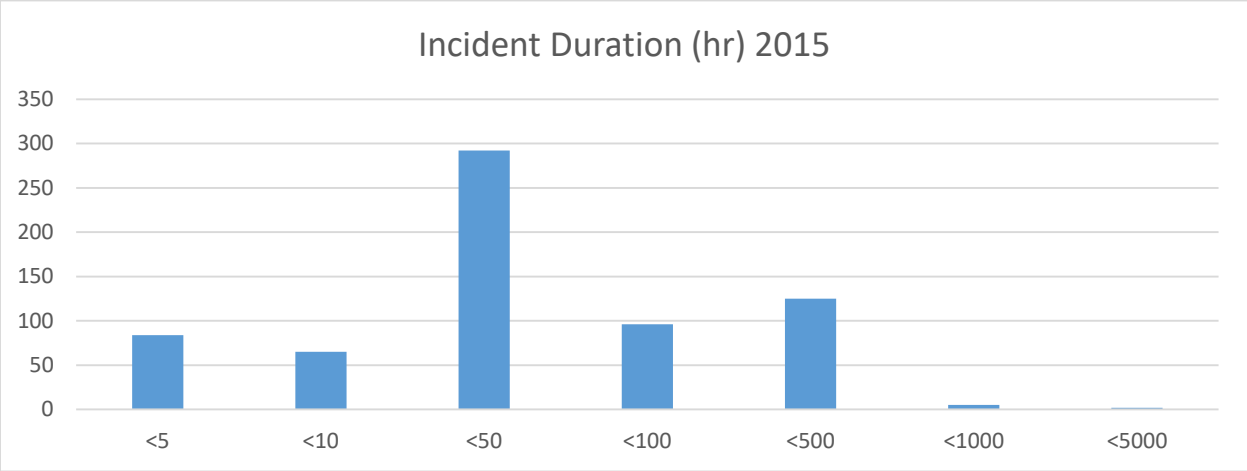


Figure 3. Incident Duration, 2015

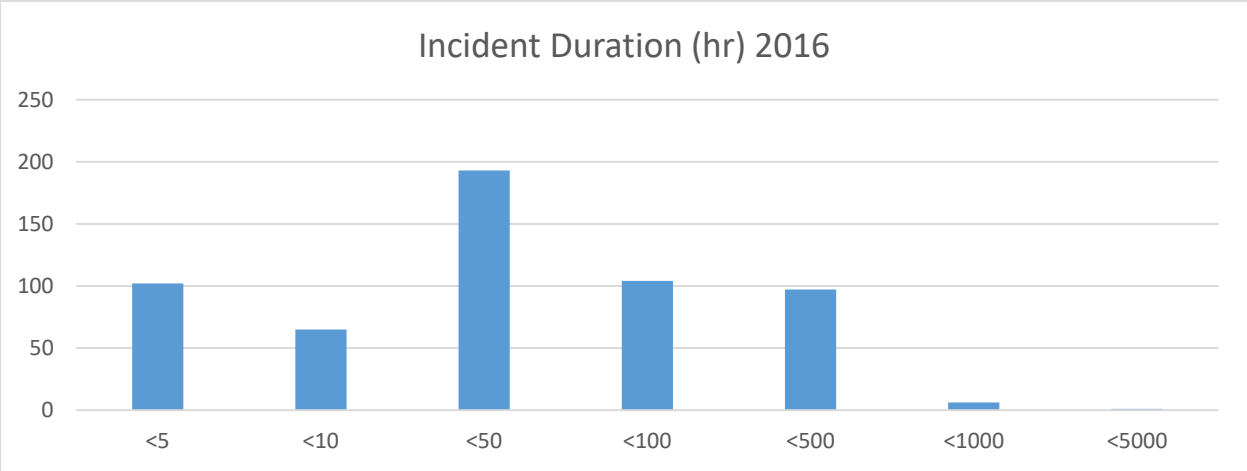


Figure 4. Incident Duration, 2016

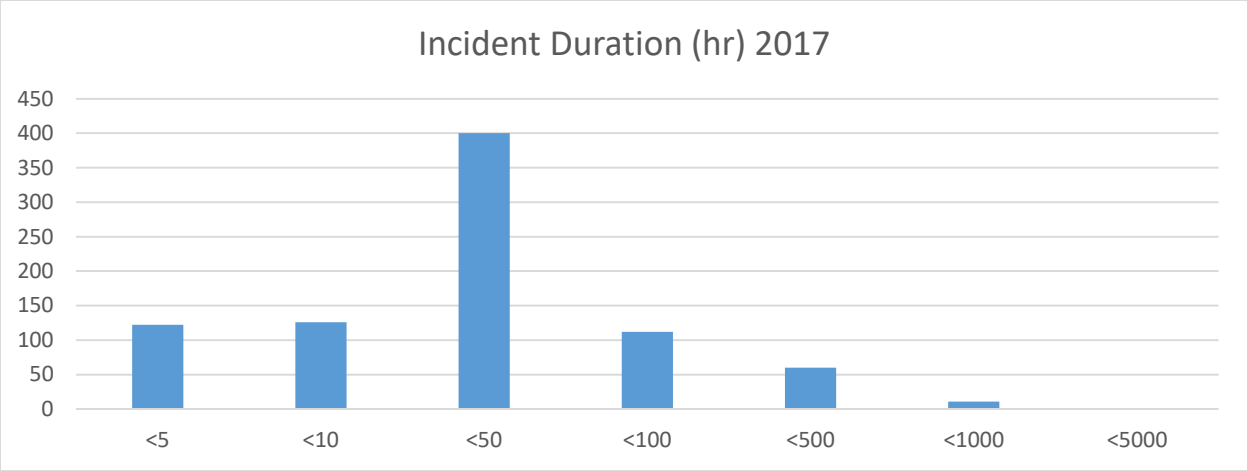


Figure 5. Incident Duration, 2017

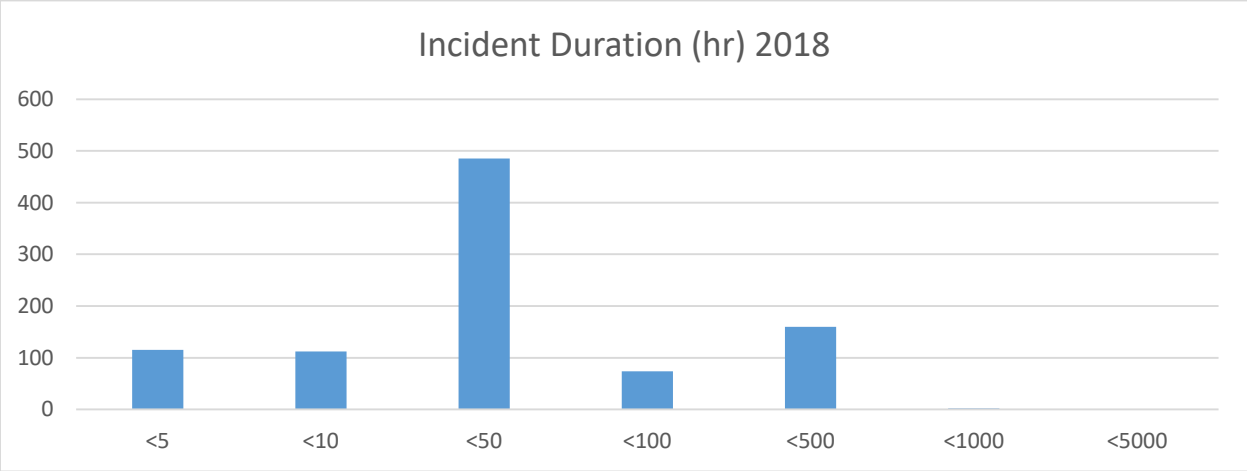


Figure 6. Incident Duration, 2018

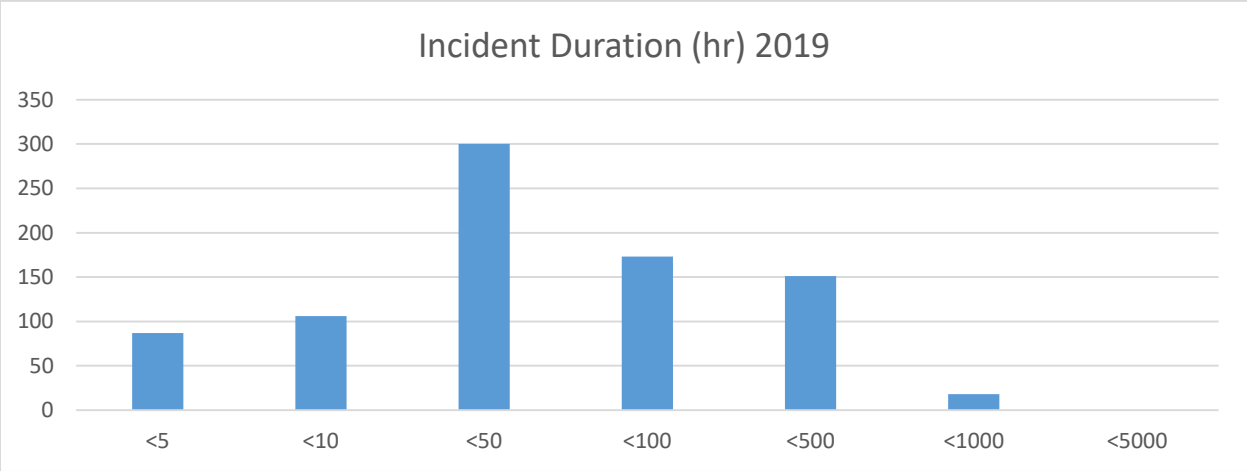


Figure 7. Incident Duration, 2019

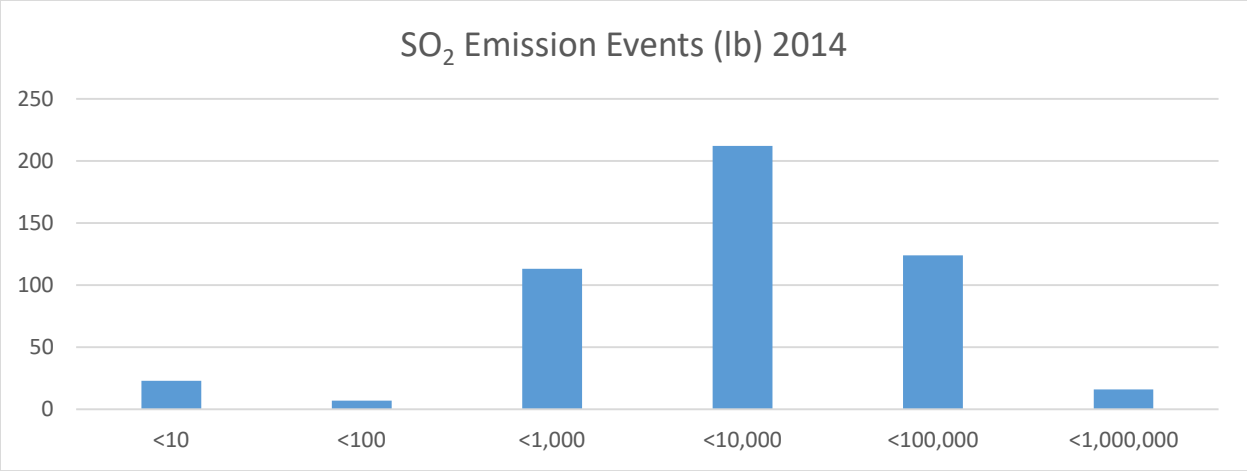


Figure 8. Emissions Events (lb), 2014

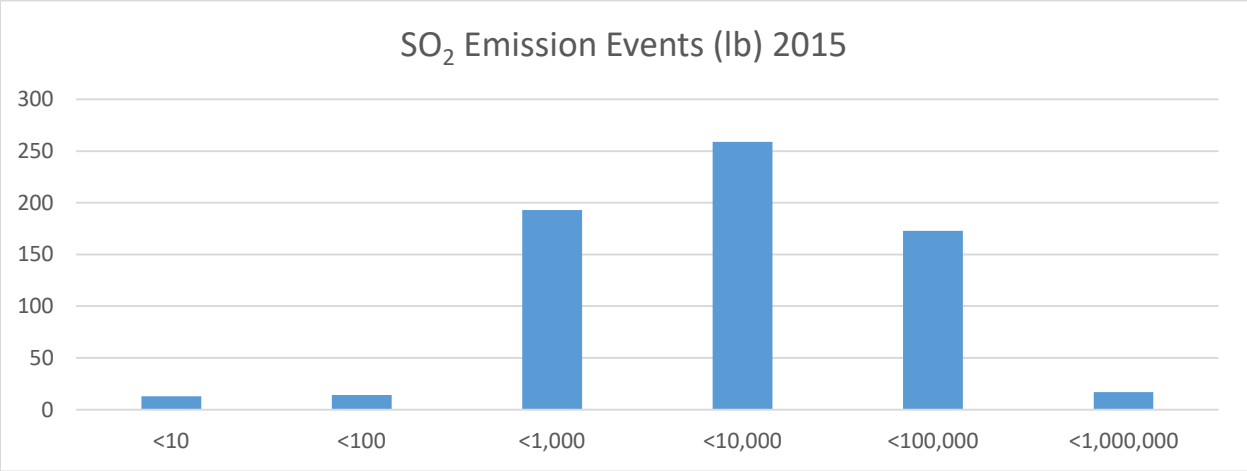


Figure 9. Emissions Events (lb), 2015

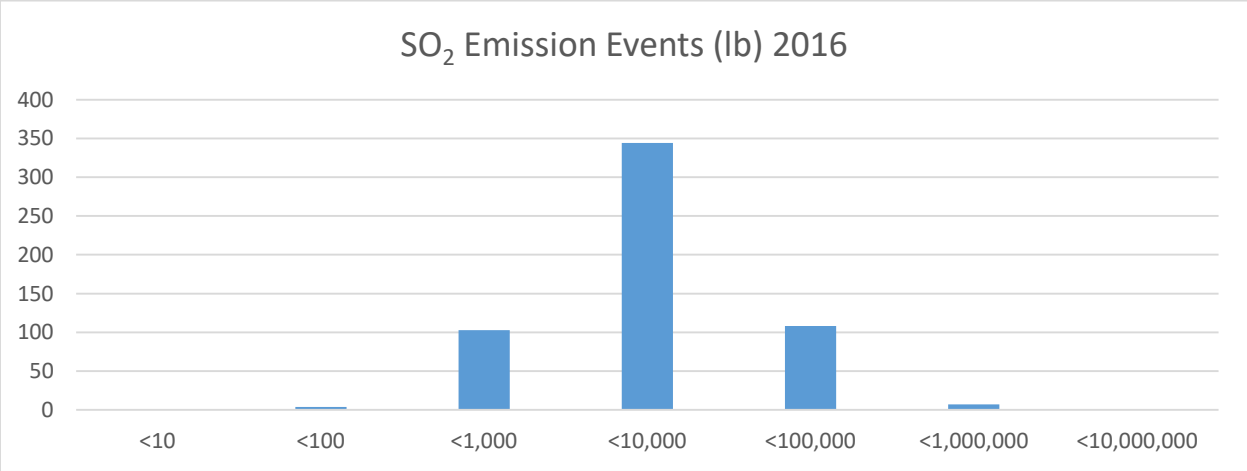


Figure 10. Emissions Events (lb), 2016

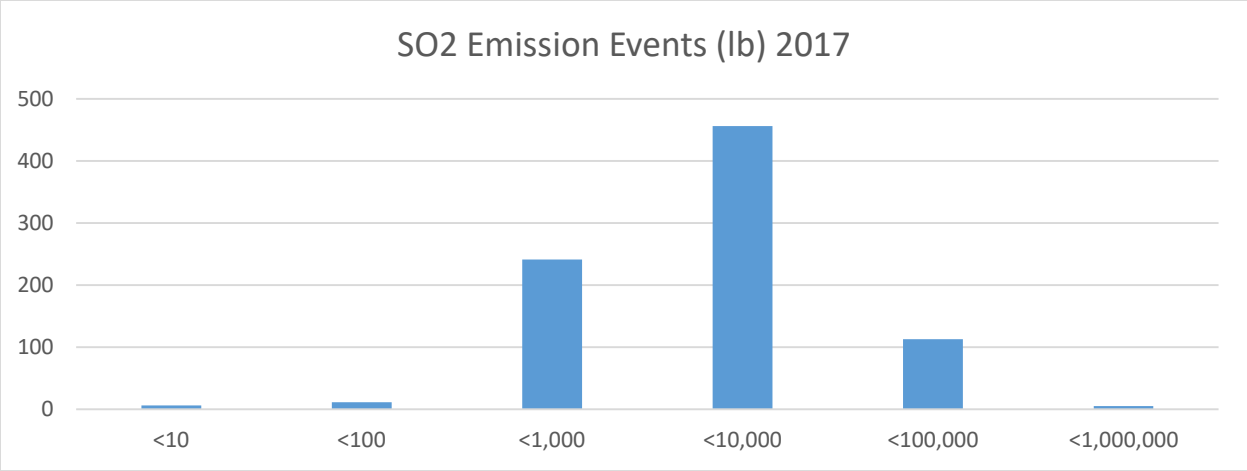


Figure 11. Emissions Events (lb), 2017

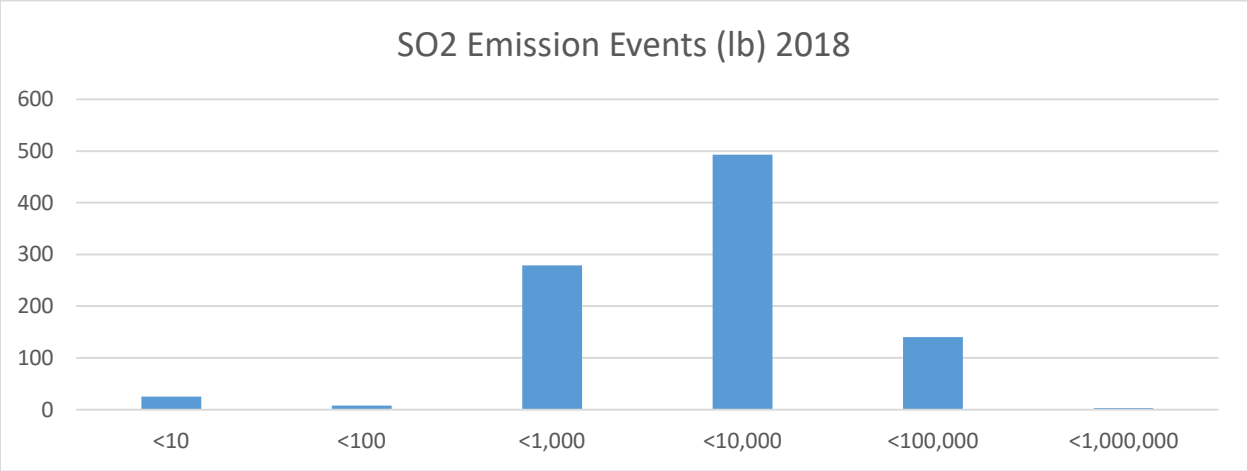


Figure 12. Emissions Events (lb), 2018

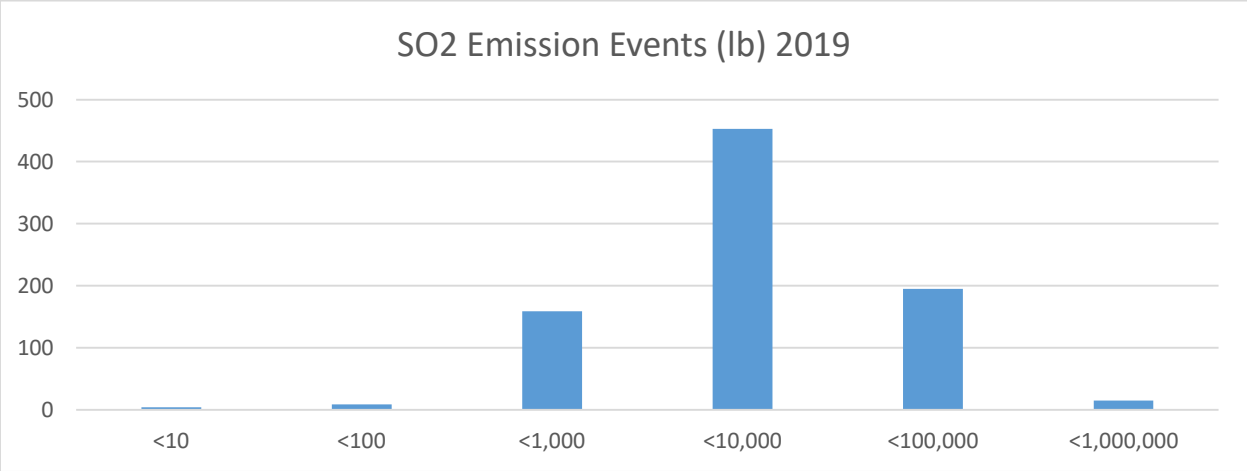


Figure 13. Emissions Events (lb), 2019

Receptor Data

The AERMOD model is designed to estimate pollutant concentrations at a specified set of locations within the modeling domain, which are referred to as the modeled "receptors". For the current AERMOD application, I defined a set of gridded modeled receptors within Ector County (30 mi x 30 mi square), as shown in Figure 14. Receptors were placed every 1 mile, accounting for 961 gridded receptors (31 N/S x 31 E/W).

The AERMOD model calculated the SO_2 concentration ($\mu g/m^3$) at each of the 961 receptor locations for every hour of the six-year model simulation (52,584 hours). The modeled concentrations at each receptor location are assumed to be representative of the surrounding 1 mi x 1 mi grid cell.[11]

In addition to the gridded receptors, a set of 20 discrete receptors, located at residences, ranches, churches, places of business, etc., were placed throughout Ector County, as shown In Table 2, below. The locations of the discrete receptors are also shown on the map in Figure 15.

Table 2. Discrete Receptors

Receptor	Type	Location
R1	business	SE corner of Gulf Ave (HWY 158) & S. Scharbauer St., Goldsmith
R2	urban center	Intersection of W 8th St. & N Washington Ave., Odessa
R3	residential	N Aster Ave., between E Larkspur Ln. and E Goldenrod Dr., Gardendale
R4	campground	Western Skies RV Campground, HWY 20, Penwell
R5	residential	Larchmont Pl., north Odessa
R6	ranch	Boys Ranch Rd., 0.9 km west of Marion Flint (Rte 26)
R7	church	Goldsmith Community Church, S Goldsmith Ave & Avenue E, Goldsmith
R8	residential	5200 block of W 40th St., west Odessa
R9	residential	2300 block of W Berry St., south Odessa
R10	school	University of Texas of the Permian Basin, east Odessa
R11	ranch	Cottonwood Dr, 0.5 km west of Wire Line Rd.
R12	ranch	YT Ranch Rd., 3.9 km west of Chapel Hill Rd. (Rte 1936)
R13	residential	6900 block of N Carter Ave, West Odessa
R14	school	Ector College Prep Success Academy, south Odessa
R15	church	Faith Community Baptist Church, West Odessa
R16	residential	Intersection of W Ivory St. & S Beryl Ave., Pleasant Farms
R17	museum	Odessa Meteor Crater Museum, SW Odessa
R18	ranch	YT Ranch Rd., 2.9 km east of James Lake (Rte 866)
R19	residential	3rd St., Notrees
R20	ranch	NE corner of W Apple St. & S Klondyke Ave., Pleasant Farms

[11] The gridded receptors are located at the center of each 1 mi x 1 mi grid cell.

Figure 14. Ector County AERMOD modeling domain (30 mi x 30 mi)

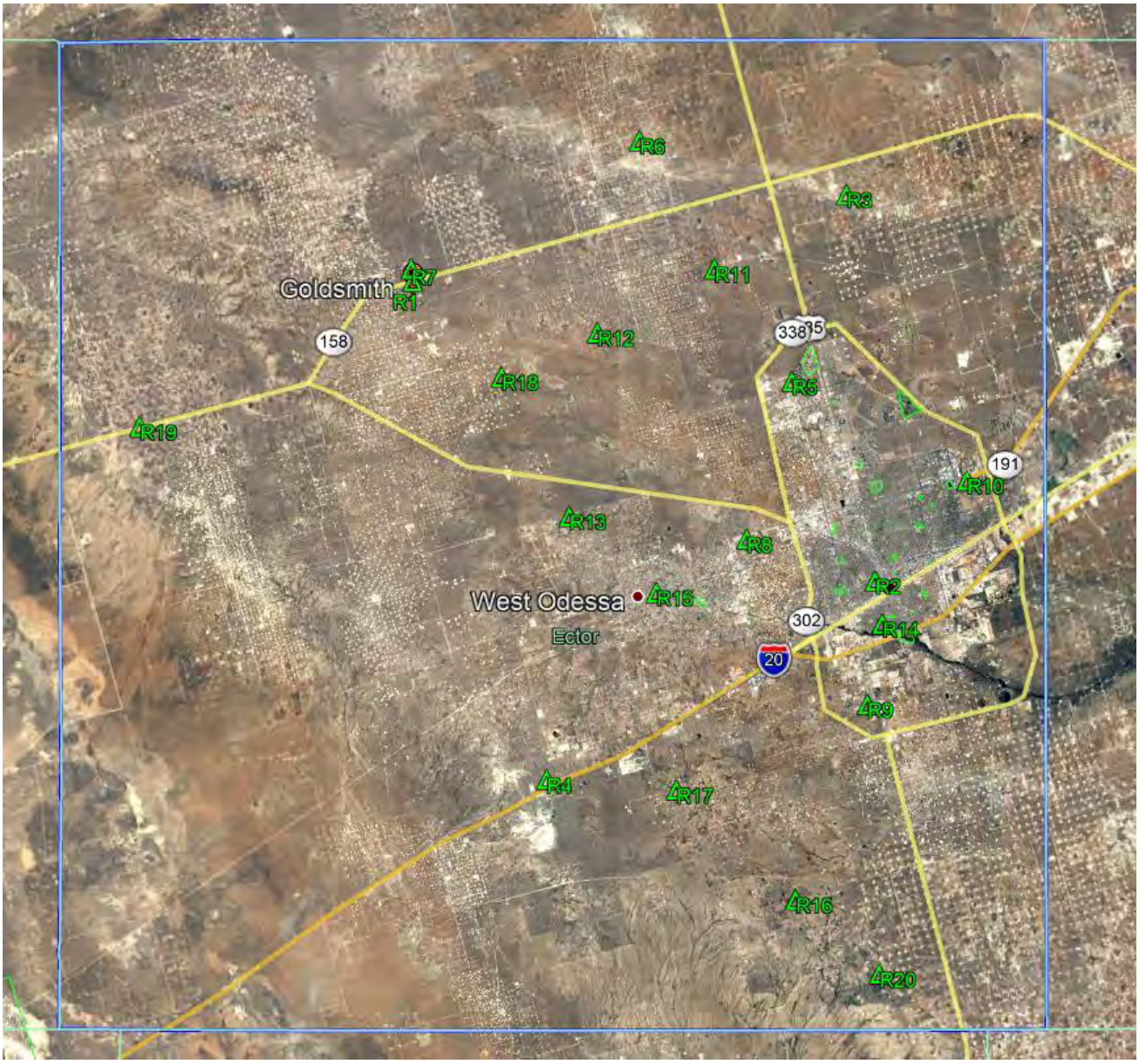


Figure 15. Modeling Domain Showing Locations of Discrete Receptors

Meteorological Data

I assembled meteorological data for 2014-2019 for input to the AERMOD model. The model requires continuous records of surface and upper air meteorological data (including wind speeds and directions, temperatures, ambient air pressures, precipitation, etc.). These data were obtained from airport measurements. The surface data included (1) hourly Integrated Surface Data (ISD) from the Odessa Schleymeyer

Field Airport (ODO),[12] and (2) 1-minute Automated Surface Observing System (ASOS) wind data from ODO.[13] The upper air data consisted of morning radiosonde measurements (soundings) recorded each day at 1200 GMT at Midland International Airport (MAF),[14] located about 8 km east of Ector County.

AERMOD ignores hours with variable wind (i.e., undefined wind direction) or calm (low wind speed) conditions, resulting in zero concentrations for those hours, which can lead to an underestimation of long-term average concentrations. To address the issue of calm and variable winds associated with the hourly averaged surface wind data that is typically input to AERMOD, US EPA developed the AERMINUTE preprocessor.[15] AERMINUTE processes 1-minute ASOS wind data, resulting in significantly fewer hours with calm and missing winds. I used AERMINUTE (Version 15272) to reduce the number of calm wind conditions (zero wind speed) within the hourly Odessa surface data for 2014-2019 from 1,595 to 220 (out of 52,584 total modeled hours).

AERSURFACE,[16] a non-regulatory component of the AERMOD modeling system, was used to develop the surface characteristics at ODO, as required by AERMET. I obtained land cover/land use data from the US Geological Survey (USGS) National Land Cover Database (NLCD)[17] and processed the data using AERSURFACE (Version 13016) in order to determine the required micrometeorological parameters (noon-time albedo, daytime Bowen ratio, and surface roughness length) at ODO using twelve 30-degree sectors for each month. Average surface moisture was assumed for the Odessa Airport location.[18]

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[12] National Climatic Data Center, Integrated Surface Data (ISD) for ODO (USAF: 722648; WBAN: 03031) 2014-2019, National Oceanic and Atmospheric Administration (NOAA). ftp://ftp.ncdc.noaa.gov/pub/data/noaa/readme.txt

[13] National Centers for Environmental Information (NCEI), Automated Surface Observing System (ASOS) Data for Odessa, TX (ODO), 2014-2019. National Oceanic and Atmospheric Administration (NOAA). https://www.ncdc.noaa.gov/data-access/land-based-station-data/land-based-datasets/automated-surface-observing-system-asos

[14] Earth System Research Laboratory (ESRL), ESRL Radiosonde Database, FSL Data for MAF (WBAN: 23023) 2014-2019. National Oceanic and Atmospheric Administration (NOAA). https://ruc.noaa.gov/raobs/General_Information.html

[15] U.S. Environmental Protection Agency. AERMINUTE User's Guide. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. 2011. http://www.epa.gov/ttn/scram/7thconf/aermod/aerminute_v11059.zip

[16] U.S. Environmental Protection Agency. AERSURFACE User's Guide. EPA-454/B-08-001. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. 2008. (http://www.epa.gov/ttn/scram/7thconf/aermod/aersurface_userguide.pdf)

[17] Multi-Resolution Land Characteristics Consortium (MRLC). https://www.mrlc.gov/

[18] According to Climate Data for US Cities (http://www.usclimatedata.com/climate/odessa/texas/united-states/ustx2587), the average precipitation for Odessa, TX is 15 inches. According to the Average Annual Precipitation by City in the United States (https://www.currentresults.com/Weather/US/average-annual-precipitation-by-city.php), the average annual precipitation for Austin, Dallas, and San Antonio, are 34.2, 37.6, and 32.3 inches, respectively. AERSURFACE guidelines recommend using the wet surface moisture option for locations in the top 30 percent of annual precipitation (greater than about 45 inches), and dry surface moisture for locations in the bottom 30 percentile.

I used the AERMET meteorological preprocessor (Version 16216)[19] to merge the hourly surface and upper air data, and to estimate a number of required boundary layer parameters using the meteorological data and surface characteristics.

Modeling Options

A number of control options must be specified in order to execute the AERMOD model. For this application, regulatory default options were used, which include the use of stack-tip downwash (for point releases), and the calms and missing data processing as set forth in US EPA's modeling guidelines.[20] There are almost no topological features in Ector County, so the model was run in "flat" mode (i.e., no terrain effects). The model's averaging time was set to one hour and default flagpole receptor heights were assumed to be 1.5 m. The majority of Ector County is sparsely populated, so the "Rural" modeling option was selected within AERMOD.[21]

I used the most recent version of AERMOD (Version 16216r) to estimate the SO_2 concentration impacts due to emissions from the intermittent flares at each of the 173 modeled facilities. No background concentrations were added to the modeled impacts, therefore the modeled concentrations represent the incremental impact to the surrounding community from the modeled incidents.

MODEL RESULTS

The AERMOD model was used to estimate the average SO_2 concentration due to emissions from the 173 modeled facilities for every hour of the six-year (2014-2019) modeling period at every gridded and discrete receptor location. The current Primary National Ambient Air Quality Standard (NAAQS) for SO_2[22] requires that the 99th percentile of 1-hour daily maximum SO_2 concentrations, averaged over 3 years, is below 75 ppb (equivalent to 196 ug/m3). The modeled 99th percentile (4th highest) maximum daily 1-hour SO_2 concentrations for each year are shown in Table 3, below, for the gridded receptors. Three-year averages of the modeled 99th percentile maximum daily 1-hour SO_2 concentrations for the gridded receptors are shown in Table 4.

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[19] U.S. Environmental Protection Agency. User's Guide to the AERMOD Meteorological Preprocessor (AERMET). EPA-454/R-03-003. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. 2004. http://www.epa.gov/ttn/scram/7thconf/aermod/aermet_userguide.zip

[20] U.S. Environmental Protection Agency. Guideline on Air Quality Models, 40 CFR Part 51, Appendix W. Published in the Federal Register, Vol. 70, No. 216, November 9, 2005.

[21] The "URBAN" modeling option would incorporate the effects of increased surface heating from an urban area on pollutant dispersion under stable nighttime atmospheric conditions.

[22] https://www.epa.gov/criteria-air-pollutants/naaqs-table

A shown in Tables 3 and 4, the 1-hour SO_2 NAAQS level was exceeded during each model year, and for each three-year averaging period, at numerous locations throughout Ector County.

Table 3. Annual Modeled Design Values for 1-Hour SO_2 NAAQS[23]

Model Year	Maximum Receptor (µg/m3)	Grid Cells > 196 µg/m3	Grid Cells > 400 µg/m3
2014	4,624.6	170	72
2015	3,333.6	352	111
2016	2,992.5	229	80
2017	2,161.2	128	34
2018	3,022.2	159	47
2019	4,996.8	279	82
6-year avg	1,714.2	209	67
6-year max	4,996.8	461	166

Table 4. Modeled 3-Year Average Design Values for 1-Hour SO_2 NAAQS

Modeled 3-Year Average	Maximum Receptor (µg/m3)	Grid Cells > 196 µg/m3	Grid Cells > 400 µg/m3
2014-2016	2,687.1	252	80
2015-2017	2,091.5	229	73
2016-2018	1,908.8	164	52
2017-2019	2,050.0	187	60

Figures 16-23 show the modeled three-year average SO_2 design value concentration impacts due to emissions from the 173 facilities.[24] The modeled three-year average 99th percentile daily maximum hourly SO_2 concentration (NAAQS design value) exceeded the allowable NAAQS level (196 µg/m^3) across a large area of the modeling domain (the red areas shown in Figures 16-23): 252 square miles in 2014-2017, 229 square miles in 2015-2017, 164 square miles in 2016-2018, and 187 square miles in 2017-2019 (one square mile is equivalent to 2.59 km^2).

[23] Design values correspond to the 99th percentile (4th highest) maximum daily 1-hour SO_2 concentration.
[24] Contours are shown in Figures 16, 18, 20, and 22 for concentrations up to 196 µg/m^3. The red areas represent design value concentrations that exceed 196 µg/m^3.

Figure 16. Modeled Design Value SO_2 concentrations (µg/m^3), 2014-2016

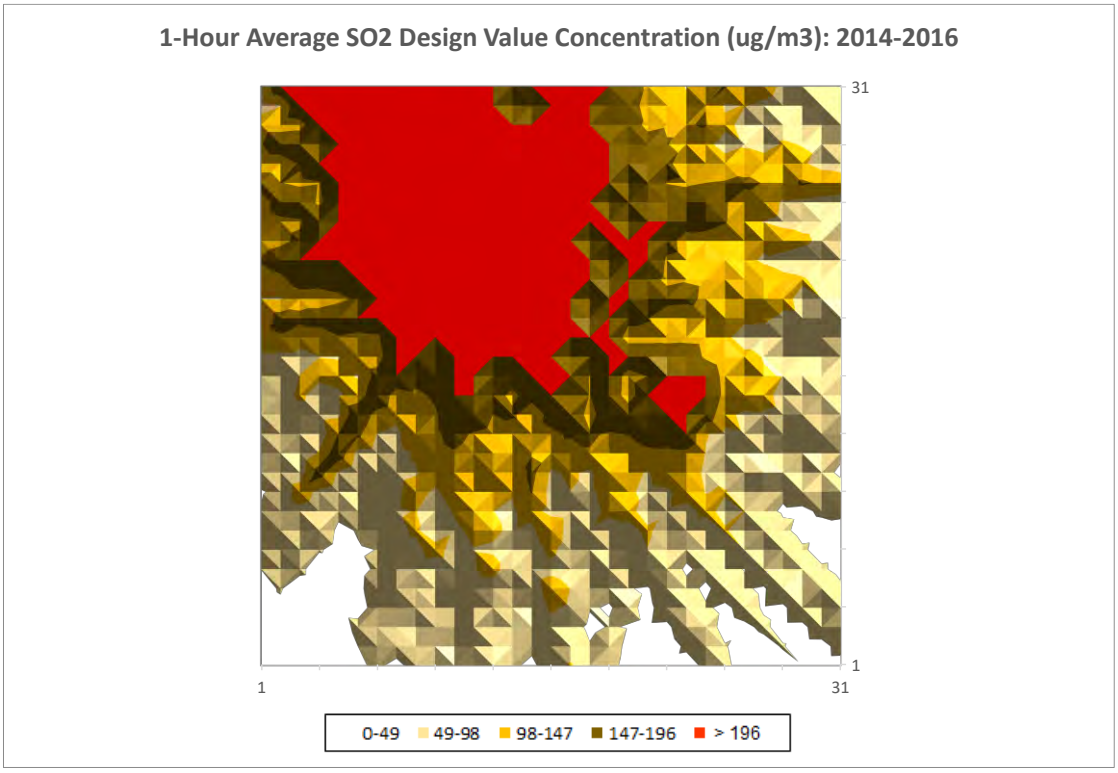

Figure 17. Modeled SO_2 concentrations exceeding 196 µg/m^3, 2014-2016

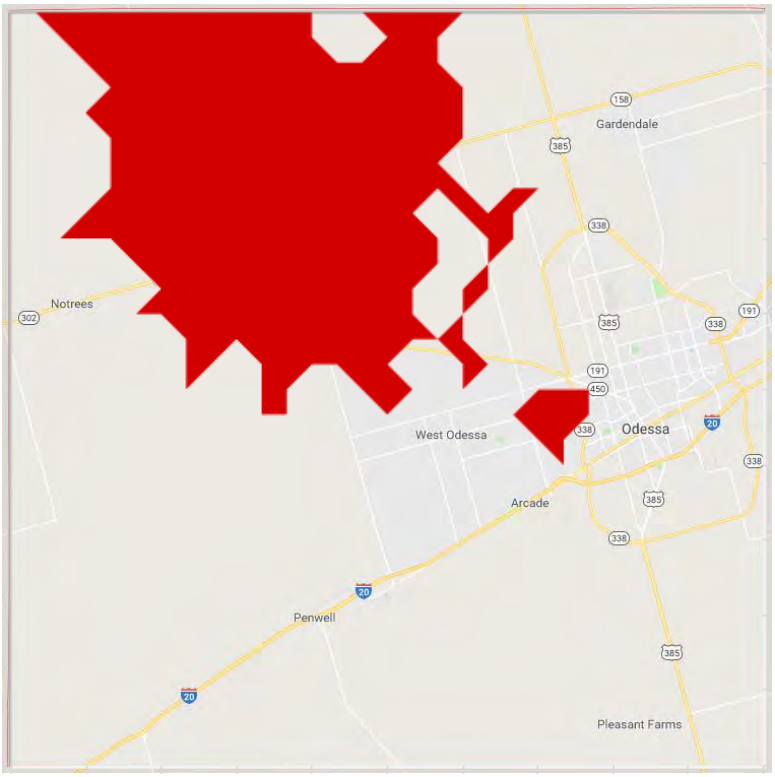

Figure 18. Modeled Design Value SO_2 concentrations (µg/m^3), 2015-2017

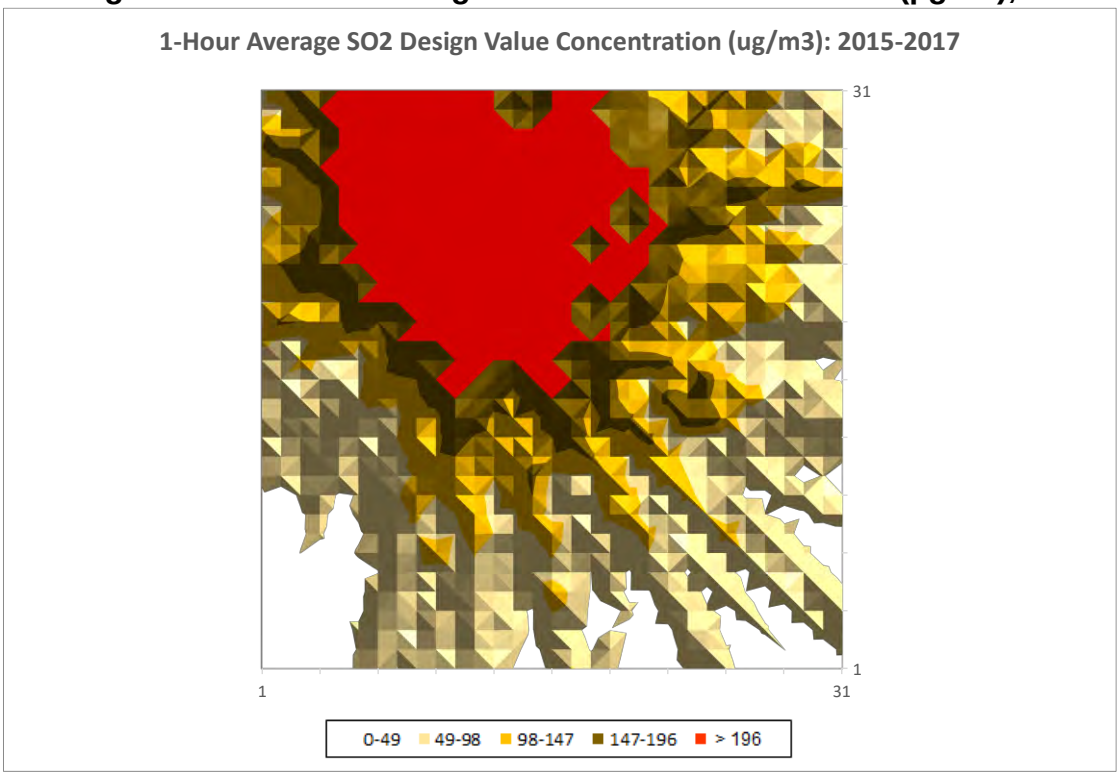

Figure 19. Modeled SO_2 concentrations exceeding 196 µg/m^3, 2015-2017

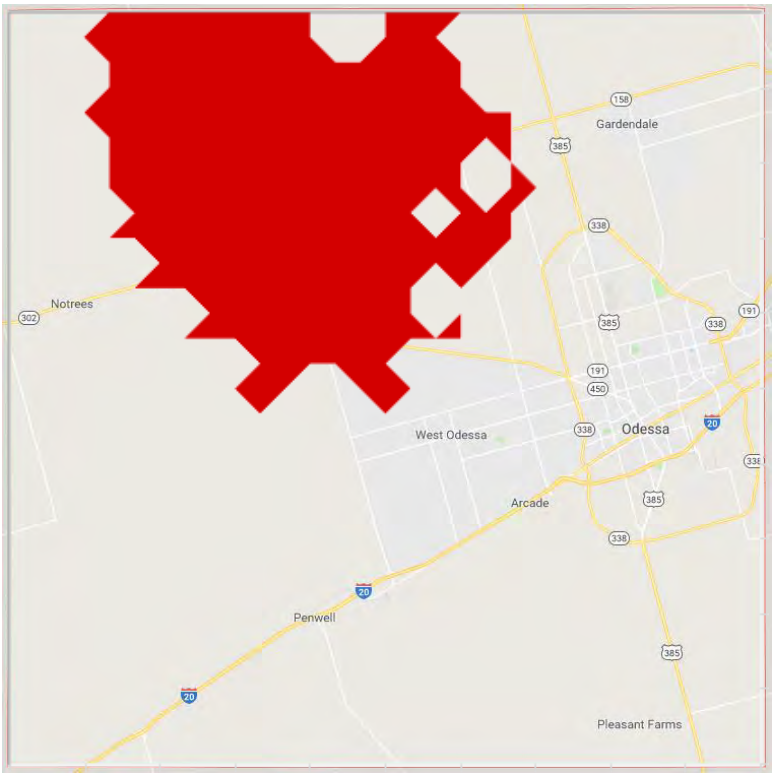

Figure 20. Modeled Design Value SO_2 concentrations (µg/m^3), 2016-2018

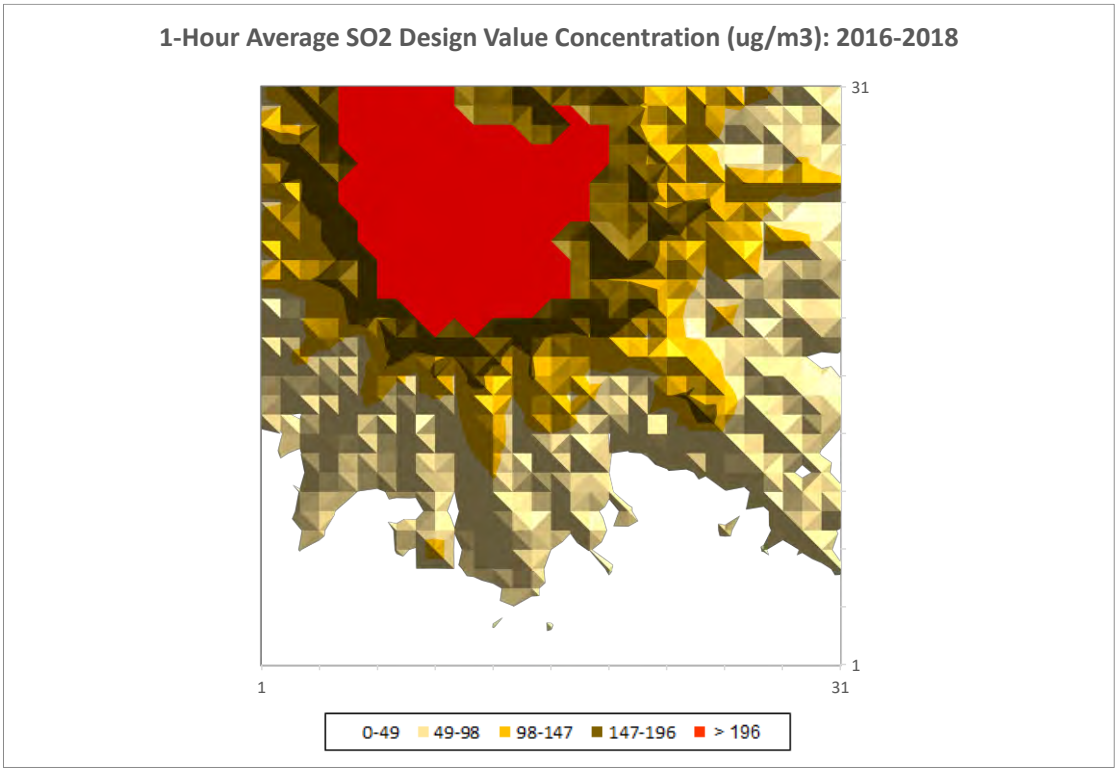

Figure 21. Modeled SO_2 concentrations exceeding 196 µg/m^3, 2016-2018

Figure 22. Modeled Design Value SO_2 concentrations (µg/m^3), 2017-2019

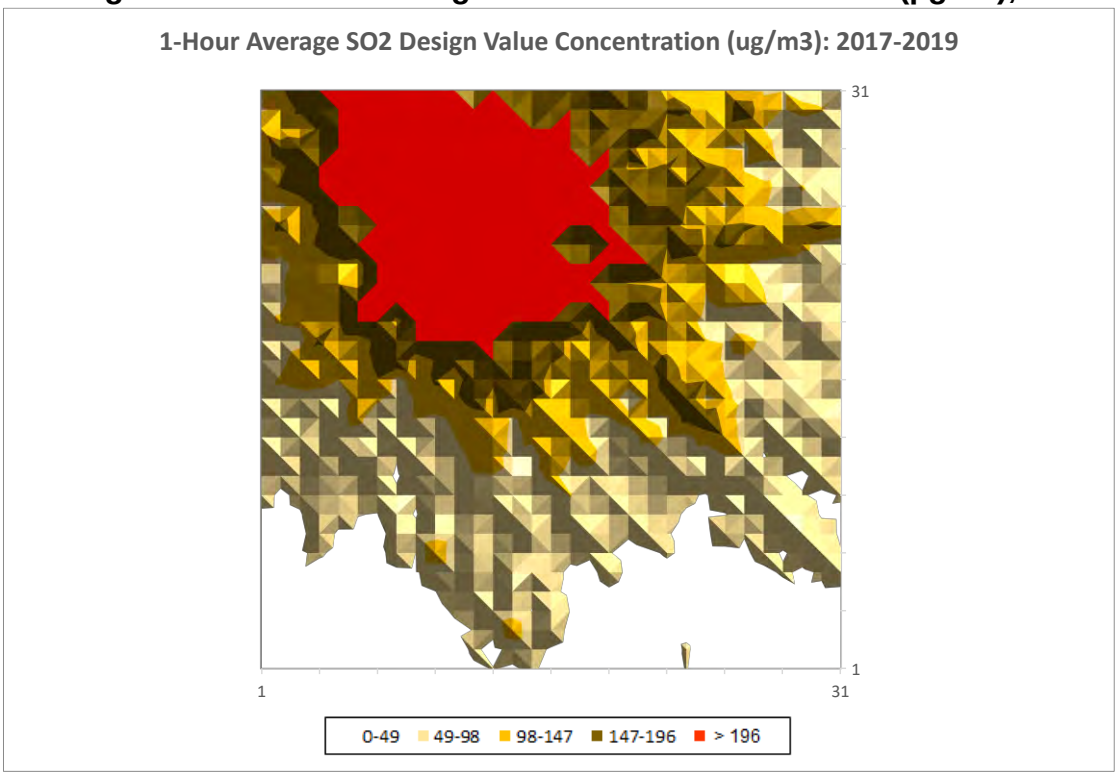

Figure 23. Modeled SO_2 concentrations exceeding 196 µg/m^3, 2017-2019

Table 5 shows the modeled design values (99th percentile daily maximum hourly SO_2 concentration) for each model year at each of the 20 discrete receptor locations. The modeled annual design values exceeded the allowable NAAQS level (196 µg/m^3) at numerous locations throughout Ector County (between 4 and 12 discrete locations, depending on the year, accounting for 14 of the 20 discrete receptor locations), as shown in red in the table.

Table 5. Modeled Design Values for 1-Hour SO_2 NAAQS at Discrete Receptors

Receptor	UTMx (m)	UTMy (m)	2014	2015	2016	2017	2018	2019	6-yr AVG	6-yr MAX
R1	725335	3540778	**330.7**	**623.1**	**1,239.8**	**845.6**	**450.1**	**454.7**	**657.3**	**1,239.8**
R2	748320	3526688	121.7	87.7	85.5	40.4	133.7	53.7	87.1	133.7
R3	746500	3545500	73.4	**241.4**	120.1	88.6	70.1	127.0	120.1	**241.4**
R4	732420	3516640	47.1	**320.3**	61.8	38.6	88.2	67.0	103.9	**320.3**
R5	744025	3536317	125.2	**245.2**	112.0	107.9	83.3	163.6	139.5	**245.2**
R6	736288	3547888	155.5	175.9	**238.2**	**203.0**	180.5	**208.9**	193.6	**238.2**
R7	725253	3541377	**267.4**	**845.0**	**1,343.1**	**739.3**	**388.8**	**464.1**	**674.6**	**1,343.1**
R8	741970	3528581	**428.6**	178.2	67.5	56.9	167.3	**236.7**	189.2	**428.6**
R9	748072	3520648	98.4	80.6	63.5	26.3	65.4	81.4	69.3	98.4
R10	752720	3531690	55.3	62.5	62.7	47.0	60.4	117.9	67.6	117.9
R11	740100	3541720	125.6	**221.2**	**216.7**	101.6	156.6	**275.5**	182.9	**275.5**
R12	734425	3538475	**284.3**	**334.2**	**261.2**	129.1	**242.5**	**604.0**	**309.2**	**604.0**
R13	733250	3529500	85.4	**433.5**	86.0	125.6	146.3	168.7	174.3	**433.5**
R14	748720	3524600	106.8	148.9	56.4	48.3	39.5	78.2	79.7	148.9
R15	737600	3525880	79.4	**451.9**	119.7	28.0	101.8	139.6	153.4	**451.9**
R16	744760	3511055	23.8	112.9	19.4	30.7	12.6	53.2	42.1	112.9
R17	738795	3516280	41.6	**203.5**	45.1	57.3	34.5	58.7	73.4	**203.5**
R18	729780	3536216	**244.1**	**611.1**	**501.6**	**424.6**	**419.3**	**729.3**	**488.3**	**729.3**
R19	712136	3533400	146.3	**227.6**	123.0	128.0	62.6	163.8	141.9	**227.6**
R20	748950	3507500	33.0	67.0	12.3	22.6	11.6	59.8	34.4	67.0

Table 6. Modeled 3-Year Average Design Values for 1-Hour SO_2 NAAQS at Discrete Receptors

Receptor	UTMx (m)	UTMy (m)	2014-2016	2015-2017	2016-2018	2017-2019
R1	725335	3540778	**731.2**	**902.8**	**845.2**	**583.5**
R2	748320	3526688	98.3	71.2	86.5	75.9
R3	746500	3545500	145.0	150.1	92.9	95.2
R4	732420	3516640	143.1	140.3	62.9	64.6
R5	744025	3536317	160.8	155.0	101.1	118.3
R6	736288	3547888	189.8	**205.7**	**207.2**	**197.4**
R7	725253	3541377	**818.5**	**975.8**	**823.7**	**530.7**
R8	741970	3528581	**224.8**	100.9	97.3	153.6
R9	748072	3520648	80.8	56.8	51.8	57.7
R10	752720	3531690	60.2	57.4	56.7	75.1
R11	740100	3541720	187.8	179.8	158.3	177.9
R12	734425	3538475	**293.2**	**241.5**	**210.9**	**325.2**
R13	733250	3529500	**201.6**	**215.0**	119.3	146.9
R14	748720	3524600	104.0	84.5	48.0	55.3
R15	737600	3525880	**217.0**	**199.8**	83.1	89.8
R16	744760	3511055	52.0	54.3	20.9	32.2
R17	738795	3516280	96.7	101.9	45.6	50.2
R18	729780	3536216	**452.3**	**512.5**	**448.5**	**524.4**
R19	712136	3533400	165.6	159.5	104.5	118.1
R20	748950	3507500	37.4	34.0	15.5	31.3

As shown in Table 6, the modeled three-year average 99th percentile daily maximum hourly SO_2 concentration (NAAQS design value) exceeded the allowable NAAQS level (196 $\mu g/m^3$) at between five and seven locations (out of the 20 modeled discrete receptor locations), depending on the three-year averaging period. NAAQS exceedances (as shown in red) were observed at eight different discrete receptors: R1 (business, Goldsmith), R6 (ranch, Boys Ranch Rd.), R7 (church, Goldsmith), R8 (residence, west Odessa), R12 (ranch, YT Ranch Rd.), R13 (residence, west Odessa), R15 (church, west Odessa), and R18 (ranch, YT Ranch Rd.).

SUMMARY AND CONCLUSIONS

I compiled the necessary information in order to characterize the oil and gas flare SO_2 emission incidents from 173 facilities during the period between 2014 and 2019. I also constructed the required hourly meteorological data representing the six-year period 2014-2019. The source and meteorological data were input to the AERMOD dispersion model which was used to estimate the SO_2 air quality impacts throughout Ector County. The model results indicate that SO_2 emissions from the intermittent flare releases had a significant effect on SO_2 air quality in Ector County. The model estimated that the oil and gas flare incidents were responsible for exceedances of the 1-hour SO_2 Primary NAAQS between 2014 and 2019 over an area of between 164 and 252 square miles within Ector County, depending on the three-year period. The 1-hour SO_2 Primary NAAQS was exceeded at eight of the twenty modeled discrete receptor locations (residences, businesses, ranches, churches, etc.) during the six-year modeling period (2014-2019).

APPENDIX A. Modeled Sources

Customer Name (CN)	RN Number	Facility	LAT	LON	stack height (m)	stack diameter (m)	exit velocity (m/s)	temperature (K)
OXY USA WTP LP	RN102199759	RHODES COWDEN UNIT CENTRAL BATTERY	31.953700	-102.470000	13.72	0.30	20.00	1273.00
(CN600125827)	RN102414307	JOHNSON GBSA UNIT CB	31.915537	-102.489732	7.62	0.30	20.00	1273.00
	RN102665148	RHODES COWDEN UNIT TRACT 3 SATELLITE	31.964300	-102.462900	13.72	0.30	20.00	1273.00
	RN104428909	RHODES COWDEN UNIT TRACT 4 SATELLITE	31.962800	-102.471000	13.72	0.30	20.00	1273.00
	RN102298460	BAGLEY A TANK BATTERY	31.872200	-102.414600	13.72	0.30	20.00	1273.00
	RN105609424	DORA ROBERTS RANCH UNIT TRACT 19 CTB	31.758055	-102.288055	13.72	0.30	20.00	1273.00
Citation Oil & Gas Corp.	RN110599032	JORDAN UNIVERSITY OIL UNIT AND WATER STATION	31.659100	-102.569450	6.10	0.30	20.00	1273.00
(CN600126536)	RN110573565	JORDAN UNIVERSITY UNIT SATELLITE 1	31.677950	-102.574800	6.10	0.11	20.00	1274.82
Devon Energy Production	RN105780795	RFD TANK BATTERY	31.700300	-102.382400	13.72	0.30	20.00	1273.00
Company, L.P.	RN102500782	MF HENDERSON 1	31.711500	-102.585800	13.72	0.30	20.00	1273.00
(CN600132344)	RN105780837	THELMA LOU OTIS TANK BATTERY	31.812900	-102.363800	13.72	0.30	20.00	1273.00
	RN106426786	MCELROY F BATTERY	31.523200	-102.285300	13.72	0.30	20.00	1273.00
	RN106426943	MCELROY H BATTERY	31.478500	-102.267700	13.72	0.30	20.00	1273.00
	RN106426976	MCELROY F 25 BATTERY	31.504300	-102.296600	13.72	0.30	20.00	1273.00
Oxy USA Inc.	RN102516168	JL JOHNSON H TANK BATTERY	31.913900	-102.471100	13.72	0.30	20.00	1273.00
(CN600268296)								
XTO Energy Inc.	RN106893795	CA GOLDSMITH SAT 541 SAT	31.922222	-102.652222	13.72	0.30	20.00	1273.00
(CN600601348)	RN102303211	GSAU CENTRAL BATTERY	31.925000	-102.627900	13.72	0.30	20.00	1273.00
	RN102304755	GOLDSMITH CAG CENTRAL TB	31.925000	-102.627900	13.72	0.30	20.00	1273.00
	RN103914248	CAG 731 TANK BATTERY	31.940000	-102.625600	6.10	0.30	20.00	1273.00
	RN103914354	CAG 437 SATELLITE BATTERY	31.911600	-102.608300	6.10	0.30	20.00	1273.00
	RN103914438	GSAU 2 2 SATELLITE BATTERY 1	31.947100	-102.597000	13.72	0.30	20.00	1273.00
	RN103914461	CAG CENTRAL BATTERY NO 448	31.935800	-102.616300	7.62	0.10	20.00	1273.00
	RN103914495	CAG 480 SATELLITE BATTERY	31.963700	-102.625800	13.72	0.30	20.00	1273.00
	RN104149414	GSAU 1 138 PUMP OUT	31.963600	-102.637500	13.72	0.30	20.00	1273.00
	RN104149430	GSAU 2 2 BATTERY	31.960000	-102.617000	6.10	0.10	0.91	1273.00
	RN104149844	GSAU 1 147 PUMP OUT	31.941300	-102.603600	13.72	0.30	20.00	1273.00
	RN104149927	GSAU 1 296 SATELLITE BATTERY	31.928300	-102.626300	13.72	0.30	20.00	1273.00
	RN105716047	GOLDSMITH C02 PILOT PHASE II FACILITY	31.923800	-102.619400	24.38	0.30	12.80	1273.00
	RN106893753	CA GOLDSMITH SAT 446	31.944000	-102.608900	13.72	0.30	20.00	1273.00
	RN106894330	CA GOLDSMITH SAT 511	31.929000	-102.644800	13.72	0.30	20.00	1273.00
	RN106902265	GOLDSMITH SAN ANDRES UNIT SAT 14	31.966649	-102.656325	13.72	0.30	20.00	1273.00
	RN106904238	GOLDSMITH SAN ANDRES UNIT SAT 120	31.956400	-102.635600	13.72	0.30	20.00	1273.00
	RN108344706	CAG 266 SATELLITE BATTERY	31.941700	-102.644040	9.14	0.30	20.00	1273.00
	RN103914453	GSAU 2 2 SATELLITE BATTERY 2	31.949440	-102.592500	13.72	0.30	20.00	1273.00
	RN106894603	CA GOLDSMITH SAT 541 PO	31.906740	-102.642246	13.72	0.30	20.00	1273.00
	RN104149463	GSAU 1 94 SATELLITE BATTERY	31.927220	-102.599400	13.72	0.30	20.00	1273.00
	RN104149968	GSAU 1 94 PUMP OUT 2	31.923330	-102.615300	13.72	0.30	20.00	1273.00
	RN106900889	GOLDSMITH SAN ANDRES UNIT SAT 296	31.928363	-102.626263	13.72	0.30	20.00	1273.00
	RN106894140	CA GOLDSMITH SAT 497	31.956338	-102.655869	13.72	0.30	20.00	1273.00
	RN106900921	GOLDSMITH SAN ANDRES UNIT SAT 1 47	31.946200	-102.614300	13.72	0.30	20.00	1273.00
	RN106901077	GOLDSMITH SAN ANDRES UNIT SAT 306	31.906090	-102.630646	13.72	0.30	20.00	1273.00
	RN102298643	GSAU 1 306 CO2 RECOMPRESSION FACILITY	31.917000	-102.641500	13.72	0.30	20.00	1273.00
	RN103914701	CAG 676 SATELLITE BATTERY	31.890800	-102.609600	13.72	0.30	20.00	1273.00
	RN104149471	GSAU 1 86 PUMP OUT	31.918100	-102.605200	13.72	0.30	20.00	1273.00
	RN104149919	GSAU 1 14 SATELLITE BATTERY	31.966900	-102.656100	13.72	0.30	20.00	1273.00
Occidental Permian Ltd.	RN102292885	RHODES A CENTRAL BATTERY	31.953700	-102.470000	13.72	0.30	20.00	1273.00
(CN600755086)	RN102412046	N COWDEN UNIT TS 16	32.014000	-102.506700	13.72	0.30	20.00	1273.00
	RN102412137	N COWDEN UNIT TEST STN 1	32.072900	-102.497800	13.72	0.30	20.00	1273.00
	RN102413135	OB HOLT R LEASE TB 1	32.061800	-102.507400	13.72	0.30	20.00	1273.00
	RN102413655	N COWDEN UNIT TS NO 25	31.970700	-102.493600	13.72	0.30	20.00	1273.00
	RN102413903	N COWDEN UNIT TS 26	32.007000	-102.495300	13.72	0.30	20.00	1273.00
	RN102414083	NORTH COWDEN UNIT SOUTH CENTRAL TANK BATTERY	32.009444	-102.510277	13.72	0.30	20.00	1273.00
	RN102416013	GSMITH LANDRETH DEEP ST12	31.996666	-102.641666	9.14	1.83	20.00	1255.37
	RN102416344	GLDU STATION 4	32.020100	-102.655700	13.72	0.30	20.00	1273.00
	RN102416476	GLDU STATION 9	32.025700	-102.658800	13.72	0.30	20.00	1273.00
	RN102417698	GOLDSMITH LANDRETH DEEP UNIT STATION 14	31.986300	-102.630000	9.14	0.30	20.00	810.93
	RN102418381	OB HOLT S TANK BATTERY	32.054000	-102.518000	13.72	0.30	20.00	1273.00
	RN102419959	FOSTER COOP STORAGE SYSTEM AND WATER INJECTION STATION	31.842800	-102.446500	6.10	0.05	18.29	294.26
	RN102420601	BH BLAKENEY A AND B LSE 1	32.026000	-102.541800	13.72	0.30	20.00	1273.00
	RN102421344	NORTH COWDEN CO2 INJECTION FACILITY	31.970700	-102.493600	13.72	0.30	20.00	1273.00
	RN102421369	N COWDEN UNIT TS 22	31.988900	-102.481000	13.72	0.30	20.00	1273.00
	RN102421625	N COWDEN UNIT TS 21	31.988900	-102.481000	13.72	0.30	20.00	1273.00
	RN102421716	GLDU STATION 8	32.016200	-102.672800	13.72	0.30	20.00	1273.00
	RN102421773	N COWDEN UNIT TS 15	32.043000	-102.486000	13.72	0.30	20.00	1273.00
	RN102421922	N COWDEN UNIT TS 20	32.007400	-102.483300	13.72	0.30	20.00	1273.00
	RN102422185	N COWDEN UNIT TS 19	31.999500	-102.502800	13.72	0.30	20.00	1273.00
	RN102422326	N COWDEN UNIT TS 18	31.992800	-102.520000	13.72	0.30	20.00	1273.00
	RN102517935	N COWDEN UNIT TEST STA 4	32.060000	-102.488800	13.72	0.30	20.00	1273.00
	RN102520467	GOLDSMITH LANDRETH DEEP UNIT STATION 3	32.015555	-102.686111	9.14	0.15	20.00	1273.00
	RN102530706	GOLDSMITH LANDRETH DEEP UNIT STATION 5	31.977600	-102.644700	9.14	0.15	20.00	1273.00
	RN102533965	N COWDEN UNIT TEST STN 3	32.031200	-102.491300	13.72	0.30	20.00	1273.00
	RN102590338	SOUTH FOSTER UNIT CENTRAL TANK BATTERY	31.847900	-102.422800	6.71	0.05	1.16	1255.37
	RN102598810	GOLDSMITH LANDRETH DEEP UNIT STATION 10	32.014000	-102.670500	9.14	0.30	20.00	810.93
	RN102751856	N COWDEN UNIT TEST STA 9	32.046600	-102.499500	13.72	0.30	20.00	1273.00
	RN102752920	GOLDSMITH LANDRETH DEEP UNIT STATION 6	31.996666	-102.641666	9.14	0.15	20.00	1273.00
	RN102817673	NORTH COWDEN TEST STATION 8	32.055400	-102.521000	13.72	0.30	20.00	1273.00
	RN102874062	N COWDEN UNIT TEST STA 10	32.041400	-102.514900	13.72	0.30	20.00	1273.00
	RN102898624	N COWDEN UNIT TEST STA 6	32.053500	-102.542600	13.72	0.30	20.00	1273.00
	RN102995461	N COWDEN UNIT TEST SATELLITE 11	32.037400	-102.532300	13.72	0.30	20.00	1273.00
	RN102995479	N COWDEN UNIT TEST SATELLITE 14	32.027600	-102.511900	13.72	0.30	20.00	1273.00
	RN102996055	N COWDEN UNIT TEST STA 23	31.983300	-102.499000	13.72	0.30	20.00	1273.00
	RN102996071	GOLDSMITH LANDRETH DEEP UNIT CTB AND SATELLITE 11	31.996000	-102.661700	7.32	0.09	20.00	1273.00
	RN103024170	GOLDSMITH LANDRETH DEEP UNIT STATION 1	32.016200	-102.672800	9.14	0.05	1.52	810.93
	RN102756756	N COWDEN UNIT TEST SAT 13	32.027000	-102.510300	13.72	0.30	20.00	1273.00

APPENDIX A. Modeled Sources

Customer Name (CN)	RN Number	Facility	LAT	LON	stack height (m)	stack diameter (m)	exit velocity (m/s)	temperature (K)
	RN102413416	N COWDEN UNIT TS 24	32.010982	-102.513793	13.72	0.30	20.00	1273.00
	RN105093835	NORTH COWDEN UNIT REINJECTON COMPRESSION FACILITY	32.020000	-102.523611	13.72	0.91	9.59	1273.00
	RN102995503	N COWDEN UNIT TEST ST 7	32.066000	-102.525000	13.72	0.30	20.00	1273.00
	RN102415163	GOLDSMITH BLAKENEY ANDRES	31.956300	-102.655900	13.72	0.30	20.00	1273.00
	RN102771995	GOLDSMITH LANDRETH DEEP UNIT STATION 1	32.016200	-102.672800	13.72	0.30	20.00	1273.00
	RN102412145	JE WITCHER SATELLITE 4	31.838250	-102.428670	6.10	0.10	0.29	1088.71
	RN102413796	F FOSTER SATELLITE 1	31.860000	-102.441300	13.72	0.30	20.00	1273.00
	RN102418761	JE WITCHER SATELLITE 1	31.852940	-102.432980	6.10	0.05	7.32	294.26
	RN102419686	GLDU STATION 13	31.977600	-102.671100	13.72	0.30	20.00	1273.00
	RN102420239	S FOSTER UNIT SAT A TB	31.854400	-102.421900	13.72	0.30	20.00	1273.00
	RN102421427	SOUTH FOSTER SATELLITE F	31.832700	-102.418000	7.62	0.61	20.00	1273.00
	RN102421856	GLDU STN NO 7	32.002730	-102.681720	13.72	0.30	20.00	1273.00
	RN102757184	SOUTH FOSTER UNIT SATELLITE G	31.836388	-102.410277	7.62	0.06	20.00	1273.00
	RN102877255	SOUTH FOSTER UNIT SAT D	31.847800	-102.412600	7.62	0.61	20.00	1273.00
	RN102943214	LAGUNA A STORAGE SYSTEM	31.826700	-102.424800	13.72	0.30	20.00	1273.00
	RN102416146	E F COWDEN B STORAGE SYSTEM AND SATELLITE	31.858251	-102.457686	13.72	0.30	20.00	1273.00
	RN106441454	FOSTER 8 TANK BATTERY	31.884500	-102.414360	13.72	0.30	20.00	1273.00
	RN108398405	NORTH COWDEN REINJECTION COMPRESSOR FACILITY	32.020000	-102.523000	13.72	0.30	20.00	1273.00
	RN108734252	GOLDSMITH LANDRETH DEEP UNTI NORTH CTB	32.021100	-102.669200	13.72	0.30	20.00	1273.00
	RN102419926	EF COWDEN SATELLITE NO 2	31.844000	-102.454900	13.72	0.30	20.00	1273.00
	RN102420189	FV ADDIS D SEPARATION FACILITY	31.820200	-102.450000	13.72	0.30	20.00	1273.00
	RN102309374	BP AMERICA NORTH COWDEN GASOLINE PLT	32.012200	-102.492500	13.72	0.30	20.00	1273.00
	RN102418589	JE WITCHER PA C AND 7	31.839800	-102.433500	13.72	0.30	20.00	1273.00
	RN105236426	MIDLAND FARMS UNIT NORTH FLARE	32.139600	-102.393500	13.72	0.30	20.00	1273.00
	RN108586108	GOLDSMITH LANDRETH DEEP UNIT NORTH CTB	32.013800	-102.672800	13.72	0.30	20.00	1273.00
DCP Operating Company, LP (CN601229917)	RN100209436	ANDECTOR BOOSTER STATION	32.041500	-102.681900	9.75	0.30	12.80	672.04
	RN100211549	DUKE ENERGY JUDKINS BOOSTER	31.716300	-102.597500	28.35	0.20	20.00	1255.37
	RN100222330	GOLDSMITH GAS PLANT	31.980900	-102.634400	30.48	0.40	65.53	1273.15
	RN102419421	CHAPEL HILL BOOSTER	32.031666	-102.512500	30.48	0.34	20.00	1088.71
	RN106320153	WIGHT BOOSTER STATION	31.924800	-102.626400	12.19	0.30	20.00	1273.00
DCP Midstream, LP (CN601229917)	RN100210954	COWDEN BOOSTER STATION	31.754600	-102.476900	13.72	0.30	20.00	1273.00
Four Star Oil & Gas Company (CN601284219)	RN100218890	HEADLEE COMPRESSOR STATION	31.870000	-102.301111	13.72	0.30	20.00	1273.00
ConocoPhillips Company (CN601674351)	RN102186830	GANDU 36 BATTERY	32.062700	-102.690900	7.62	0.15	20.00	1033.15
	RN102195955	CLYDE COWDEN BATTERY 1	31.933000	-102.583600	13.72	0.15	2.84	1033.15
	RN102881521	SOUTH FAULT BLOCK UNIT	32.048611	-102.679444	7.62	0.15	20.00	1033.15
	RN105969943	CLYDE COWDEN BATTERY 5	31.933000	-102.583700	13.72	0.15	11.90	810.93
	RN106153463	UNIVERSITY ANDREWS 1E and 11T BATTERY	32.117500	-102.712000	13.72	0.15	27.98	1033.15
	RN106248347	UNIVERSITY ANDREWS BATTERY 14T	32.137500	-102.738000	7.62	0.15	20.00	1033.15
	RN106262827	EMBAR 2 AND 6 BATTERY	32.080700	-102.690700	13.72	0.15	20.00	1033.15
	RN106274418	UNIVERSITY ANDREWS BATTERY 12T	32.119300	-102.740800	13.72	0.09	20.00	1033.15
	RN106336712	BUM A BATTERY	32.097200	-102.725600	7.62	0.15	20.00	1033.15
	RN106338825	MCENTIRE CENTRAL TANK BATTERY	32.048800	-102.693000	7.62	0.15	20.00	1033.15
	RN106503253	NPU 1 and MILLARD C TANK BATTERY	31.739000	-102.646800	13.72	0.30	20.00	1273.00
	RN106503261	CLYDE COWDEN SATELLITE 4	31.939000	-102.585400	13.72	0.30	20.00	1273.00
	RN106564750	CLYDE COWDEN BATTERY 2	31.920400	-102.585000	13.72	0.30	20.00	1273.00
	RN106597891	GANDU 26 FRANK B BATTERY	32.073070	-102.704100	13.72	0.30	20.00	1273.00
	RN106636236	CLYDE COWDEN BATTERY 7	31.943500	-102.582700	13.72	0.15	3.18	1033.15
	RN106833478	CLYDE COWDEN BATTERY 6	31.927463	-102.570541	13.72	0.15	7.29	1033.15
	RN107712127	GANDU SATELLITE 33	32.048800	-102.679500	13.72	0.15	20.00	1033.15
	RN107712135	GANDU SATELLITE 31	32.044300	-102.694700	13.72	0.15	20.00	1033.15
	RN108320300	FRANK B CLEARFORK	32.072380	-102.692000	13.72	0.30	20.00	1273.00
	RN108320508	GANDU SATELLITE 19	32.053900	-102.711000	13.72	0.30	20.00	1273.00
	RN108726639	MINNS BATTERY AND GANDU SATELLITE 21	32.031933	-102.703700	13.72	0.15	14.42	1033.15
	RN108790296	GANDU BATTERY 34	31.981000	-102.635000	13.72	0.30	20.00	1273.00
	RN109215442	EMBAR 2 - WCAB	32.048800	-102.679500	6.10	0.91	20.00	1273.00
	RN102194826	GANDU 25 BATTERY	32.043600	-102.698500	13.72	0.30	20.00	1273.00
	RN106264724	MILLARD A and D TANK BATTERY	31.739000	-102.646800	13.72	0.30	20.00	1273.00
	RN102295524	S COWDEN INJECTION FAC	31.760600	-102.380300	13.72	0.30	20.00	1273.00
	RN102198181	SOUTH COWDEN 6 BATTERY	31.753000	-102.384000	13.72	0.30	20.00	1273.00
	RN105778476	FRANK A BATTERY	32.043800	-102.695100	13.72	0.30	20.00	1273.00
	RN108790403	GANDU BATTERY 8	31.981000	-102.635000	13.72	0.30	20.00	1273.00
	RN106335573	EDWARDS E BATTERY	31.681800	-102.412100	13.72	0.30	20.00	1273.00
	RN105797880	GANDU CENTRAL TANK BATTERY	32.044700	-102.697700	13.72	0.30	20.00	1273.00
	RN106336316	MILLARD B TANK BATTERY	31.727500	-102.647000	13.72	0.30	20.00	1273.00
Burlington Resources Oil & Gas Company LP (CN602989436)	RN109961052	GANDU BATTERY 35	32.063000	-102.673100	13.72	0.30	20.00	1273.00
Chevron MidContinent, L.P. (CN603028317)	RN101931897	NORTH COWDEN CENTRAL TANK BATTERY	32.008800	-102.512000	13.72	0.30	20.00	1273.00
Kinder Morgan Production Company LLC (CN603227380)	RN105979363	GOLDSMITH LANDRETH SAN ANDRES CENTRAL UNIT	31.987000	-102.664000	15.24	0.08	20.00	1273.00
Linn Operating, LLC (CN603395690)	RN107097164	PATE TANK BATTERY	32.018100	-102.603960	13.72	0.30	20.00	1273.00
	RN107097289	RICHARD TANK BATTERY	32.002500	-102.582000	13.72	0.30	20.00	1273.00
	RN107098436	TRIPP JAMES TANK BATTERY	32.009300	-102.583800	13.72	0.30	20.00	1273.00
	RN107098741	JONAH TANK BATTERY	32.015130	-102.608640	13.72	0.30	20.00	1273.00
	RN107100224	ALLISON TANK BATTERY	32.019000	-102.592200	13.72	0.30	20.00	1273.00
	RN107096695	ANNABELLE TANK BATTERY	31.994000	-102.584800	13.72	0.30	20.00	1273.00
	RN107097693	HENRY CENTRAL TANK BATTERY	31.995840	-102.579300	13.72	0.30	20.00	1273.00
	RN107099079	CATHERINE ELAINE KIMBERLY TANK BATTERY	32.023200	-102.588100	13.72	0.30	20.00	1273.00

APPENDIX A. Modeled Sources

Customer Name (CN)	RN Number	Facility	LAT	LON	stack height (m)	stack diameter (m)	exit velocity (m/s)	temperature (K)
	RN107099806	GIDEON AND ELIZABETH TANK BATTERY	32.001000	-102.587000	13.72	0.30	20.00	1273.00
	RN107100182	ADAM TANK BATTERY	32.006900	-102.610300	13.72	0.30	20.00	1273.00
Cross Timbers Energy, LLC (CN604493007)	RN102305406	PENWELL SATELLITE 1	31.718900	-102.597000	13.72	0.30	20.00	1273.00
JAMES LAKE MIDSTREAM LLC (CN604509893)	RN107088759	JAMES LAKE GAS PLANT	31.963000	-102.599000	39.62	0.30	19.99	1273.15
OXY USA Inc. (CN604677401)	RN101949733	BLAKENEY OA TANK BATTERY	32.048300	-102.567400	13.72	0.30	20.00	1273.00
	RN102496916	JOHNSON DEEP UNIT	31.916200	-102.486100	13.72	0.30	20.00	1273.00
	RN102508215	LE WIGHT B TANK BATTERY	31.979400	-102.503300	13.72	0.30	20.00	1273.00
	RN102515202	CORRIGAN COWDEN UNIT TB	32.028000	-102.492900	13.72	0.30	20.00	1273.00
	RN104282645	SOUTH MOJO BOOSTER STATION	31.875555	-102.433611	27.43	0.91	20.00	1272.59
	RN110238953	CORRIGAN COWDEN SOUTH BATTERY	32.027600	-102.486900	13.72	0.30	20.00	1273.00
	RN101987022	FAY HOLT TANK BATTERY	32.043800	-102.554400	13.72	0.30	20.00	1273.00
Scout Energy Management LLC (CN605147479)	RN107098196	BATTERY 2	32.014000	-102.590100	13.72	0.30	20.00	1273.00
	RN107098931	SAMANTHA TANK BATTERY	32.024410	-102.609000	13.72	0.30	20.00	1273.00
	RN107099830	LOUISA TANK BATTERY	31.992600	-102.592400	13.72	0.30	20.00	1273.00

H. ANDREW GRAY

EDUCATION

Ph.D. environmental engineering science, California Institute of Technology, Pasadena, California, 1986

M.S. environmental engineering science, California Institute of Technology, Pasadena, California, 1980

B.S. civil engineering/engineering and public policy, Carnegie-Mellon University, Pittsburgh, Pennsylvania, 1979

EXPERIENCE

Dr. H. Andrew Gray has been performing research in air pollution for over 35 years, within academic, governmental, and consulting environments. He has made significant contributions in the areas of airborne particles and visibility, including the development and application of computer-based air quality models. His areas of expertise are air pollution control strategy design and evaluation, computer modeling of the atmosphere (including AERMOD, CALPUFF, CAMx, etc.), characterization of ambient air quality and air pollutant source emissions, aerosol monitoring and modeling, visibility analysis, receptor modeling, statistical data analysis, mathematical programming, numerical methods, and analysis of environmental public policy. Dr. Gray is currently an independent contractor focusing on particulate matter and visibility related research issues. Previous Gray Sky Solutions projects include assessment of Clean Air Act and other regulations on visibility in Class I (park and wilderness) areas, development of air pollution control plans and emission inventories for tribal lands, review and development of guidelines for modeling long-range transport impacts using the CALPUFF model, evaluation of particulate air quality impacts associated with diesel exhaust emissions, air quality management plan modeling protocol review, a critical review of Clean Air Mercury Rule (CAMR) documents, and assessment of the regional air quality impacts of power plant emissions. Dr. Gray has performed dispersion modeling studies to determine the impacts associated with mercury emissions in the Chesapeake Bay region, and has evaluated the air quality, visibility and health impacts of numerous electric generating facilities, industrial sources, and container ship traffic. Recently, Dr. Gray worked with a team of researchers to evaluate the health effects due to coal-fired power plant emissions throughout China. Dr. Gray was invited by the Royal Institute of International Affairs to participate in the "Balancing Global Energy Policy Objectives: A High-Level Roundtable" meeting in April 2014.

Before starting Gray Sky Solutions, Dr. Gray was the manager of the PM_{10} and Visibility Program at Systems Applications International (SAI / ICF Inc.). At SAI, Dr. Gray conducted and managed a number of varied air pollution research projects. In the early 1990s, Dr. Gray directed a large (over $1 million) air-quality modeling program to determine the impact of SO_2 emissions from a large coal-fired power plant on Grand Canyon sulfate and visibility levels. He managed projects to develop carbon particle emission data for the Denver area, designed a PM_{10} monitoring and modeling program for the El Paso area, determined the appropriate tradeoffs between direct PM_{10} emissions and emissions of PM_{10} precursors, estimated the visibility effects in federal Class I areas due to the 1990 Clean Air Act Amendments (results of which were incorporated into EPA's 1993 Report to Congress on the expected visibility consequences of the 1990 Clean Air Act Amendments), and provided assistance to EPA Region VIII's tribal air programs. Other projects include emission inventory development for Sacramento and carbon monoxide modeling of Phoenix, Arizona to support federal and regional implementation plans in those regions, systematic evaluation

of the Interagency Workgroup on Air Quality Modeling (IWAQM) recommendations for the use of MESOPUFF II, a critical assessment of exposures to particulate diesel exhaust in California, and an evaluation of $PM_{2.5}$ and PM_{10} air quality data in support of EPA's review of the federal particulate matter air quality standards. Later projects included a study of micrometeorology and modeling of low wind speed stable conditions in the San Joaquin Valley (CA), an assessment of the reductions in nationwide ambient particulate nitrate exposures due to mobile source NO_X emission reductions, an evaluation of visibility conditions in the Southern Appalachian Mountains region, a review of cotton ginning emission factors, and a critical review and assessment of the PM_{10} Attainment Demonstration Plan for the San Joaquin Valley. Dr. Gray was a member of the modeling subcommittee of the technical committee of the Grand Canyon Visibility Transport Commission.

Previous to his tenure at SAI, Dr. Gray was responsible for the PM_{10} and visibility programs at the South Coast Air Quality Management District which involved directing monitoring, analysis, and modeling efforts to support the design of air pollution control strategies for the South Coast Air Basin of California. He developed and applied the methodologies for assessing PM_{10} concentrations that were used by the District through numerous subsequent air quality management plan revisions. Dr. Gray authored portions of the 1989 Air Quality Management Plan issued by the District that describe the results of modeling and data analyses used to evaluate particulate matter control strategies. Dr. Gray was instrumental in promoting the development and application of state-of-science models for predicting particulate matter concentrations. His responsibilities included direction and oversight of numerous aerosol-related contracts, including development of the SEQUILIB and SAFER models, construction of an ammonia emission database, and development of sulfate, nitrate and organic chemical mechanisms. In addition, Dr. Gray was responsible for initiating the District's visibility control program.

In research performed at the California Institute of Technology, Dr. Gray studied control of atmospheric fine primary carbon particle concentrations and performed computer programming tasks for acquisition and analysis of real-time experimental data. He designed, constructed, and operated the first long-term fine particle monitoring network in Southern California in the early 1980s. He also developed and applied deterministic models to predict source contributions to fine primary carbon particle concentrations and constructed objective optimization procedures for control strategy design. In research carried out for the Department of Mechanical Engineering at Carnegie-Mellon University, Dr. Gray developed fuel use data for input to an emission simulation model for the northeastern United States.

Specialized Professional Competence

- Air pollution control strategy design
- Atmospheric air quality characterization
- Aerosols and visibility
- Computer modeling and data analysis
- Dispersion modeling for particulate matter and visibility

- Receptor modeling including Chemical Mass Balance (CMB) and factor analysis
- Analysis of environmental public policy

Professional Experience

- Systems Applications International (SAI/ICF)—PM_{10} and visibility program manager—participated in and managed numerous air quality modeling and analysis projects for public and private sector clients, with emphasis on particulate matter and visibility research
- South Coast Air Quality Management District, El Monte, California—air quality specialist—developed and applied air quality modeling analyses to support air pollution control strategy design for the South Coast Air Basin of California
- California Institute of Technology, Pasadena, California—research assistant—Ph.D. candidate in environmental engineering science. Thesis: Control of atmospheric fine primary carbon particle concentrations (thesis advisors: Dr. Glen Cass, Dr. John Seinfeld, and Dr. Richard Flagan)
- California Institute of Technology, Pasadena, California—laboratory assistant—performed computer programming tasks for acquisition and analysis of real-time experimental data
- Department of Mechanical Engineering, Carnegie-Mellon University, Pittsburgh, Pennsylvania—research assistant—developed fuel use data for an emissions simulation model for the northeastern United States. Grant from the U.S. Department of Energy for evaluation of national energy policy
- Department of Civil Engineering, Carnegie-Mellon University, Pittsburgh, Pennsylvania—consultant—analyzed structural retrofit design for Ferrari Dino import automobile for United States five mph crash test

HONORS AND AWARDS

Harold Allen Thomas Scholarship Award, Carnegie-Mellon University

University Honors, Carnegie-Mellon University

PROFESSIONAL AFFILIATIONS

Air and Waste Management Association

American Association for Aerosol Research

SELECTED PUBLICATIONS AND PRESENTATIONS

The Deposition of Airborne Mercury within the Chesapeake Bay Region from Coal-fired Power Plant Emission in Pennsylvania, in press (2012)

Peer Review of the Interagency Workgroup On Air Quality Modeling Phase 2 Summary Report And Recommendations For Modeling Long Range Transport Impacts (with others), Report compiled by: John S. Irwin, Air Policy Support Branch, Atmospheric Sciences Modeling Division, U.S. Environmental Protection Agency Research Triangle Park, NC 27711 (1999)

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"Monitoring and Analysis of the Surface Layer at Low Wind Speeds in Stable PBL's in the Southern San Joaquin Valley of California" (with others), presented at the American Meteorological Society's 12th Symposium on Boundary Layers and Turbulence, Vancouver, British Columbia (July 1997)

"Estimation of Current and Future Year NOx to Nitrate Conversion for Various Regions of the United States" (with A. Kuklin), presented at the 90th Meeting of the Air and Waste Management Association, Toronto, Ontario (June 1997)

Integrated Monitoring Study (IMS) 1995: Characterization of Micrometeorological Phenomena: Mixing and Diffusion in Low Wind Speed Stable Conditions: Study Design and Preliminary Results (with others), in *Measurement of Toxic and Related Air Pollutants*, Air and Waste Management Association, Pittsburgh, Pennsylvania, pp. 484-500 (1996)

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"Assessment of the Effects of the 1990 Clean Air Act Amendments on Visibility in Class I Areas", presented at the 86th Annual Meeting & Exhibition of the Air and Waste Management Association, Denver, Colorado (June 1993)

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"Modeling Wintertime Sulfate Production in the Southwestern United States" (with M. Ligocki), presented at the AWMA/EPA International Specialty Conference on PM10 Standards and Nontraditional Particulate Source Controls, Scottsdale, Arizona (January 1992)

"Deterministic Modeling for the Navajo Generating Station Visibility Impairment Study: An Overview," presented at the 84th Meeting of the Air and Waste Management Association, Vancouver, British Columbia (June 1991)

"Receptor and Dispersion Modeling of Aluminum Smelter Contributions to Elevated PM10 Concentrations" (with R. G. Ireson and A. B. Hudischewskyj), presented at the 84th Meeting of the Air and Waste Management Association, Vancouver, British Columbia (June 1991)

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Optimization of PM10 control strategy in the South Coast Air Basin (with others), in *PM-10: Implementation of Standards*, Air Pollution Control Association, Pittsburgh, Pennsylvania, pp. 589-600 (1988)

Quantitative high-resolution gas chromatography and high-resolution gas chromatography/mass spectrometry analyses of carbonaceous fine aerosol particles (with others), *Int. J. Environ. Anal. Chem.*, 29:119-139 (1987)

"Development of an Objective Ozone Forecast Model for the South Coast Air Basin" (with others), presented at the 80th Meeting of the Air Pollution Control Association, New York (June 1987)

"PM10 Modeling in the South Coast Air Basin of California" (with others), presented at the 79th Annual Meeting of the Air Pollution Control Association, Minneapolis, Minnesota (1986)

Characteristics of atmospheric organic and elemental carbon particle concentrations in Los Angeles (with others), *Environ. Sci. Technol.*, 20:580-589 (1986)

"Chemical Speciation of Extractable Organic Matter in the Fine Aerosol Fraction" (with others), presented at the 1984 International Chemical Congress of Pacific Basin Societies, Honolulu, Hawaii (1984)

"Source Contributions to Atmospheric Carbon Particle Concentrations" (with others), presented at the First International Aerosol Conference, Minneapolis, Minnesota (1984)

Elemental and organic carbon particle concentrations: A long term perspective (with others), *Sci. Total Environ.*, 36:17-25 (1984)

"Meteorological and Chemical Potential for Oxidant Formation" (with others), presented at the Conference on Air Quality Trends in the South Coast Air Basin, California Institute of Technology, Pasadena, California (1980)

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"Natural Resources Defense Council, Inc., Sierra Club, Inc., and Respiratory Health Association (Plaintiffs) v. Illinois Power Resources, LLC and Illinois Power Resources Generating, LLC (Defendants)", expert report prepared on behalf of Natural Resources Defense Council (2015)

"Visibility Modeling: Technical Support Document to Comments of Conservation Organizations; EPA's Proposed Federal Implementation Plan for Arkansas for the First Planning Period of 2008 through 2018", prepared on behalf of Sierra Club, San Francisco, CA and National Parks Conservancy Association, Washington, DC (2015)

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"Modeling of SO2 Sources in the Wayne County Non-Attainment Area", prepared on behalf of Sierra Club, San Francisco, CA (2015)

"The Role of the Regional Haze Rule in Restoring Clean Air at National Parks and Wilderness Areas: Exploring the Impact of Regulatory Interaction on Power Plant Emissions and Visibility in Class I Areas", report prepared (with others) on behalf of the National Parks Conservancy Association, Washington, DC (2015)

"Review of Illinois 2014 SO_2 Ambient Air Monitoring Network", prepared on behalf of Sierra Club, San Francisco, CA (2015)

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"Evaluation of Ambient Species Profiles, Ambient Versus Modeled NMHC:NO_x and CO:NO_x Ratios, and Source-Receptor Analyses" (with G. Yarwood, M. Ligocki, and G. Whitten), SYSAPP-94/081, prepared for Office of Mobile Sources, U.S. Environmental Protection Agency, Ann Arbor, Michigan (1994)

"Diesel Particulate Matter in California: Exposure Assessment" (with M. Ligocki and A. Rosenbaum), SYSAPP-94/077, prepared for Engine Manufacturers Association, Chicago, Illinois (1994)

"Interagency Workgroup on Air Quality Modeling (IWAQM): Assessment of Phase I Recommendations Regarding the Use of MESOPUFF II" (with M. Ligocki and C. Emery), SYSAPP-94/030, prepared for Source Receptor and Analysis Branch, Technical Services Division, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina (1994)

"Analysis of the 1991-1992 Pine Bend Monitoring Data" (with others), SYSAPP-94/007, prepared for Minnesota Pollution Control Agency, St. Paul, Minnesota (1994)

"Assessment of the Effects of the 1990 Clean Air Act Amendments on Visibility in Class I Areas" (with others), SYSAPP-93/162, prepared for Ambient Standards Branch, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina (1994)

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"Carbon Monoxide Modeling in Support of the 1993 State Implementation Plan for Maricopa County, Arizona" (with others), SYSAPP-93/156, prepared for Maricopa Association of Governments, Phoenix, Arizona (1993)

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"Base Case Carbon Monoxide Emission Inventory Development for Maricopa County, Arizona" (with others), SYSAPP-93/077, prepared for Maricopa Association of Governments, Phoenix, Arizona (1993)

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"Air Pollution Control Analyses for State Implementation Plan Revisions in Allegheny County," project report, Department of Engineering and Public Policy, Carnegie-Mellon University, Pittsburgh, Pennsylvania (1978)

EMPLOYMENT HISTORY

Systems Applications International	Manager, PM_{10} and Visibility Program	1989–1997
South Coast Air Quality Management District	Air Quality Specialist	1985–1989
California Institute of Technology, Pasadena, California	Research Assistant Laboratory Assistant	1979–1985 1979
Carnegie-Mellon University, Dept. of Mechanical Engineering Pittsburgh, Pennsylvania	Research Assistant	1978–1979