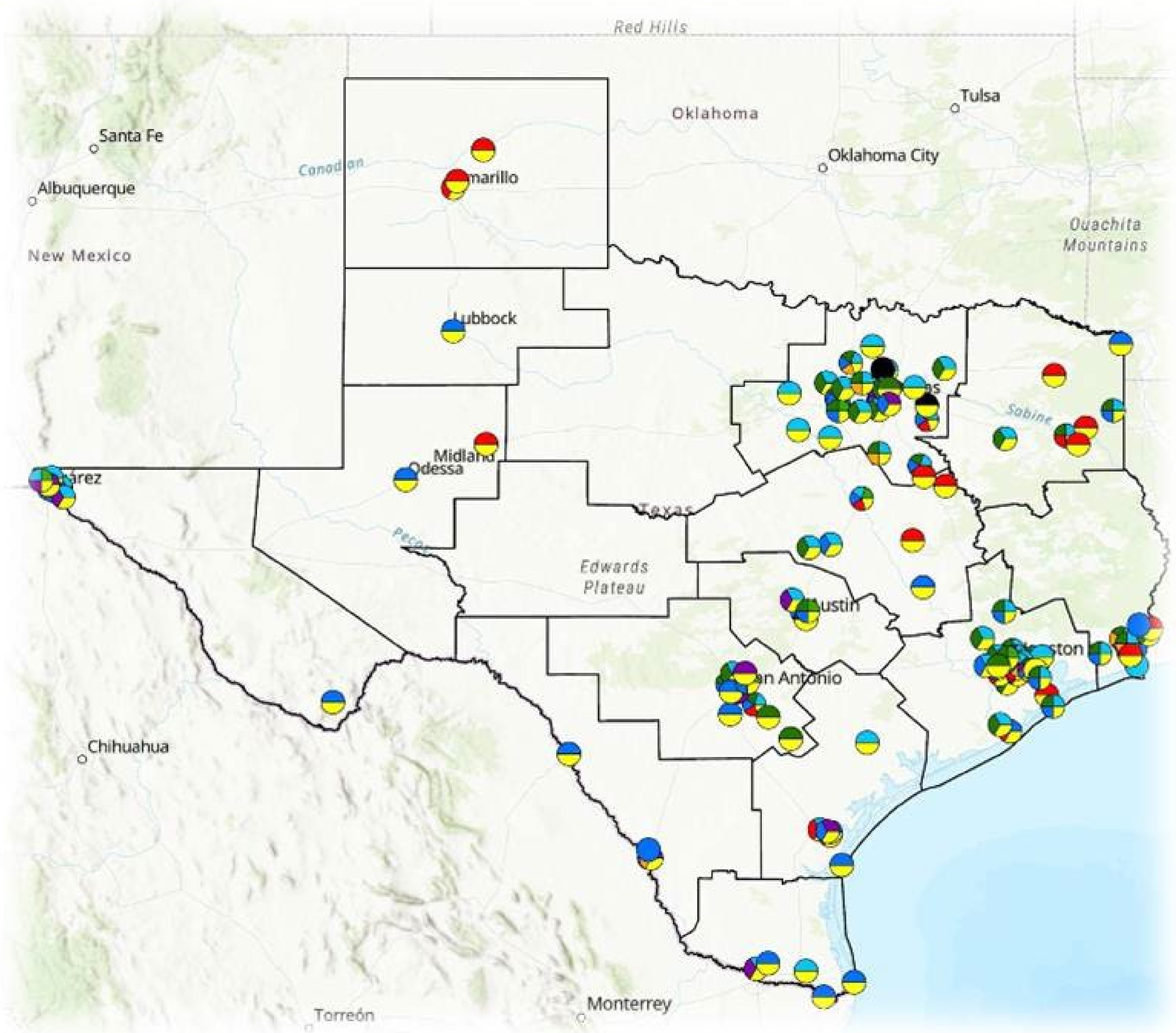
Texas 2025 Five-Year Ambient Air Monitoring Network Assessment



Texas Commission on Environmental Quality
Air Monitoring Division
Ambient Monitoring Section

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Acronyms and Abbreviations

– number
§ - part
% – percent
> – greater than
≥ - greater than or equal to
< – less than
$\mu g/m^3$ – micrograms per cubic meter
AMCV - Air Monitoring Comparison Values
AMNP – annual monitoring network plan
APWL – Air Pollutant Watch List
AQS – Air Quality System
autoGC – automated gas chromatography
BPA – Beaumont-Port Arthur
CBSA – core based statistical area
CFR – Code of Federal Regulations
CO – carbon monoxide
DFW – Dallas-Fort Worth
DRR – Data Requirements Rule
EI – emissions inventory
EPA – United States Environmental Protection Agency
ESL – Effects Screening Levels
FCAA – Federal Clean Air Act
FEM – federal equivalent method
FRM – federal reference method
FYA – five-year assessment
HGB – Houston-Galveston-Brazoria
LBJ – Lyndon B. Johnson
MSA – metropolitan statistical area
$\mu g/m^3$ - micrograms per cubic meter
NA – not applicable
NAAQS – National Ambient Air Quality Standards
NCore – National Core Multipollutant Monitoring Stations
NEI – National Emissions Inventory
NO_2 – nitrogen dioxide
NO – nitrogen oxide
NO_x – oxides of nitrogen
NO_Y – total reactive nitrogen compounds
O_3 – ozone
OMB – United States Office of Management and Budget
PAMS – Photochemical Assessment Monitoring Stations

Pb – lead
PM_{10} – particulate matter of 10 micrometers or less in diameter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
$PM_{10-2.5}$ – coarse particulate matter
ppb – parts per billion
ppm – parts per million
PWEI – population weighted emissions index
RA-40 – Regional Administrator 40
SE – southeast
§ - section
SETRPC – South East Texas Regional Planning Commission
SH – State Highway
SIP – State Implementation Plan
SLAMS – State or Local Air Monitoring Stations
SO_2 – sulfur dioxide
SPM – special purpose monitor
TAC – Texas Administrative Code
TAMIS – Texas Air Monitoring Information System
TCEQ – Texas Commission on Environmental Quality
TEOM – tapered element oscillating microbalance
tpy – tons per year
TSP – total suspended particulate
U.S. – United States
UTEP – University of Texas at El Paso
VOC – volatile organic compound

Introduction

The United States (U.S.) Environmental Protection Agency (EPA) establishes and updates National Ambient Air Quality Standards (NAAQS) for six "criteria" air pollutants under the Federal Clean Air Act (FCAA). The EPA assigned responsibility for designing and implementing ambient air quality surveillance networks to determine NAAQS compliance to state air pollution control agencies. In 2006, the EPA finalized a requirement for states to conduct a network assessment every five years. The EPA's final regulation, in 40 Code of Federal Regulations (CFR) Section (§)58.10, is as follows.

> (d) The state, or where applicable local, agency shall perform and submit to the EPA Regional Administrator an assessment of the air quality surveillance system every five years to determine, at a minimum, if the network meets the monitoring objectives defined in appendix D to this part, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any

> sites that are being proposed for discontinuance, the effect on data users other than the agency itself, such as nearby states and tribes or health effects studies. The state, or where applicable local, agency must submit a copy of this five-year assessment, along with a revised annual network plan, to the Regional Administrator. The assessment requirements began July 1, 2010, and are due every five years.

To meet this requirement, Texas Commission on Environmental Quality (TCEQ) conducted the *Texas 2025 Five-Year Ambient Air Monitoring Network Assessment* (FYA) to confirm that the existing federal network continues to meet the objectives in 40 CFR Part 58, Appendix D and to evaluate whether individual federal network monitors should be added, relocated, or decommissioned to best understand and evaluate air quality with existing resources. Federal network monitors include the air quality monitoring data that TCEQ submits to the EPA's Air Quality System (AQS) and are certified annually.

TCEQ provides an analysis of the Texas ambient air monitoring network's compliance with the federal monitoring network design requirements under 40 CFR Part 58 in its annual monitoring network plan. The EPA approved the *TCEQ 2024 Annual Monitoring Network Plan* (AMNP) in a January 15, 2025, letter, indicating that the existing network met the current monitoring requirements. An updated analysis is provided in the *TCEQ 2025 Annual Monitoring Network Plan*, which was made available for public review and comment on April 15, 2025, and will be submitted to the EPA on July 1, 2025. Because the AMNP is focused on federally required monitoring, it does not include a review of state-initiated monitoring conducted in addition to federal requirements. TCEQ's AMNP and this assessment are limited to the portion of TCEQ's air monitoring network designed to comply with federal monitoring requirements and supported by federal funding.

TCEQ and its monitoring partners (city, county, private, and industry) also operate a robust network of additional 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. TCEQ uses the data from these state-initiative monitors for many purposes and often locates these monitors to address local public health and welfare concerns. Information and data from federal and state-initiative monitors are available to the public on TCEQ's Texas Air Monitoring Information System (TAMIS) located at TCEQ Air Monitoring, TAMIS.

Enhanced Monitoring Plan

TCEQ provides a reassessment of the Enhanced Monitoring Plan (EMP), originally submitted with the 2019 AMNP, as FYA Appendix D. The EMP is applicable to areas designated as moderate and above nonattainment for the eight-hour ozone (O_3) NAAQS. The EMP includes monitoring activities important to understanding the area's O_3 formation including the following:

- O_3 monitors beyond the minimum requirements;
- oxides of nitrogen (NO_x) or total reactive nitrogen compounds (NO_y) monitors beyond the minimum requirements;
- speciated volatile organic compounds (VOC) measurements; and
- enhanced upper air measurements of meteorology.

Statistical Areas and Population

TCEQ uses statistical-based definitions for core based statistical areas (CBSAs) or metropolitan statistical areas (MSAs), as defined and delineated by the U.S. Office of Management and Budget (OMB). The OMB defines a CBSA as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration. MSAs (areas with populations greater than 50,000) and micropolitan statistical areas (areas with populations between 10,000 and 50,000) are the two categories of CBSAs.

The OMB delineated CBSAs and MSAs overlap in Texas, and the terms are used in this plan according to their usage in 40 CFR Part 58. TCEQ used the most recent delineations available at the time of drafting this FYA dated July 2023. The OMB updated the CBSA delineation list in July 2023 with several changes affecting Texas. The Houston-The Woodlands-Sugar Land CBSA title was updated to Houston-Pasadena-The Woodlands (Houston), and San Jacinto County was added to the CBSA. The Austin-Round Rock-Georgetown CBSA title was updated to Austin-Round Rock-San Marcos (Austin). The OMB added three counties to the Lubbock CBSA: Cochran, Garza, and Hockley Counties. The OMB upgraded Eagle Pass from a micropolitan statistical area to a CBSA, containing Maverick County. The OMB added Bosque County to the Waco CBSA. The OMB removed Somervell County from the Dallas-Fort Worth-Arlington (DFW) CBSA. The OMB created a new micropolitan statistical area, Granbury, for Hood County, previously in the DFW CBSA. The Marshall micropolitan statistical area was removed, and Harrison County was added to the Longview CBSA. The OMB removed Sterling County from the San Angelo CBSA. The updated titles and counties are used in this FYA and its appendices.

Evaluation Methods

Overview

Texas has a diverse geography, population, and economy, and each air pollutant differs in its emission source, transport, and effects. Due to the pollutant complexity and diverse regional characteristics, TCEQ divided the FYA into individual pollutant assessments within six major Texas areas. The six Texas areas and the CBSAs in each area are shown in Figure 1 below and detailed in FYA Appendix C.

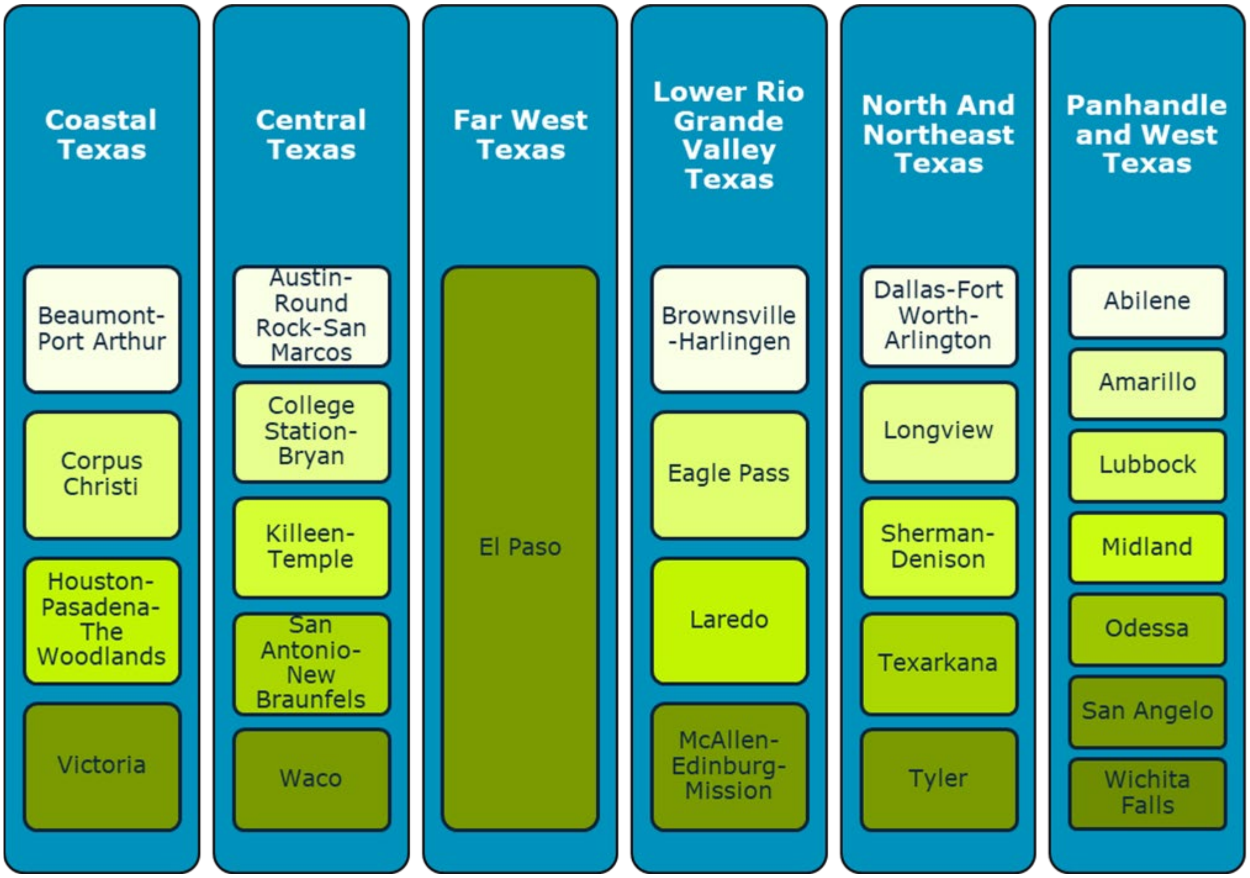


Figure 1: Texas Five Year Ambient Air Monitoring Assessment Areas and Core Based Statistical Areas

To assess the monitoring network within these six areas, TCEQ considered the ambient air monitors individually and in relation to the network as a whole using the information below.

- Regional wind patterns were considered due to the potential impact on O_3 formation, pollutant transport, and area dispersion.
- Population density and estimated population growth trends were reviewed to ensure that monitors with the objective of measuring pollutant concentrations in populated areas were still properly sited.
- Location of current point sources were evaluated in conjunction with air monitoring sites to evaluate the spatial placement of existing ambient air quality monitors in relation to point source emissions.
- Area-wide emissions were evaluated in conjunction with population density to determine compliance with federal monitoring requirements and spatial coverage.
- Regional air quality was evaluated based on area attainment/nonattainment status.
- Technology advancement, availability, and applicability were considered but are assessed annually in the AMNP.
- Monitor purpose, history, and data trends were evaluated to assess monitor importance and data usage.

- Monitors were evaluated based on five metrics to determine an *Assessment Value* of critical, high, medium, or low, representative of importance to the network. The five metrics are summarized below and discussed further in this section:
  - *Regulatory Value* - meets a requirement in 40 CFR Part 58;
  - *NAAQS Value*– criteria pollutants compared against the current standard;
  - *Data Trends Value* – ten-year data trends;
  - *Historical Value* – total years of monitoring at that site providing historical trends; and
  - *Source Impact Value* – impacts of pollutant sources.

Evaluation Tools

Wind Patterns

Annual average wind patterns, summarized in wind roses, were reviewed to ascertain if monitors continue to meet stated location monitoring objectives. Wind roses are included on maps containing the area's population density with active sites and monitors. The length of each wind rose bar corresponds to the frequency of the wind coming from the indicated direction. Wind data indicate the area's predominate flow pattern. Area average wind direction and wind speed information is a component of initial site and monitor selection and is considered during the review of existing site locations, new site locations, and site relocations.

Population

Population projections were reviewed to ensure that monitors with the objective of measuring pollutant concentrations in populated areas were still properly sited. TCEQ used estimated population counts developed from the U.S. Census Bureau's 2020 census and five-year projection data from the Texas Demographics Center (TDC) in this assessment available at the time this FYA was developed. The TDC's *Texas Population Estimates and Projections Program,* overseen by the State Demographer, conducts surveys to create population estimates for the State of Texas in compliance with Chapter 468 of the Texas Government Code. Population projections are provided in statistical areas defined by the OMB. The OMB defined statistical areas (CBSAs and MSAs) overlap in Texas, and the terms are used interchangeably in this assessment according to usage in 40 CFR Part 58. FYA population density maps utilize the most recent population density data available at the time of development, 2018-2022 five-year estimates provided by the TDC.

TCEQ evaluated population projection data available from the TDC since the following pollutants have population-based monitoring requirements: O_3, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter of 2.5 micrometers or less in diameter ($PM_{2.5}$), and particulate matter of 10 micrometers or less in diameter (PM_{10}). In addition, the SO_2 population weighted emissions index (PWEI) monitoring requirement calculation was evaluated using projected 2023 population estimates available at the time of the TCEQ 2025 AMNP and current available emissions inventory (EI) data for each CBSA.

Point Sources and Area-Wide Emissions

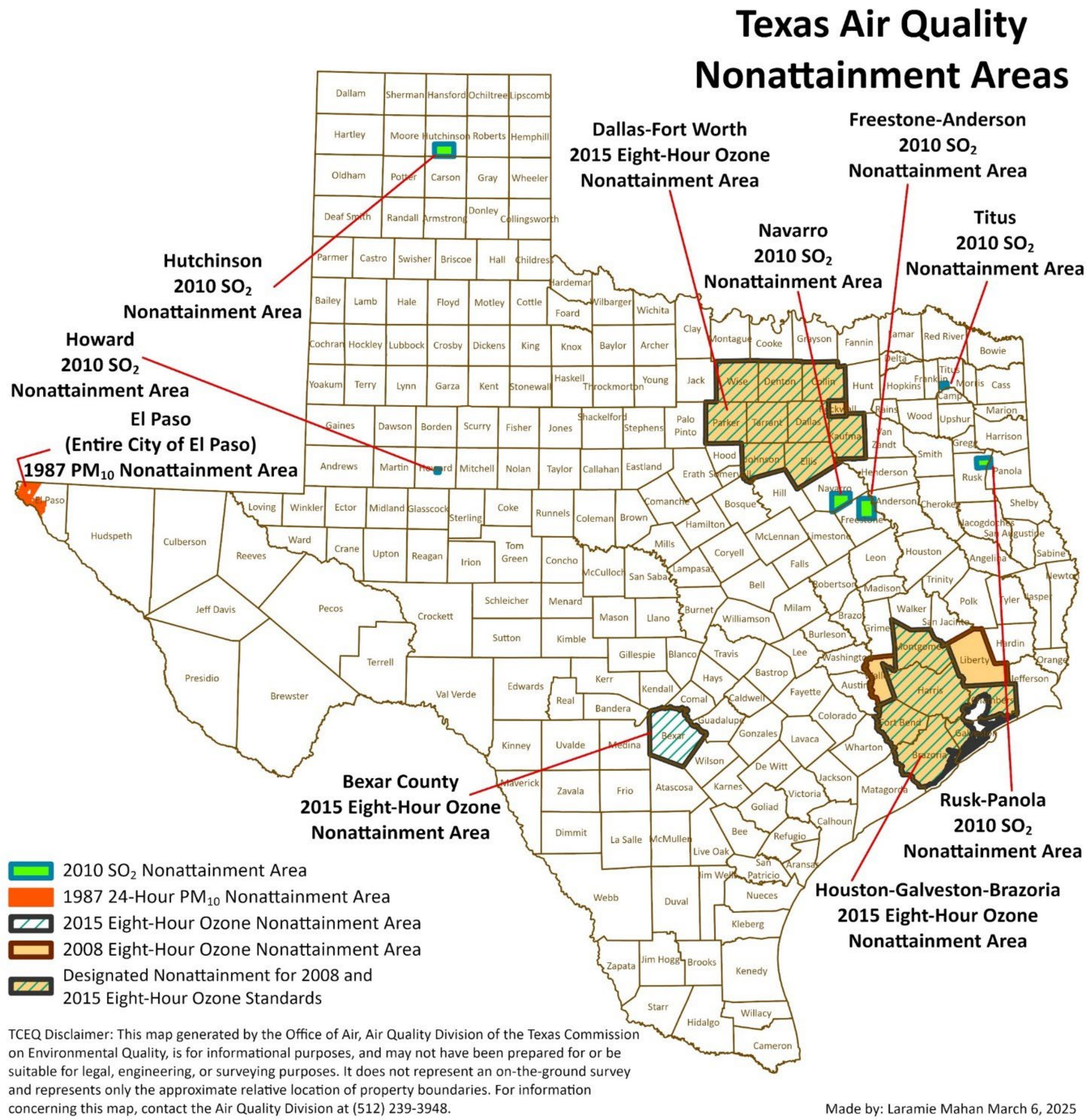
Air emissions are emitted from point sources (large stationary sources, such as fossil fuel fired power plants, smelters, industrial boilers, petroleum refineries, and manufacturing facilities) and non-point sources (area, on-road mobile, non-road mobile, and biogenic). Point source emissions data are reported annually from sources meeting the reporting requirements under 30 Texas Administrative Code (TAC) §101.10. In addition, TCEQ develops estimates for non-point source emissions that are submitted to the EPA every three years as part of the National Emissions Inventory (NEI).

The most recently available data from the 2020 NEI and 2020 annual point source EI were used to assess the relative contributions of primary pollutant anthropogenic sources and 2023 annual point source EI were used to evaluate spatial monitor placement in relation to these sources. More information about Texas's EI is available on TCEQ's Sources of Air Emissions webpage.

In addition to anthropogenic sources, TCEQ evaluated the potential for natural pollutant sources and pollutants resulting from long-range transport and wind flow patterns. Smoke from agricultural burning in North and Central America can affect Texas seasonally when the winds bring in air from eastern Mexico and Central America. Long-range transport from other types of events can also impact Texas, including wildfires and dust from large and intense regional dust storms from the West Texas-New Mexico-Northern Mexico area and internationally from Africa.

Regional Air Quality

Regional air quality plans were reviewed for areas with current and prior nonattainment designations, re-designations, and reclassifications to ensure monitor placement and quantity continue to provide adequate data for the evaluation of progress towards attainment. Details on Texas' State Implementation Plan (SIP) proposed and approved revisions for air quality are detailed on TCEQ's SIP webpage. Figure 2 shows a map of Texas air quality nonattainment areas which are discussed further in each area.



PM_{10} – particulate matter of 10 micrometers or less in diameter
SO_2 – sulfur dioxide

Figure 2: Texas Air Quality Nonattainment Areas

Monitoring Technology Review

TCEQ continually evaluates advances in ambient air monitoring technology. However, because regulatory monitors used for determination of compliance with the NAAQS are required to meet federal reference method (FRM), federal equivalent method (FEM), or approved regional method requirements, a full review of available technology was not detailed in this assessment. TCEQ's regulatory monitors comply with existing monitoring method requirements and provide consistent, high-quality data. TCEQ also uses non-NAAQS comparable monitors that do not meet FRM or FEM requirements but still provide valuable data for trends assessments, spatial coverage, and meet alternative monitoring objectives. TCEQ continues to evaluate newer technologies as they become available and propose method changes through the AMNP.

Monitor History, Status, and Design Values

TCEQ used information from TAMIS for evaluating historical changes to the monitoring network, objectives, and locations. Monitoring information discussed in this evaluation is available online at TCEQ TAMIS. Unless otherwise noted, the most recently available data at the time of the assessment was used, which was certified data through 2023. As required under 40 CFR § 58.15, the TCEQ certifies data annually by May 1. EPA reviews the data and calculates design values for the previous year's data annually in June.

A design value is a statistic that describes the air quality status of a given location relative to the level of the NAAQS. Design values are typically used to designate and classify nonattainment areas, as well as to assess progress towards meeting the NAAQS. Design value requirements vary by pollutant and are summarized in the *Pollutants* section below. Design values are computed and published annually by EPA's Office of Air Quality Planning and Standards and reviewed in conjunction with the EPA Regional Offices. Design values used in the FYA were obtained from the EPA webpage, EPA-air-quality-design-values. FYA Appendix A lists active and decommissioned monitors since the last FYA, locations, monitoring objectives, associated spatial scales, and the monitor's calculated *Assessment Value* as described below.

Monitor *Assessment Value* Calculation

During the overall network evaluation, several metrics were used to assess individual monitors to quantify their relative network importance: *Regulatory Value, NAAQS Value, Data Trend Value, Historical Value,* and *Source Impact Value*. A value (one through four) was assigned to each metric, and a monitor's overall *Assessment Value* was calculated and used to characterize its importance as critical, high, medium, or low. The evaluation metrics are summarized below and in Table 1.

Regulatory Value

The monitor *Regulatory Value* was assigned based on whether the monitor was used to meet a regulatory requirement under 40 CFR Part 58, Appendix D. These monitors were given a value of four. Monitors beyond the minimum requirements were given a value of one. Monitors with a *Regulatory Value* of four were automatically given an *Assessment Value* of critical.

National Ambient Air Quality Standards (NAAQS) Value

The monitor *NAAQS Value* was assessed for criteria pollutant monitors by dividing the valid 2023 design value by the NAAQS to determine the percentage of the NAAQS. Title 40 CFR §58.14 states that monitors with a 10 percent (%) or greater chance of exceeding 80% of the NAAQS within the next three years are not candidates for deactivation or relocation. Monitors with design values 80% or greater of the NAAQS were given a *NAAQS Value* score of four and an automatic Assessment Value of critical. Monitors with design values between 70 and 79% of the NAAQS have a risk of approaching or exceeding the NAAQS and were given a score of three. A score of two indicated a monitor with a design value between 50% and 69% of the NAAQS. Monitors with design values below 50% of the NAAQS were given a score of one. Pollutants with dual primary standards (like NO_2, CO, and $PM_{2.5}$) were evaluated for both standards and scored based on the standard with the highest NAAQS percentage.

The *NAAQS Value* metric was not used for monitors with invalid 2023 design values or non-NAAQS comparable monitors, including PM monitoring data obtained from non-NAAQS comparable monitors. The *NAAQS Value* metric was also not used for non-criteria pollutant monitoring data, including VOCs, carbonyls, NO_y, coarse particulate matter ($PM_{10-2.5}$), and $PM_{2.5}$ speciation. If a new monitor was activated or if an FEM monitor replaced a non-NAAQS comparable monitor in the last three years, design values are not yet effective; therefore, the *NAAQS Value* metric was not used for the monitor's *Assessment Value* calculation detailed below.

Data Trend Value

The *Data Trend Value* was based on NAAQS comparable monitors' historical concentration data from the last ten years, or as many years as available for assessment. Monitors with increasing design value trends expected to exceed the NAAQS in the next five years were scored four, and monitors with increasing, stable, or decreasing trends were respectively scored three, two, or one. Non-criteria pollutant and non-NAAQS comparable monitors (such as VOC, carbonyl, NO_y, $PM_{10-2.5}$, $PM_{2.5}$ non-NAAQS comparable, and $PM_{2.5}$ speciation) were not assessed with the *Data Trend Value* metric. If a new monitor was deployed or if an FRM or FEM monitor replaced a non-NAAQS comparable monitor in the last three years, NAAQS comparable trends are not applicable; therefore, the *Data Trend Value* metric was not used in the monitor's *Assessment Value* calculation detailed below.

Historical Value

Historical Value was assessed based on the number of years the parameter has been monitored at the site. The longer a parameter has been continuously monitored, the better suited that monitor is to provide trend data. Monitors with more than 15 years of data were scored four. Monitors providing 11 to 15 years of data were scored three. Monitors with 6 to 10 years of data were scored two, and monitors with 5 or fewer years of data received a score of one.

Source Impact Value

Source Impact Value was based on the monitor's importance in evaluating the impacts of pollutant sources on an area's air quality. Required source-oriented monitors downwind of a single point source or a monitor evaluating area transport were scored as four. Monitors downwind of multiple sources were scored as three. Monitors providing source contribution information but not specifically sited to measure source impacts, such as speciation monitors providing data on dust composition, were scored as two. Monitors located in areas with minimal source contributions received a score of one.

Table 1: Ambient Air Monitoring Network Evaluation Metrics

Scale	Four Points	Three Points	Two Points	One Point
Regulatory Value	Explicit federal requirement, automatic critical Assessment Value*	Not used for this metric	Not used for this metric	Beyond minimum requirements
NAAQS Value	Within 80% of the NAAQS or exceeds the NAAQS, automatic critical Assessment Value*	Design value between 70% and 79% of the NAAQS	Design value between 50% and 69% of the NAAQS	Design value less than 50% of NAAQS
Data Trend Value	Design value trend increasing and forecasted to exceed the NAAQS within the next five years	Increasing trend	Stable trend	Decreasing trend
Historical Value	More than 15 years of data	Between 11 and 15 years of data	Between 6 and 10 years of data	5 or fewer years of data
Source Impact Value	Source-oriented requirement or transport	Multiple source contributions	Source contribution information	Minimal, non-specific source contribution

**Assessment Value* – is the sum of all metric values for the monitor categorized as critical, high, medium, or low
% - percent
NAAQS – National Ambient Air Quality Standards

Assessment Value for Each Ambient Air Monitor

The *Assessment Value* (critical, high, medium, or low) is assigned based on the sum of all metric values for the monitor. A critical value was assigned to monitors with a *Regulatory Value* or *NAAQS Value* metric score of four. For NAAQS comparable monitors with a valid 2023 design value, total metric values of 13-19 were assigned an *Assessment Value* of high, values of 9-12 were assigned medium, and values of 5-8 were assigned low. For NAAQS comparable monitors with an invalid design value, VOC, carbonyl, NO_y, $PM_{10\text{-}2.5}$, $PM_{2.5}$ non-NAAQS comparable, and $PM_{2.5}$ speciation, total metric values of 9-12 were assigned an *Assessment Value* of high, values of 5-8 were assigned medium, and values 3-4 were assigned low. The total *Assessment Value* determination is illustrated below in Figure 3.

Monitor value assessments are included in each pollutant network evaluation discussion. Low monitor values do not necessarily indicate plans for monitor deactivation, and critical or high monitor values do not guarantee that a site will not need to be relocated. TCEQ continually assesses the network. Federal air monitor recommendations to activate, deactivate, or relocate air monitors are published annually in the AMNP.

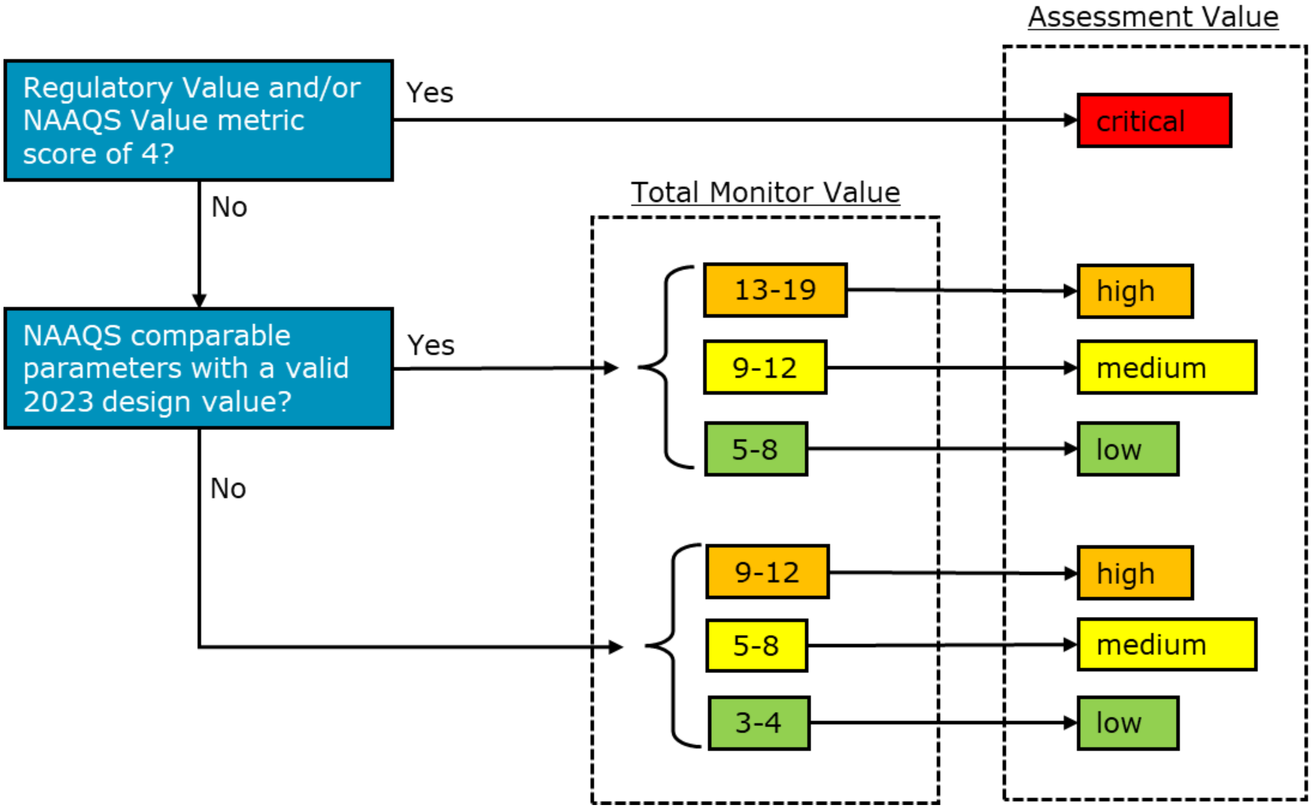


Figure 3: Total Monitor Value Assessment Determination

Background Information

National Ambient Air Quality Standards

The FCAA requires EPA to set NAAQS for six principal “criteria” air pollutants which can be harmful to public health and the environment. Periodically, the NAAQS are reviewed and may be revised, establishing new standards. Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. More information on criteria air pollutants and the NAAQS are found on the EPA webpage NAAQS Table | US EPA. The current NAAQS are listed in Table 2.

Table 2: National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Carbon monoxide	Primary	8 hours	9 ppm	Not to be exceeded more than once per year
Carbon monoxide	Primary	1 hour	35 ppm	Not to be exceeded more than once per year
Lead	Primary and secondary	Rolling 3-month average	0.15 μg/m^3	Not to be exceeded

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Ozone	Primary and secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Nitrogen dioxide	Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Nitrogen dioxide	Primary and secondary	1 year	53 ppb	Annual mean (for one year)
$PM_{2.5}$	Primary	1 year	9.0 $\mu g/m^3$	Annual mean, averaged over 3 years
$PM_{2.5}$	Secondary	1 year	15.0 $\mu g/m^3$	Annual mean, averaged over 3 years
$PM_{2.5}$	Primary and secondary	24 hours	35 $\mu g/m^3$	98th percentile, averaged over 3 years
PM_{10}	Primary and secondary	24 hours	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur dioxide	Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations averaged over 3 years
Sulfur dioxide	Secondary	1 year	10 ppb	annual mean, averaged over 3 years

$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
PM_{10} – particulate matter of 10 micrometers or less in diameter
ppm – part per million
ppb – part per billion
$\mu g/m^3$ – microgram per cubic meter

Monitoring Objectives and Methods

Title 40 CFR Part 58, Appendix D, Section 1 describes the monitoring objectives and general criteria for the required State and Local Air Monitoring Stations (SLAMS) ambient air monitors. Ambient air monitoring networks must be designed to meet the three basic monitoring objectives listed below, though each objective is to be considered independently:

- provide air pollution data to the public in a timely manner;
- support compliance with ambient air quality standards and emissions strategy development; and
- support air pollution research studies (for example National Core Multipollutant Monitoring Stations (NCore) network data).

Ambient air monitoring FRM and FEM are designated by EPA and must be operated in accordance with the requirements of 40 CFR Part 53. FRM and FEM are acceptable for use in air quality surveillance systems under 40 CFR Part 58 and are used for comparing an area's air quality levels against the NAAQS. These methods must be used in strict accordance with associated operation and/or instruction manuals and with applicable quality assurance procedures. EPA reviews and approves FRM and FEM designated instrumentation. The list of EPA designated reference and equivalent methods is available at Air Monitoring Methods - Criteria Pollutants | US EPA.

Air Quality Monitoring Data Design Values

TCEQ utilizes air quality data (calculated as design values) in this FYA that are calculated and published annually by EPA's Office of Air Quality Planning and Standards in conjunction with the Regional Administrator. A design value is a statistic calculated from air quality data that compares the air quality status of a given location relative to the level of the NAAQS. Design value calculation requirements vary by pollutant and are summarized in the *Pollutants* section below. Design values are calculated according to specific data handling procedures under 40 CFR Part 50 for each criteria pollutant to the level of the relevant NAAQS. Most design values are based on a three-year average of data according to requirements under 40 CFR Part 50. Newly activated monitors, with less than three-years' data, may not have acquired an official design value at the time of this assessment. Non-NAAQS comparable monitor data also does not have calculated design values because the monitoring technology does not meet the EPA's FRM or FEM requirements, but these monitors still provide valuable data for trends assessments, spatial coverage, and to meet alternative monitoring objectives. The most recent and historical design values used in this FYA are located on the EPA's webpage Air Quality Design Values | US EPA.

New and Relocated Air Quality Monitoring Site Deployment Timeline

Deploying a new air quality monitoring site requires multiple steps that can require two to four years to complete due to the complexity of each step and reliance on partnerships with external parties such as property owners, permitting authorities, and utility providers. TCEQ air monitoring sites are generally located on private property, and TCEQ must find willing property owners who are amenable to allowing TCEQ to place an air monitoring site on their property. Additionally, the length of time needed to obtain construction permits and/or power connections has significantly increased and can take six to 12 months, or more, for each step.

A general overview of the steps required to deploy a new or relocated site is listed below. While some steps can occur concurrently, others are dependent on completion of the previous step and may rely heavily on external parties in order to make progress. However, TCEQ is committed to deploying and relocating sites as soon as practicable.

- Reconnaissance to identify potential sites (2-4 months)
- Confirmation of power availability with the electrical provider (2-6 months)
- Site access and property usage negotiation (4-12 months)
- Air monitoring equipment purchase (6-10 months)
- Site preparation/construction vendor solicitation (4-6 months)
- Site preparation permit approval and construction (6-12+ months)
- Power connection by electrical provider (1-6 months)
- Site deployment and equipment activation, weather dependent (1-2 months)

Data Quality and Data Loss

TCEQ uses a variety of measures to ensure its air monitoring data is of the utmost quality. Air monitors are assessed regularly to verify their operations remain within proper specifications. TCEQ personnel physically visit each monitoring station on a weekly basis to assess instrument performance, conduct various quality control checks, and perform preventive maintenance activities. The monitoring instruments themselves must meet rigorous sampling and analytical requirements prescribed by federal air monitoring rules and undergo daily, weekly, and/or quarterly quality control checks to verify the instrument's calibration, accuracy, and precision. In addition, independently calibrated instruments are used to perform quarterly and annual audits of the air monitors and their operation.

Finally, a validation assessment is performed on all data to verify TCEQ's data quality objectives are met. The data are reviewed for outliers, regional comparability, quality assurance/quality control requirements, and other data quality assessment indicators.

Data that do not meet these objectives completely are invalidated or denoted accordingly, which can result in data loss. Data loss may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Data loss can also occur if an air monitoring site is temporarily deactivated for relocation or if the site is impacted by a natural disaster. Natural disasters, such as tropical storms, hurricanes, and tornados, can damage air monitoring station infrastructure and cause power outages. Sites are restored to normal operating conditions as soon as practicable after these events but in some cases, may require extensive repairs that prolong data loss. Data loss may impact design value calculations as described in the *Design Value* section for each pollutant under the *Pollutants* section.

Population Projections

The TDC prepared Texas population projections for 2020-2060. These projections use certain assumptions detailed in the 2022 TDC Projections Methodology report and associated data available at the time. The projections are of the resident population of the State and of all counties in the State for each year from 2020 through 2060, with the 2020 population equal to the 2020 census counts for the State of Texas and for all counties in Texas. A subset of the TDC population projection data are used in the FYA. TDC's net migration rates were derived using a standard residual migration formula for projecting the population of Texas. This expected population was compared to the 2020 population base to derive net migration for 2010-2020 and subsequently for later post-2020 time periods. One migration scenario assumed the 2010-2020 migration rate (1.0 migration scenario) and a second, more conservative approach, was half of the 2010-2020 migration rate (the 0.5 migration scenario). The conservative 0.5 migration scenario data were used in this FYA.

Based on the conservative TDC 0.5 migration scenario, Texas population is projected to increase by 4% from 2020 to 2025 and by 8% from 2020 to 2030. Figure 4 illustrates the 2025 projected Texas county population, and Figure 5 illustrates the 2030 Texas population projection. The largest projected population growth changes for 2025-2030 are expected to occur in urban areas such as Austin, Dallas-Fort Worth, Houston, and San Antonio, as illustrated in Figure 6.

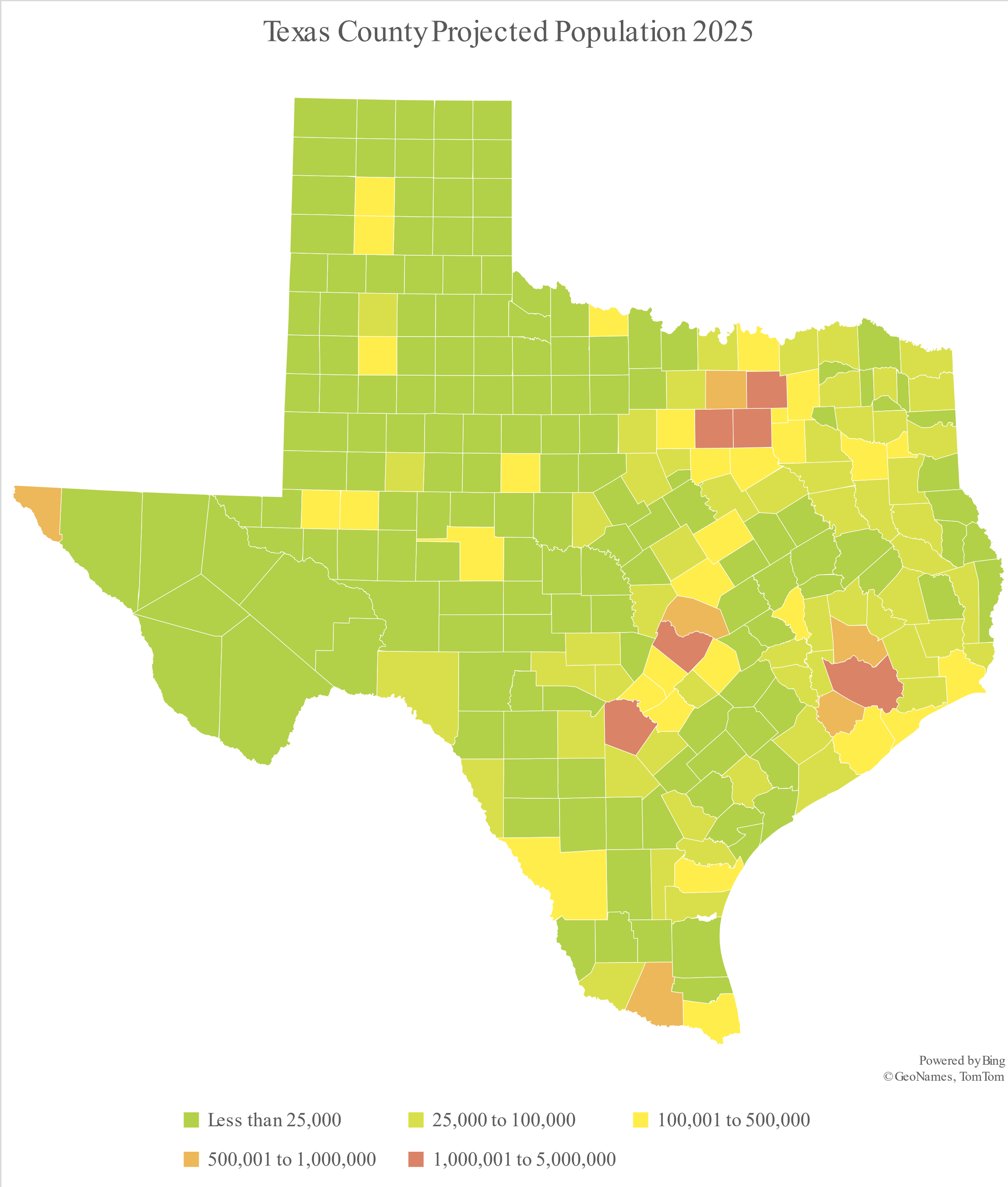


Figure 4: Texas Projected 2025 Population by County

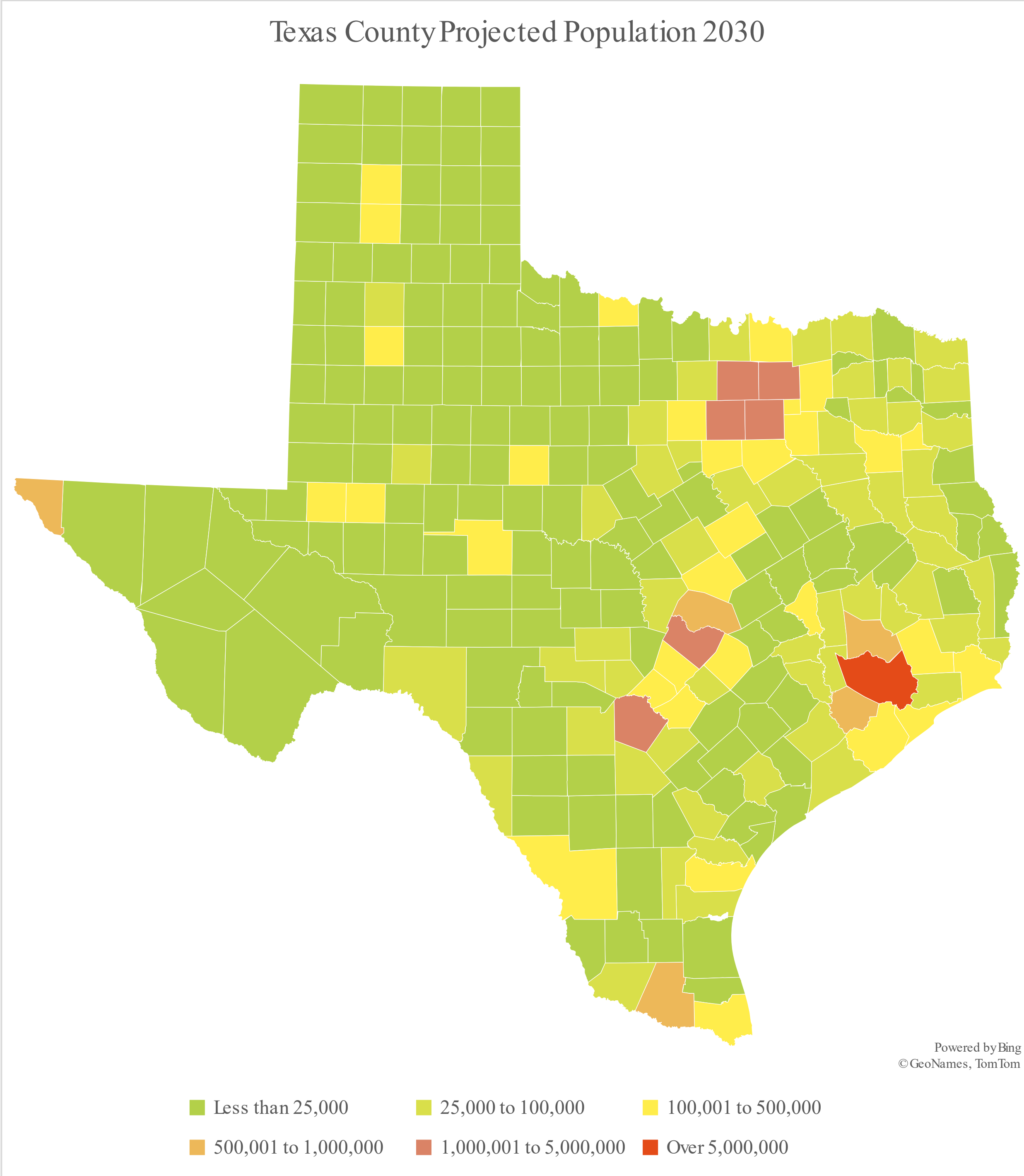


Figure 5: Texas Projected 2030 Population by County

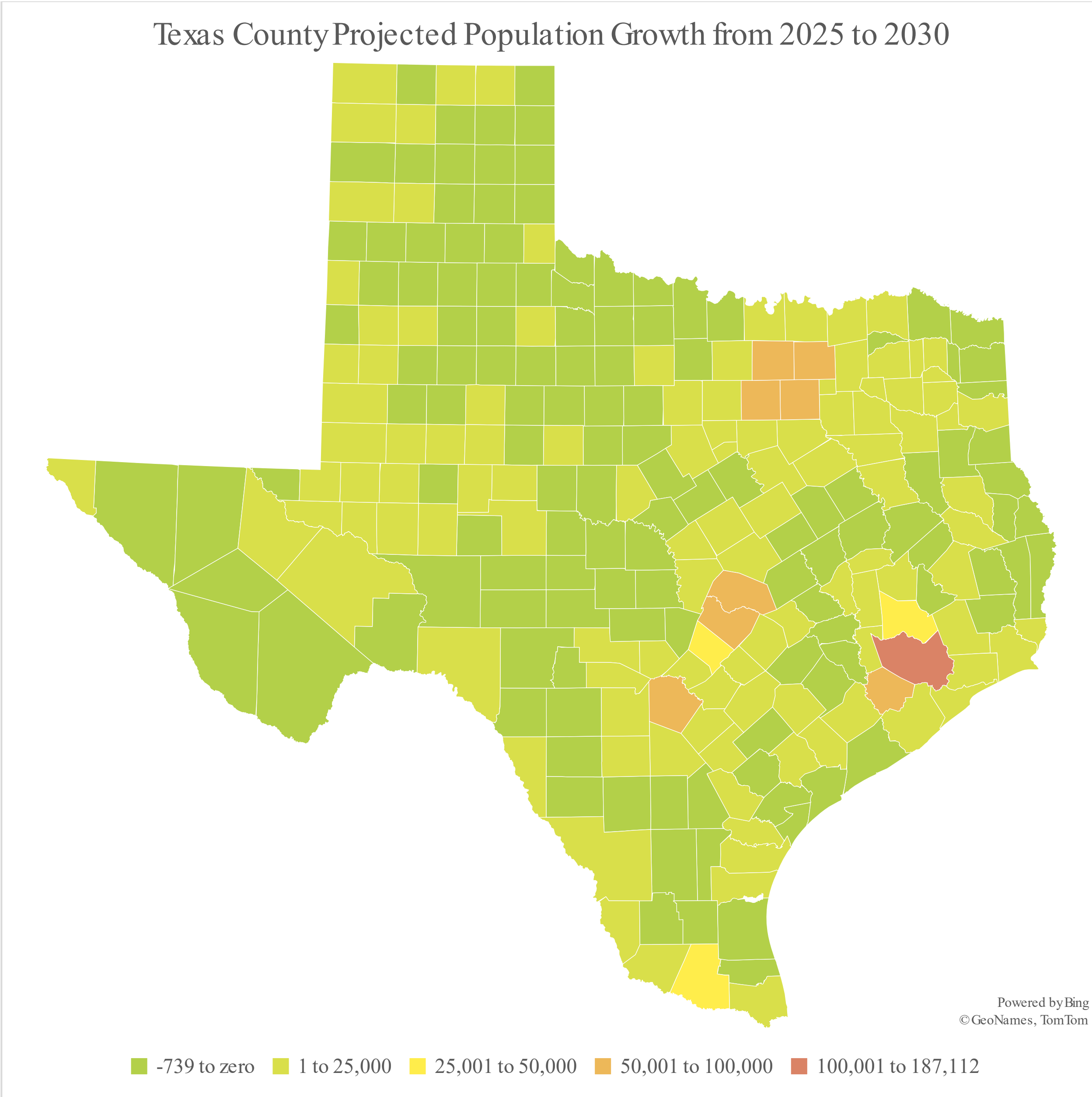


Figure 6: Texas Projected Population Growth by County from 2025-2030

The TDC projects expansive urban growth from 2025 to 2030. Even under the TDC's conservative 0.5 migration scenario projection, 12 counties are expected to grow by over 25,000 people in the DFW, Austin, Houston, San Antonio-New Braunfels (San Antonio), and McAllen-Edinburg-Mission CBSAs. Harris county, in the Houston CBSA, is projected to gain over 187,000 people. Figure 6 depicts Texas projected county level population growth from 2025 to 2030. The four largest CBSAs, Houston, DFW, San Antonio, and Austin, are projected to grow by a combined total of over one million people resulting in a combined 5% increase from 2025 to 2030. Texas overall CBSA population projections from 2020 to 2040 are provided in Table 3 based on the TDC's conservative 0.5 migration scenario projection.

Table 3: Texas Population Projections, 2020-2040

Core Based Statistical Area	2020 Census Count	2025	2030	2040	Change (2020 - 2025)	Change (2025 - 2030)	Change (2020 - 2040)
Abilene	176,579	181,778	186,362	193,988	3%	3%	10%
Amarillo	268,691	274,380	279,707	289,028	2%	2%	8%
Austin-Round Rock-San Marcos	2,283,371	2,468,534	2,645,809	2,961,132	8%	7%	30%
Beaumont-Port Arthur	397,565	400,857	403,060	405,491	1%	1%	2%
Brownsville-Harlingen	421,017	427,288	433,804	445,013	1%	2%	6%
College Station-Bryan	268,248	290,916	307,559	331,210	8%	6%	23%
Corpus Christi	445,763	453,300	459,519	467,118	2%	1%	5%
Dallas-Fort Worth-Arlington	7,637,387	8,009,329	8,377,195	9,030,589	5%	5%	18%
Eagle Pass	57,887	60,134	62,424	66,814	4%	4%	15%
El Paso	868,859	896,051	920,450	958,685	3%	3%	10%
Houston-Pasadena- The Woodlands	7,149,642	7,490,416	7,824,951	8,429,802	5%	4%	18%
Killeen-Temple	475,367	495,824	513,059	543,735	4%	3%	14%
Laredo	267,114	273,319	279,673	290,779	2%	2%	9%
Longview	286,184	287,586	288,598	289,742	0%	0%	1%
Lubbock	351,268	370,183	387,313	413,104	5%	5%	18%
McAllen-Edinburg-Mission	870,781	900,491	932,285	995,377	3%	4%	14%
Midland	175,220	186,670	198,030	221,722	7%	6%	27%
Odessa	165,171	175,276	185,716	208,075	6%	6%	26%
San Angelo	121,516	125,879	130,003	137,440	4%	3%	13%
San Antonio-New Braunfels	2,558,143	2,693,273	2,825,602	3,068,271	5%	5%	20%
Sherman-Denison	135,543	139,452	142,859	148,796	3%	2%	10%
Texarkana	92,893	93,230	93,182	92,648	0%	0%	0%
Tyler	233,479	239,076	244,181	252,539	2%	2%	8%
Victoria	98,331	99,612	100,753	102,567	1%	1%	4%
Waco	295,782	305,067	313,829	328,141	3%	3%	11%
Wichita Falls	148,128	147,959	147,119	144,616	0%	-1%	-2%
All CBSAs	27,849,155	29,110,792	30,326,330	32,484,286	5%	4%	17%
State of Texas*	29,145,505	30,407,353	31,621,474	33,772,879	4%	4%	16%

Source: Texas Demographic Center (TDC), 2020-2060 – 0.5 migration scenario TDC - 2022 Projections
CBSA – Core Based Statistical Area
*Total includes all counties and statistical areas

Sensitive Populations

Under 40 CFR §58.10(d), the FYA must consider the ability of the monitoring network to support air quality characterization for areas with relatively high populations of susceptible individuals. No definition is provided for "susceptible individuals" nor is guidance provided for the term “relatively high” in 40 CFR Part 58. The EPA received comments (71 FR 61248) concerning the addition of the FYA requirement, several commenters noted that this requirement would be challenging to implement, and EPA acknowledged the challenge in obtaining information regarding distribution of susceptible individuals in specific geographic areas. TCEQ assessed the ability of the federal monitoring network to support air quality characterization by evaluating the network compliance with 40 CFR Part 58 and its appendices, as well as evaluating monitor placement.

EPA is required to set health-based NAAQS for pollutants considered harmful to public health and the environment per the FCAA (40 CFR Part 50). The NAAQS are assessed every five years and are set at levels to protect public health within an adequate margin of safety. The standards are set to protect the general public, including sensitive members of the population such as children, the elderly, and those individuals with preexisting health conditions. TCEQ’s federal ambient air quality network meets, and in many cases exceeds, the federal monitoring requirements and objectives specified in 40 CFR Part 58 and its appendices, as detailed in each FYA section by pollutant. As such, the number, type, and location of monitors in TCEQ’s federal network is sufficient to characterize area air quality for use in evaluations to determine compliance with the NAAQS, for all members of the public, including susceptible individuals.

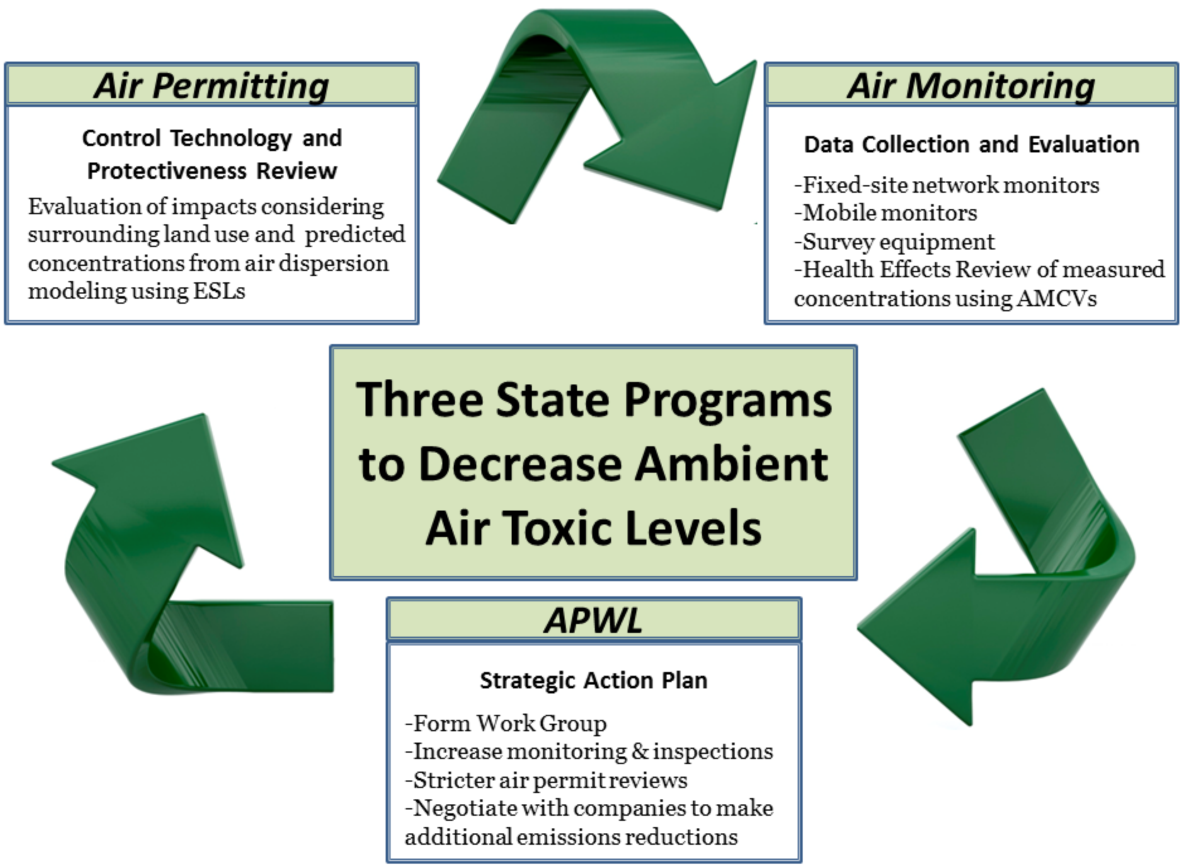
TCEQ’s federal network monitors are generally sited in populated areas. Approximately 86% of the total 2025 projected Texas population is located in 16 Texas CBSAs with a minimum population of 250,000 persons, and approximately 92% of TCEQ federally supported monitors, listed in FYA Appendix A, are sited in these 16 CBSAs. The public, including susceptible individuals, are supported by the ambient air monitoring data from air pollutant monitors located in CBSAs with current or previous air quality concerns. In each FYA section, TCEQ reviewed regional air quality plans for areas with current and prior nonattainment designations to ensure monitor placement and quantity are adequate to characterize air quality and show progress towards attainment.

Air Toxics Evaluation

TCEQ evaluates measurements of air toxics in ambient air collected from TCEQ federal network and state-initiative network air monitoring sites located throughout the state. TCEQ toxicology personnel evaluate these measured chemical concentrations for potential to cause adverse health effects and odors. TCEQ uses screening levels, termed Air Monitoring Comparison Values (AMCVs), that are set to protect human health and welfare, including sensitive populations, to evaluate monitored concentrations of ambient pollutants. AMCVs are used by TCEQ to determine if there is a potential health or welfare concern. Although this FYA focuses on federal ambient monitoring requirements, TCEQ toxicological evaluations of ambient air toxic data for monitors that are operated in addition to these requirements are available online at TCEQ Toxicological Evaluations of Ambient Air Monitoring Data.

Since AMCVs are screening levels, and not levels at which a health effect would be expected, when ambient concentrations are measured above the AMCVs, TCEQ conducts a more in-depth review of the data and sampling conditions. If concentrations consistently above the AMCV are observed, additional agency resources may be focused, such as in areas on the Air Pollutant Watch List (APWL).

The APWL is TCEQ's program to address areas in Texas where monitoring data show persistent, elevated concentrations of air toxics. TCEQ uses the APWL process to focus its resources, notify the public, engage stakeholders, and develop strategic actions to reduce emissions. Each year, TCEQ collects an extensive amount of ambient air monitoring data and evaluates the potential for adverse short- and long-term health effects and odors. TCEQ uses air permitting, ambient air monitoring, and the APWL to decrease ambient air toxic concentrations (Figure 7).



ESL – Effects Screening Levels
AMCV – Air Monitoring Comparison Values
APWL - Air Pollutant Watch List

Figure 7: TCEQ Programs to Decrease Ambient Air Toxic Levels

The framework for the APWL program is outlined in the APWL Protocol, which describes the process that TCEQ follows for all APWL issues, such as listing, remediating, and delisting APWL areas. Areas in Texas that show persistently elevated levels of air toxics may be considered for addition to the APWL following procedures outlined in the APWL Protocol. When reviewing current APWL areas, TCEQ may propose removal from the APWL if ambient monitoring data shows a downward trend, information demonstrates that the improvement will be sustained, and TCEQ determines that there is no longer a potential for adverse health effects. TCEQ accepts public comments on all additions and removals from the APWL. More information about the APWL can be found online at TCEQ APWL.

National Core Multipollutant Monitoring Stations (NCore) Requirements

Characteristics

NCore multipollutant sites, approved by the EPA Administrator, were selected to measure multiple pollutants utilizing continuous methods as available. NCore sites are intended to be long-term sites useful for a variety of applications including air quality trends analyses, model evaluation, and tracking metropolitan area statistics. NCore guidance suggests monitoring instruments capable of measuring trace levels (high sensitivity), where needed. TCEQ's NCore monitoring network includes the following measurements in compliance with NCore monitoring guidance and federal requirements listed in 40 CFR Part 58, Appendix D, Section 3, as discussed further in this section:

- nitrogen oxide (NO), high sensitivity;
- NO_y, high sensitivity;
- SO_2, high sensitivity;
- O_3;
- CO, high sensitivity;
- filter-based $PM_{2.5}$;
- continuous $PM_{2.5}$;
- speciated $PM_{2.5}$;
- coarse particulate matter ($PM_{10-2.5}$); and
- meteorology (ambient temperature, wind speed, wind direction, and relative humidity).

Monitoring Requirements

Texas is required to operate two to three urban NCore sites, due to multiple air sheds and CBSAs, and meets the requirements listed in 40 CFR Part 58, Appendix D, Section 3(b) with three urban NCore sites and associated measurements listed below in Table 4. Additional air monitoring information for these sites is detailed in FYA Appendix A.

Table 4: National Core Multipollutant Monitoring Stations and Parameters

Core Based Statistical Area	Site Name	NO_y* and NO*	SO_2*	O_3	CO*	$PM_{2.5}$ mass filter-based	$PM_{2.5}$ mass continuous	$PM_{2.5}$ speciation	$PM_{10-2.5}$	Meteorology
Dallas-Fort Worth-Arlington	Dallas Hinton	√	√	√	√	√	√	√	√	√
Houston-Pasadena-The Woodlands	Houston Deer Park #2	√	√	√	√	√	√	√	√	√
El Paso	El Paso Chamizal	√	√	√	√	√	√	√	√	√

*Instrument capable of measuring trace levels (high sensitivity)
- number
CO – carbon monoxide
NO_y – total reactive nitrogen compounds
NO – nitrogen oxide
SO_2 – sulfur dioxide
O_3 – ozone
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
$PM_{10-2.5}$ – coarse particulate matter
Meteorology – includes wind speed, wind direction, outdoor temperature, and relative humidity

Photochemical Assessment Monitoring Stations Requirements

Characteristics

The Photochemical Assessment Monitoring Stations (PAMS) network is an O_3 precursor monitoring network operated by state and local agencies that measures O_3, its precursors, and meteorological variables at NCore sites in metropolitan areas with a CBSA population of 1,000,000 or more persons. The main objective of the required PAMS sites is to develop a database of O_3 precursors and meteorological measurements to support O_3 model development and track trends of important O_3 precursor concentrations. TCEQ's PAMS network also includes enhanced O_3 monitoring in currently designated O_3 nonattainment areas and areas with previous O_3 nonattainment designations that have not been formally redesignated to attainment.

The minimum PAMS measurements include the following:

- speciated volatile organic compounds (VOCs);
- carbonyl compounds, three eight-hour samples every third day for June, July, and August;
- O_3;
- true (direct-read) NO_2;
- NO and NO_y;
- outdoor temperature;
- wind direction and wind speed;
- atmospheric pressure;
- relative humidity;
- precipitation;

- mixing-height;
- solar radiation; and
- ultraviolet radiation.

Monitoring Requirements

State monitoring agencies are required to measure and report PAMS measurements at each required NCore site located in CBSAs with populations greater than 1,000,000, based on the latest available census figures. Two of the three NCore sites in Texas are located in CBSAs with populations subject to this requirement. The El Paso CBSA, based on the most recent census figures, is not subject to this requirement. TCEQ meets PAMS monitoring requirements listed in 40 CFR Part 58, Appendix D, Section 5(b) with the measurements at the two NCore/PAMS sites listed below in Table 5.

Table 5: Photochemical Assessment Monitoring Stations and Parameters

Core Based Statistical Area	Site Name	VOCs	Carbonyl compounds	O_3	True NO_2	NO_y and NO	Ambient Temperature	Wind Direction and Speed	Atmospheric Pressure	Relative Humidity	Precipitation	Mixing-Height*	Solar Radiation	Ultraviolet Radiation
Dallas-Fort Worth-Arlington	Dallas Hinton	√	√	√	√	√	√	√	√	√	√	√	√	√
Houston-Pasadena-The Woodlands	Houston Deer Park #2	√	√	√	√	√	√	√	√	√	√	√	√	√

*Mixing height requirement for the Houston-Pasadena-The Woodlands core based statistical area is met at the La Porte Airport site as approved by the EPA in a letter dated October 19, 2018, approving the 2018 Annual Monitoring Network Plan.
- number sign
VOCs – volatile organic compounds speciated
O_3 – ozone
NO_2 – nitrogen dioxide
NO_y – total reactive nitrogen compounds
NO – nitrogen oxide

Enhanced Monitoring Plan (EMP)

TCEQ developed an EMP detailing enhanced O_3 and O_3 precursor monitoring activities in addition to the PAMS requirements. The EMP was provided as an appendix in TCEQ's 2019 AMNP and approved by the EPA. The EMP includes details on additional O_3, NO_x and/or NO_y, speciated VOC, and meteorology monitoring at locations other than those required. The EMP was reassessed as required under 40 CFR Part 58, Appendix D, Section 5(h) for areas designated as moderate or above nonattainment under the eight-hour O_3 NAAQS and included as FYA Appendix D. Information for the additional monitors supporting enhanced monitoring is listed in FYA Appendix A and FYA Appendix D.

TCEQ collects ambient VOC data in two ways: discrete canister samples and near-real-time automated gas chromatography (autoGC) samples. TCEQ's list of PAMS target VOC and carbonyl compounds are listed in Table 6, Table 7, and Table 8.

The VOC monitoring network is supplemented by state- and industry-initiated monitoring dispersed throughout Texas, although a review of these monitors and monitor placement is outside the scope of this assessment. More information about state-initiative VOC monitoring is available online on TCEQ's VOC air monitoring webpages.

Table 6: TCEQ Target Volatile Organic Compounds by Canister

1,1,2,2-tetrachloroethane	acetylene	methylcyclopentane
1,1,2-trichloroethane	benzene	m-ethyltoluene
1,1-dichloroethane	bromomethane	n-butane
1,1-dichloroethylene	carbon tetrachloride	n-decane
1,2,3-trimethylbenzene	chlorobenzene	n-heptane
1,2,4-trimethylbenzene	chloroform	n-hexane
1,2-dichloropropane	chloromethane	n-nonane
1,3,5-trimethylbenzene	cis-1,3-dichloropropene	n-octane
1,3-butadiene	cis-2-butene	n-pentane
1-butene	cis-2-hexene	n-propylbenzene
1-hexene and 2-methyl-1-pentene	cis-2-pentene	n-undecane
1-pentene	cyclohexane	o-ethyltoluene
2,2,4-trimethylpentane	cyclopentane	o-xylene
2,2-dimethylbutane	cyclopentene	p-xylene and m-xylene
2,3,4-trimethylpentane	dichlorodifluoromethane	p-diethylbenzene
2,3-dimethylbutane	dichloromethane	p-ethyltoluene
2,3-dimethylpentane	ethane	propane
2,4-dimethylpentane	ethylbenzene	propylene
2-chloropentane	ethylene	styrene
2-methyl-2-butene	ethylene dibromide	tetrachloroethylene
2-methylheptane	ethylene dichloride	toluene
2-methylhexane	isobutane	trans-1,3-dichloropropene
2-methylpentane	isopentane	trans-2-butene
3-methyl-1-butene	isoprene	trans-2-hexene
3-methylheptane	isopropylbenzene	trans-2-pentene
3-methylhexane	m-diethylbenzene	trichloroethylene
3-methylpentane	methyl chloroform	trichlorofluoromethane
4-methyl-1-pentene	methylcyclohexane	vinyl chloride

Table 7: TCEQ Target Volatile Organic Compounds by Automated Gas Chromatography

1,2,3-trimethylbenzene	benzene	n-heptane
1,2,4-trimethylbenzene	c-2-butene	n-hexane
1,3,5-trimethylbenzene	c-2-pentene	n-nonane
1,3-butadiene	cyclohexane	n-octane
1-butene	cyclopentane	n-pentane
1-pentene	ethane	n-propylbenzene
2,2,4-trimethylpentane	ethylbenzene	o-xylene
2,2-dimethylbutane	ethylene	p-xylene and m-xylene

2,3,4-trimethylpentane	isobutane	propane
2,3-dimethylpentane	isopentane	propylene
2,4-dimethylpentane	isoprene	styrene
2-methylheptane	isopropylbenzene - cumene	t-2-butene
2-methylhexane	methylcyclohexane	t-2-pentene
3-methylheptane	methylcyclopentane	toluene
3-methylhexane	n-butane	
acetylene	n-decane	

Table 8: TCEQ Target Carbonyl Compounds

2,5-dimethylbenzaldehyde	crotonaldehyde	methacrolein
acetaldehyde	formaldehyde	methyl ethyl ketone
acetone	heptanal	o-tolualdehyde
acrolein - unverified	hexanaldehyde	propionaldehyde
benzaldehyde	isovaleraldehyde	valeraldehyde
butyraldehyde	m- and p-tolualdehyde	

Pollutants

Ozone

Characteristics

Ground-level O_3 is not emitted directly into the air but is created by chemical reactions between NO_x and VOCs in the presence of sunlight; therefore, source-oriented monitors are not sited for this pollutant. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are some of the major sources of NO_x and VOCs. In addition, biogenic sources (mainly trees) also release VOCs that can contribute to ground-level O_3. Because it takes time for O_3 to form, a dispersed network across urban areas is necessary to fully evaluate contributing sources and regional O_3 levels.

Design Values

The 2015 eight-hour O_3 NAAQS is 0.070 parts per million (ppm). The design value is based on the three-year average of the annual fourth highest daily maximum eight-hour O_3 concentrations. A design value greater than the level of the O_3 NAAQS is always considered to be valid. A design value less than or equal to the level of the NAAQS must meet minimum data completeness requirements to be considered valid. These requirements are met for a three-year period at a site if valid daily maximum eight-hour average O_3 concentrations are available for at least 90% of the days within the O_3 monitoring season, on average, for the three-year period, with a minimum of at least 75% of the days within the O_3 monitoring season in any one year. TCEQ monitors for O_3 year-round and does not discontinue monitoring outside of O_3 season. Data completeness requirements are listed in 40 CFR Part 50, Appendix U.

Monitoring Requirements

State or Local Air Monitoring Stations Requirements

Title 40 CFR Part 58, Appendix D, Section 4.1 requires O_3 monitoring in each MSA with a population of 350,000 or more persons. Monitoring is also required in MSAs with lower populations if the design value for that MSA is equal to or greater than 85% of the NAAQS. Specific SLAMS O_3 minimum monitoring requirements are included below in Table 9, an excerpt of 40 CFR Part 58, Appendix D, Table D-2.

Table 9: Ozone Monitoring Requirements

Metropolitan Statistical Area (MSA) Population[1]	Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS[2]	Most recent 3-year design value concentrations <85% of any O_3 NAAQS[3, 4]
>10,000,000	4	2
4,000,000 to 10,000,000	3	1
350,000 to <4,000,000	2	1
50,000 to <350,000	1	0

[1]The ozone (O_3) National Ambient Air Quality Standards (NAAQS) levels are defined in 40 CFR Part 50.
[2] These minimum monitoring requirements apply in the absence of a design value.
[3]MSA must contain an urbanized area of 50,000 or more population and are designated by the United States Office of Management and Budget.
≥ - greater than or equal to
> - greater than
< - less than
% - percent
CFR – Code of Federal Regulations

Carbon Monoxide

Characteristics

CO is a colorless, odorless gas formed by the incomplete reaction of air with carbon-containing compounds. CO is primarily emitted from fossil fuel powered engines, including motor vehicles and non-road engines and vehicles (such as construction equipment and boats). Higher levels of CO generally occur in areas with heavy traffic congestion such as downtown areas, at border crossings, and near or on major highways. Other CO emission sources can include industrial processes, residential wood burning, residential trash burning, and natural sources, such as forest fires. TCEQ uses CO and high-sensitivity CO monitors to meet the requirements summarized below.

Design Values

The 1971 eight-hour CO NAAQS is 9 ppm, and the 1971 one-hour CO NAAQS is 35 ppm; each CO NAAQS cannot be exceeded more than once per year. Each CO design value is evaluated over a two-year period. Specifically, the design value is the higher of each year's annual second maximum, non-overlapping eight-hour average. An eight-hour average shall be considered valid if at least 75% of the hourly averages for the eight-hour period are available. In the event that only six (or seven) hourly averages are available, the eight-hour average shall be computed on the basis of the hours available using six (or seven) as the divisor. Data completeness requirements are listed in 40 CFR § 50.8.

NCore Monitoring Requirements

TCEQ meets NCore CO monitoring requirements as discussed above.

Near-Road Monitoring Requirements

Title 40 CFR Part 58, Appendix D, Section 4.2 requires collocating one CO monitor with one required near-road NO_2 monitor in CBSAs with populations of 1,000,000 or more persons. TCEQ meets this requirement with CO monitors at the near-road sites below.

- DFW CBSA: Fort Worth California Parkway North
- Houston CBSA: Houston North Loop
- San Antonio CBSA: San Antonio Interstate 35
- Austin CBSA: Austin North Interstate 35

Oxides of Nitrogen

Characteristics

The sum of NO and NO_2 is commonly called NO_x. NO_2 is regulated as a criteria pollutant, but NO_x is also important as a contributor to O_3 and $PM_{2.5}$ formation. NO_x is most commonly emitted from on-road emissions sources such as cars, trucks, and buses, as well as electric power plants and industrial combustion. For these reasons, NO_x monitors are sited to evaluate emission sources and regional concentrations across O_3 areas of interest. TCEQ uses NO_x and NO_2 direct (sometimes referred to as true NO_2) monitors to meet the requirements summarized below.

Design Values

The 2010 one-hour NAAQS for NO_2 is 100 parts per billion (ppb). The design value is the annual 98th percentile of the daily maximum one-hour concentration values, averaged over three consecutive years. Monitoring sites must meet data completeness as required under 40 CFR Part 50, Appendix S §3.2 to have a valid design value. An NO_2 one-hour design value is valid if it encompasses three consecutive calendar years of complete data. A year meets data completeness requirements when at least 75% of the sampling days for each quarter have complete data, for four complete quarters. A sampling day has complete data if 75% of the hourly concentration values are valid. Due to the stringent NO_2 data completeness requirements, if a monitor loses more than 25% of data in one quarter, then the NO_2 one-hour design value is invalid for three years.

The 1971 annual NAAQS for NO_2 is 53 ppb. The annual NO_2 design value is the annual average of the hourly concentration values over one calendar year. The annual NO_2 design value meets completeness criteria, and is considered valid, when at least 75% of the hours in the year are reported as complete, as required under 40 CFR Part 50, Appendix S §3.1. Therefore, the loss of 25% of hourly data in one calendar year can invalidate the monitor's NO_2 annual design value for the entire calendar year.

Monitoring Requirements

Area-Wide Monitoring Requirements

Title 40 CFR Part 58, Appendix D, Section 4.3.3 requires one area-wide ambient air quality NO_2 monitoring site in each CBSA with a population of 1,000,000 or more persons. The requirements stipulate that these sites be located in areas with the highest expected NO_2 concentration that are also representative of a neighborhood or larger (urban) spatial scale. Title 40 CFR Part 58, Appendix D, Section 4.3.5 (3) and (4), define neighborhood scale monitoring as representative of ambient air concentrations in an area between 0.5 and 4.0 kilometers with relatively uniform land use. Urban scale monitoring is representative of ambient air concentrations over large portions of an urban area with dimensions between 4 and 50 kilometers.

Based on 2023 U.S. Census Bureau population estimates for Texas, area-wide neighborhood or urban scale NO_2 monitoring is required in four Texas CBSAs. The NO_2 data derived at the sites below meet these area-wide requirements.

- DFW CBSA: Dallas Hinton
- Houston CBSA: Clinton
- San Antonio CBSA: San Antonio Northwest
- Austin CBSA: Austin North Hills Drive

Regional Administrator Monitoring Requirements

Title 40 CFR Part 58, Appendix D, Section 4.3.4 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). TCEQ collaborated with the EPA Regional Administrator to identify the four Texas RA-40 NO_2 monitoring sites (monitoring with NO_x instruments) listed below to meet the portion of this requirement attributed to Texas.

- DFW CBSA: Arlington Municipal Airport
- Houston CBSA: Clinton
- El Paso CBSA: Ascarate Park Southeast (SE)
- Beaumont-Port Arthur (Beaumont) CBSA: Nederland 17th Street

Near-Road Monitoring Requirements

Title 40 CFR Part 58, Appendix D, Section 4.3.2 requires one microscale near-road NO_2 monitor located near a major road with high annual average daily traffic (AADT) counts in each CBSA with a population of 1,000,000 or more persons. An additional near-road monitor is required in each CBSA with a population of 2,500,000 or more persons. TCEQ's near-road monitoring network meets these requirements with the seven current sites (monitoring with NO_x instruments listed below).

- Austin CBSA: 1 site - Austin North Interstate 35
- DFW CBSA: 2 sites - Dallas Lyndon B. Johnson (LBJ) Freeway and Fort Worth California Parkway North
- Houston CBSA: 2 sites - Houston Southwest Freeway and Houston North Loop
- San Antonio CBSA: 2 sites - San Antonio Interstate 35 and San Antonio Interstate 10 West

Sulfur Dioxide

Characteristics

Based on Texas' EI data, the largest source of SO_2 emissions are fossil fuel combustion at power plants and other industrial facilities. SO_2 emissions also come from metal ore extraction and high-sulfur fuels burned in locomotives, large ships, and non-road equipment. SO_2 monitoring has historically been focused on populated areas near larger emission sources but now includes required monitoring around larger emission sources regardless of population. TCEQ uses SO_2 and high-sensitivity SO_2 monitors to meet the requirements summarized below.

Design Values

The one-hour NAAQS for SO_2 is 75 ppb. The design value is the annual 99th percentile of the daily maximum one-hour concentration values, averaged over three consecutive years. Monitoring sites must meet data completeness as required under 40 CFR Part 50, Appendix T to have a valid design value. Data completeness requires at least 75% of the days in each quarter of each of three consecutive years to have at least one reported hourly value. Design values are calculated by the EPA according to the procedures specified in 40 CFR Part 50, Appendix T section 5.1. Due to the stringent SO_2 data completeness requirements, if a monitor loses more than 25% of data in one quarter, then the SO_2 one-hour design value is invalid for three years.

Monitoring Requirements

Population Weighted Emissions Index Requirements

Title 40 CFR Part 58, Appendix D, Section 4.4.2 requires states to establish an SO_2 monitoring network based on the PWEI calculations for Texas CBSAs. These indices are calculated by multiplying the CBSA population by the EI data for counties within that CBSA, using an aggregate of the most recent EI data. The NEI is released by the EPA every three years and combines emissions inventory estimates for point, nonpoint (area), on-road, non-road, and wildfire and prescribed burn event sources. TCEQ updates point-source emissions data annually from sources that meet the criteria in 30 Texas Administrative Code §101.10. Population data multiplied by data from the most recent NEI with the most recent point-source EI aggregate calculated values are divided by one million to obtain the CBSA PWEI. The PWEI monitoring requirements include the following:

- One monitor in CBSAs with a PWEI equal to or greater than 5,000, but less than 100,000.
- Two monitors in CBSAs with a PWEI equal to or greater than 100,000, but less than 1,000,000.
- Three monitors in CBSAs with a PWEI equal to or greater than 1,000,000.

TCEQ used the most recent quality assured data available – the 2023 U.S. Census Bureau population estimates, 2020 NEI data, and 2023 TCEQ point-source EI data to calculate the PWEIs and determine the minimum monitoring requirements for each CBSA (assessment included in TCEQ's 2025 AMNP Appendix E). TCEQ meets the PWEI requirements with five monitors listed in Table 10.

Table 10: Population Weighted Emissions Index Monitoring Stations

Core Based Statistical Area	Site Name(s)	2025 Area PWEI*
Dallas-Fort Worth-Arlington	Kaufman	42,991
Houston-Pasadena-The Woodlands	Clinton and Houston Croquet	291,295
San Antonio-New Braunfels	Calaveras Lake	20,165
Beaumont-Port Arthur	Port Arthur West	6,230

PWEI – population weighted emissions index
*PWEI evaluation from Texas Commission on Environmental Quality's 2025 Annual Monitoring Network Plan

Data Requirements Rule (DRR) Requirements

Title 40 CFR § 51.1202 (the DRR) required air agencies to characterize air quality around applicable sources that emitted 2,000 tons per year (tpy) or more of SO_2 in the latest emissions inventory year. TCEQ evaluated the required 2014 emission inventory data to meet the July 1, 2016, notification deadline. TCEQ identified 24 sources for air quality characterization based on 2014 emissions inventory data, including 13 sources that were selected for air quality characterization by ambient air monitoring. To meet the DRR requirement for air quality characterization around those sources, 11 SO_2 source-oriented monitors, located near these 13 sources, were installed and operational by January 1, 2017. Details for TCEQ's DRR SO_2 source evaluation, modeling, and monitoring recommendations are in TCEQ's 2017 AMNP, available upon request.

The Rockdale John D. Harper and San Antonio Gardner Road SO_2 source-oriented monitors were decommissioned based on design values less than 50% of the 2010 one-hour SO_2 NAAQS, as provided by 40 CFR § 51.1203(c)(3). TCEQ's Rockdale John D. Harper SO_2 monitor (and entire site), was decommissioned in 2020, due to the sale/lease of the property. This monitor was eligible for decommission based on a design value less than 50% of the 2010 one-hour SO_2 NAAQS from data collected during the first three-year period of operation. The source near the Rockdale John D. Harper site that required DRR SO_2 air quality characterization was shut down in 2017. The San Antonio Gardner Road SO_2 monitor (and entire site), was decommissioned in March 2023. This monitor was eligible for decommission based on a design value less than 50% of the 2010 one-hour SO_2 NAAQS. The source near the San Antonio Gardner Road SO_2 site that required DRR SO_2 air quality characterization was shut down in late 2018. The remaining TCEQ SO_2 monitors fulfilling DRR monitoring requirements are listed in Table 11.

Table 11: Data Requirements Rule Required SO_2 Monitoring Sites

Core Based Statistical Area	County Name	Air Monitoring Site Name
Amarillo	Potter	Amarillo Xcel El Rancho
Beaumont-Port Arthur	Orange	Orange 1st Street
Beaumont-Port Arthur	Jefferson	Port Arthur West 7th Street Gate 2
Big Spring*	Howard	Big Spring Midway
Borger*	Hutchinson	Borger FM 1559
College Station-Bryan	Robertson	Franklin Oak Grove
Corsicana*	Navarro	Richland Southeast 1220 Road
Longview	Harrison	Hallsville Red Oak Road
Mount Pleasant*	Titus	Cookville FM 4855

*Micropolitan statistical area
FM – farm to market
SO_2 – sulfur dioxide

Particulate Matter

Characteristics

$PM_{2.5}$ and PM_{10} are a complex mixture of particles and liquid droplets that can include acids, salts, organic chemicals, metal, dust, or soil. Both particulate matter fractions can be emitted from a variety of natural and anthropogenic sources. Most ambient $PM_{2.5}$ comes from long range transport and from atmospheric reactions that form $PM_{2.5}$ from gaseous emissions including SO_2, NO_x, and both anthropogenic and biogenic VOCs. Elevated particulate matter can impact air quality locally, such as when soil is disturbed on unpaved roads, or from the source, such as when smoke or dust is transported from out-of-state and international sources. Particulate matter monitoring is generally conducted over dispersed areas and includes monitoring in upwind locations to evaluate incoming particulate matter concentrations.

Particulate monitoring is performed using either discrete sample collection on a filter over 24 hours or continuous collection in one-hour increments. $PM_{2.5}$ speciation is performed by laboratory analysis of a discrete sample collected on a filter over 24 hours. Although the PM_{10} NAAQS is set to be protective of exposures to particles between 2.5 and 10 micrometers in size ($PM_{10-2.5}$), regulatory ambient air monitors measure all particles less than 10 micrometers in size as PM_{10}. In compliance with existing monitoring requirements in 40 CFR Part 58, Appendix D, Section 3, $PM_{10-2.5}$ is monitored at the NCore sites listed in Table 4.

$PM_{2.5}$ Design Values

The 2024 annual $PM_{2.5}$ NAAQS is 9.0 micrograms per cubic meter (µg/m^3). The design value is the annual mean concentration, averaged over three consecutive years. A year meets data completeness requirements when quarterly data capture rates for all four quarters are at least 75 percent. Therefore, if a monitor loses more than 25% of data in one quarter, then the annual $PM_{2.5}$ design value may be invalid for three years, if it fails the additional data substitution tests. The data substitution and completeness requirements, necessary for a valid design value, are listed in 40 CFR Part 50, Appendix N § 4.1.

The 2006 24-hour $PM_{2.5}$ NAAQS is 35 µg/m^3. The design value is the annual 98th percentile concentration, averaged over three consecutive years. Three years of valid annual $PM_{2.5}$ 98th percentile mass concentrations are required for a valid 24-hour $PM_{2.5}$ NAAQS design value. A year meets data completeness requirements when quarterly data completeness for all four quarters are at least 75 percent. Therefore, if a monitor loses more than 25% of data in one quarter, then the 24-hour $PM_{2.5}$ design value may be invalid for that calendar year, if it fails the additional data substitution tests. Details regarding data completeness and calculations are in 40 CFR Part 50, Appendix N § 4.2.

$PM_{2.5}$ Monitoring Requirements

Title 40 CFR Part 58, Appendix D, Section 4.7 requires SLAMS $PM_{2.5}$ monitoring in MSAs with populations of 500,000 or more persons and in MSAs with lower populations if measured $PM_{2.5}$ design values for an MSA equal or exceed 85% of the NAAQS. Specific $PM_{2.5}$ monitoring requirements are listed in Table 12 below, an excerpt of 40 CFR Part 58, Appendix D, Table D-5. Under 40 CFR Part 58, Appendix D, Section 4.7.2, TCEQ must operate continuous $PM_{2.5}$ monitors equal to at least one-half the required number of SLAMS-required sites in each MSA. TCEQ meets and/or exceeds this requirement by operating continuous $PM_{2.5}$ monitors in all Texas MSAs, shown in TCEQ's 2025 AMNP Appendix K, Table 2.

Additionally, 40 CFR Part 58, Appendix D, Section 4.7.3 requires each state to install and operate at least one $PM_{2.5}$ site to monitor for regional background and at least one $PM_{2.5}$ site to monitor regional transport. FYA Appendix A lists monitors meeting the regional background and transport requirements, with a monitoring objective of Upwind Background or Regional Transport, as prescribed by Air Quality System (AQS) transaction formats. Individual $PM_{2.5}$ monitors that are non-FEM/FRM and non-NAAQS comparable but considered acceptable for Air Quality Index use are noted in the FYA Appendix A site list and in TCEQ's 2025 AMNP Appendix K, Table 2. Design criteria, under 40 CFR Part 58, Appendix D, Section 4.7.1(b) requires these $PM_{2.5}$ monitors to be sited to represent area-wide air quality. These monitoring sites are typically found in large, urban homogeneous areas, supporting neighborhood scale.

Table 12: Particulate Matter of 2.5 Micrometers or Less in Diameter Minimum Monitoring Requirements

Metropolitan Statistical Area (MSA) population	Most recent 3-year design value ≥85% of any $PM_{2.5}$ NAAQS	Most recent 3-year design value <85% of any $PM_{2.5}$ NAAQS
>1,000,000	3	2
500,000 to 1,000,000	2	1
50,000 to <500,000	1	0

< – less than
> – greater than
≥ – greater than or equal to
% - percent
NAAQS – National Ambient Air Quality Standards
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Near-Road $PM_{2.5}$ Monitoring Requirements

Title 40 CFR Part 58, Appendix D, Section 4.7.1(b)(2) requires collocating one FRM or FEM $PM_{2.5}$ monitor with one required near-road NO_2 monitor in CBSAs with populations of 1,000,000 or more persons. These sites are located in high traffic corridors where the general public could be exposed to maximum concentrations from mobile sources, creating localized hot spots. The measurements are representative of the air quality in the area immediately around the sites as the traffic counts outside of those high traffic corridors drop off drastically on the surrounding streets. As such, these sites are appropriately designated as micro-scale as they are representative of air quality in a small area from several meters up to 100 meters around the sites. TCEQ meets this requirement with $PM_{2.5}$ monitors at the near-road sites listed below and listed in FYA Appendix A as Near-Road in the Network column.

- DFW CBSA: Fort Worth California Parkway North
- Houston CBSA: Houston North Loop
- San Antonio CBSA: San Antonio Interstate 35
- Austin CBSA: Austin North Interstate 35

Special Considerations for $PM_{2.5}$ NAAQS Data Comparisons

$PM_{2.5}$ measurement data from all eligible monitors are comparable to the 24-hour $PM_{2.5}$ NAAQS. $PM_{2.5}$ measurement data from all eligible monitors that are representative of area-wide air quality are comparable to the annual $PM_{2.5}$ NAAQS. When $PM_{2.5}$ monitoring sites collectively identify a larger region of localized high ambient $PM_{2.5}$ concentrations, such sites would be considered representative of an area-wide location and, therefore, eligible for comparison to the annual $PM_{2.5}$ NAAQS. However, according to 40 CFR § 58.30, $PM_{2.5}$ measurement data from monitors that are not representative of area-wide air quality but rather of relatively unique micro-scale, localized hot spot, or unique middle-scale impact sites, are not eligible for comparison to the annual $PM_{2.5}$ NAAQS but would remain eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS. For example, if a micro- or middle-scale $PM_{2.5}$ monitoring site is adjacent to a unique dominating local $PM_{2.5}$ source, then the $PM_{2.5}$ measurement data from such a site would only be eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS.

PM_{10} Design Values

The 24-hour PM_{10} NAAQS is 150 µg/m^3. The 24-hour PM_{10} standard is attained when the expected number of exceedances per year at each monitoring site is less than or equal to one. In the simplest case, the number of expected exceedances at a site are determined by recording the number of exceedances in each calendar year and then averaging them over the past three calendar years. Three years of PM_{10} monitoring data must meet the minimum 75% completeness per quarter to show attainment, with some exceptions. Therefore, if a monitor loses more than 25% of data in one quarter, then the PM_{10} exceedance assessment may be invalid for three years, if it fails the exceptions. Detailed requirements and exceptions are listed in 40 CFR Part 50, Appendix K.

PM_{10} Monitoring Requirements

TCEQ's PM_{10} network is designed to meet the SLAMS requirements under 40 CFR Part 58, Appendix D, Section 4.6, which provides the minimum number of PM_{10} monitors required in MSAs based on population and available 24-hour concentrations. Modifications from these PM_{10} monitoring requirements must be approved by the EPA Regional Administrator. Compliance with the PM_{10} standard is based on the number of measured exceedances of the 24-hour 150 µg/m^3 standard averaged over three years. Specific PM_{10} monitoring requirements are listed in Table 13 below, and provide an excerpt of 40 CFR Part 58, Appendix D, Table D-4.

Table 13: Particulate Matter of 10 Micrometers or Less in Diameter Minimum Monitoring Requirements

Metropolitan Statistical Area (MSA) Population	PM_{10} monitors required for MSAs with high concentration[1]	PM_{10} monitors required for MSAs with medium concentration[2]	PM_{10} monitors required for MSAs with low concentration[3]
>1,000,000	6-10	4-8	2-4
500,000 to 1,000,000	4-8	2-4	1-2
250,000 to 500,000	3-4	1-2	0-1
100,000 to 250,000	1-2	0-1	0

[1]High Concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding the PM_{10} National Ambient Air Quality Standards (NAAQS) by 20 percent or more.
[2]Medium Concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding 80 percent of the PM_{10} NAAQS.
[3]Low Concentration areas are those for which ambient PM_{10} data show ambient concentrations less than 80 percent of the PM_{10} NAAQS.
PM_{10} – particulate matter of 10 micrometers or less in diameter
> – greater than

Lead

Characteristics

Lead (Pb) is a point-source pollutant with concentrations dropping rapidly with distance from the source. Pb can be released directly into the air as suspended particles. Since the ban of on-road vehicle usage of leaded gasoline in the 1990s, no regional Pb air quality issues have been identified. Pb monitoring is only federally required near large point sources and airports reporting large Pb emissions. Pb monitoring is performed by laboratory analysis of a discrete sample collected on a filter over 24 hours.

Lead Design Values

The current Pb NAAQS is 0.15 µg/m^3 based on a rolling three-month average. A site's Pb design value is considered valid if it encompasses 36 consecutive, valid, three-month means (specifically for a three-year calendar period and the two previous months). A three-month mean is considered valid (and meets data completeness requirements) if the average data capture rates of the three monthly means are at least 75%. Therefore, if a monitor loses more than 25% of data in a three-month period, then the Pb design value may be invalid for 36 months, if the monitor fails both of the data substitution tests. Details regarding the design value requirements and data substitution tests are in 40 CFR Part 50, Appendix R.

Monitoring Requirements

TCEQ's Pb network meets 40 CFR Part 58, Appendix D, Section 4.5 monitoring requirements for Pb. TCEQ fulfills Pb monitoring requirements with total suspended particulate (TSP) Pb monitors. This section requires state agencies to conduct ambient air Pb monitoring near Pb sources that have been shown or are expected to contribute to a maximum ambient air Pb concentration in excess of the standard. Title 40 CFR Part 58, Appendix D, Section 4.5(a) requires a minimum of one source-oriented ambient air Pb monitoring site to measure maximum concentrations near each non-airport facility emitting 0.50 tpy or more of Pb annually, based on either the most recent NEI data or annual EI data submitted to meet state reporting requirements.

Pb Waivers

Under 40 CFR Part 58, Appendix D, Section 4.5(a)(ii), the EPA Regional Administrator may waive the requirement in 40 CFR Part 58, Appendix D, 4.5(a) for monitoring near specific Pb sources with sufficient demonstration that the Pb source will not contribute to a maximum concentration in ambient air greater than 50% of the NAAQS based on historical monitoring data, modeling, or other approved means. All approved waivers must be renewed every five years as part of the network assessment required under 40 CFR Part 58.10(d).

TCEQ submitted a Pb modeling analysis for the Lower Colorado River Authority Fayette Power Plant in the 2020 TCEQ *Texas Five-Year Ambient Monitoring Network Assessment.* The Lower Colorado River Authority Fayette Power Plant 2021, 2022, and 2023 Pb point-source emission data, listed in TCEQ's 2025 AMNP Table 4, does not trigger a requirement for a waiver request. All Texas sources reported Pb emissions below levels that would require monitoring or a Pb waiver request; therefore, no Pb waiver request is requested.

Coastal Texas Area Evaluation

The Coastal Texas Area Evaluation is comprised of four CBSAs including Beaumont, Corpus Christi, Houston, and Victoria. The Coastal Area Evaluation counties and urban areas are shown in Figure 8 below.

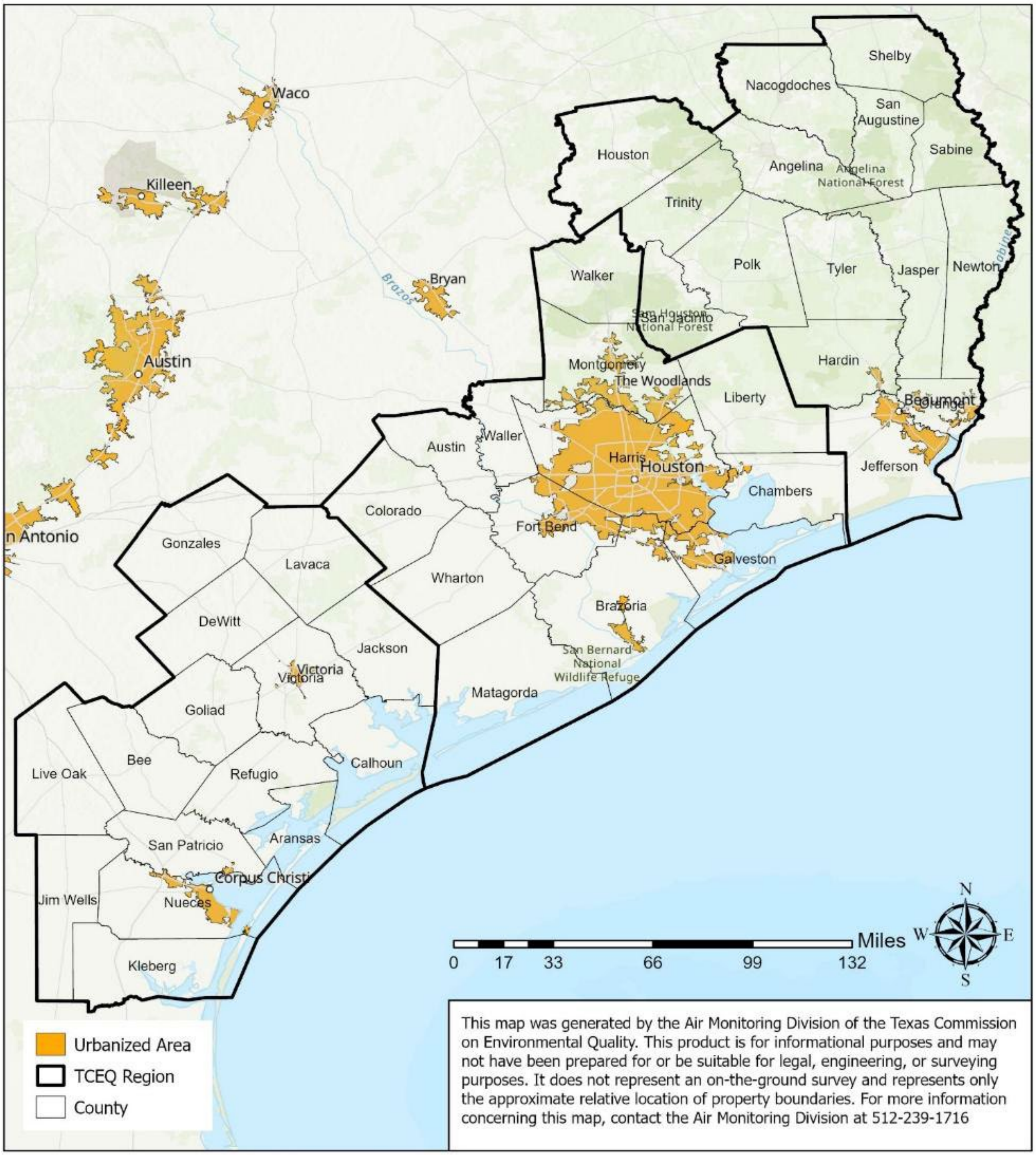


Figure 8: Coastal Texas Area Counties and Urban Areas

Coastal Texas Area Characteristics and Background

Population and Monitoring Requirements

The Coastal Texas area is comprised of three TCEQ Regional Areas: Region 10 Beaumont, Region 12 Houston, and Region 14 Corpus Christi. There are four CBSAs in these TCEQ Regions containing counties inside and outside the CBSAs. TCEQ Regions, CBSAs, and associated counties are summarized below for areas containing ambient air monitors. Details regarding every Coastal Texas county, CBSA, and micropolitan statistical area are detailed in FYA Appendix B.

TCEQ Region 10 Beaumont

- Beaumont CBSA: Hardin, Jefferson, and Orange Counties

TCEQ Region 12 Houston

- Houston CBSA: Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, San Jacinto, and Waller Counties

TCEQ Region 14 Corpus Christi

- Corpus Christi CBSA: Aransas, Nueces, and San Patricio Counties
- Victoria CBSA: Goliad and Victoria Counties
- Kingsville micropolitan statistical area: Kleberg County

The TDC projects that the combined population of the four Coastal Texas area CBSAs will exceed 8.4 million persons in 2025. The 2030 projection estimates a 4% population increase from 2025 in Coastal Texas CBSA's with the largest growth in the Houston area. Table 14 shows the Coastal Texas CBSA population projections. Figure 9, Figure 10, and Figure 11 illustrate the population densities across the Coastal Texas urban areas with active sites and monitors and wind roses. Population density is illustrated by square mile for each area zip code. Population densities were obtained from TDC Population Density in Texas, 2022 data using the 2018-2022 five-year population estimates (latest available data at the time the FYA was drafted).

Table 14: Coastal Texas Area Population Projections

Core Based Statistical Area (CBSA)	2020 Census Count	2025	2030	Change (2020 - 2025)	Change (2025-2030)
Beaumont-Port Arthur	397,565	400,857	403,060	1%	1%
Corpus Christi	445,763	453,300	459,519	2%	1%
Houston-Pasadena-The Woodlands	7,149,642	7,490,416	7,824,951	5%	4%
Victoria	98,331	99,612	100,753	1%	1%
CBSA Totals	8,091,301	8,444,185	8,788,283	4%	4%

Minimum monitoring network design requirements under 40 CFR Part 58, Appendix D are evaluated annually in TCEQ's AMNP based on the latest available census population estimates.

The Beaumont CBSA is required to have the following:

- two O_3 monitors,
- one NO_2 monitor,
- three SO_2 monitors, and
- one $PM_{2.5}$ monitor, and
- zero to one PM_{10} monitor.

The Corpus Christi CBSA is required to have the following:

- two O_3 monitors,
- one $PM_{2.5}$ monitor, and
- zero to one PM_{10} monitor.

The Houston CBSA is required to have the following:

- four O_3 monitors,
- two CO monitors,
- five NO_2 monitors,
- one NO/NO_y monitor,
- three SO_2 monitors,
- eight $PM_{2.5}$ monitors, and
- between four and eight PM_{10} monitors.

The Victoria CBSA is required to have one O_3 monitor.

TCEQ evaluated Coastal Texas 2025 and 2030 population projection data illustrated in Table 3 and Table 14 against current minimum monitoring design requirements. No Coastal Texas CBSA monitoring requirement is expected to increase based solely on the projected 2025 or 2030 population assessment. TCEQ meets and exceeds monitoring requirements with the monitors illustrated in Figure 9, Figure 10, and Figure 11.

Wind Patterns

Coastal Texas area annual average wind speed and direction wind roses from local airport meteorological sensors are illustrated in Figure 9, Figure 10, and Figure 11 with data averaged from 2019 to 2023. Figure 9 wind roses were derived from Houston Intercontinental Airport and Scholes International Airport at Galveston. Figure 10 wind roses were derived from Beaumont Municipal Airport and Orange County Airport. Figure 11 wind roses were derived from Corpus Christi Naval Air Station, Corpus Christi International, and Victoria Regional Airport. Wind data indicate the predominant flow is typically south-southeasterly from the Texas Gulf Coast to the north-northwest. Winds can originate from the North American continent or in the Caribbean Sea or Atlantic Ocean. The coastal area is susceptible to transported pollution due to its location, predominant wind patterns, and flat terrain.

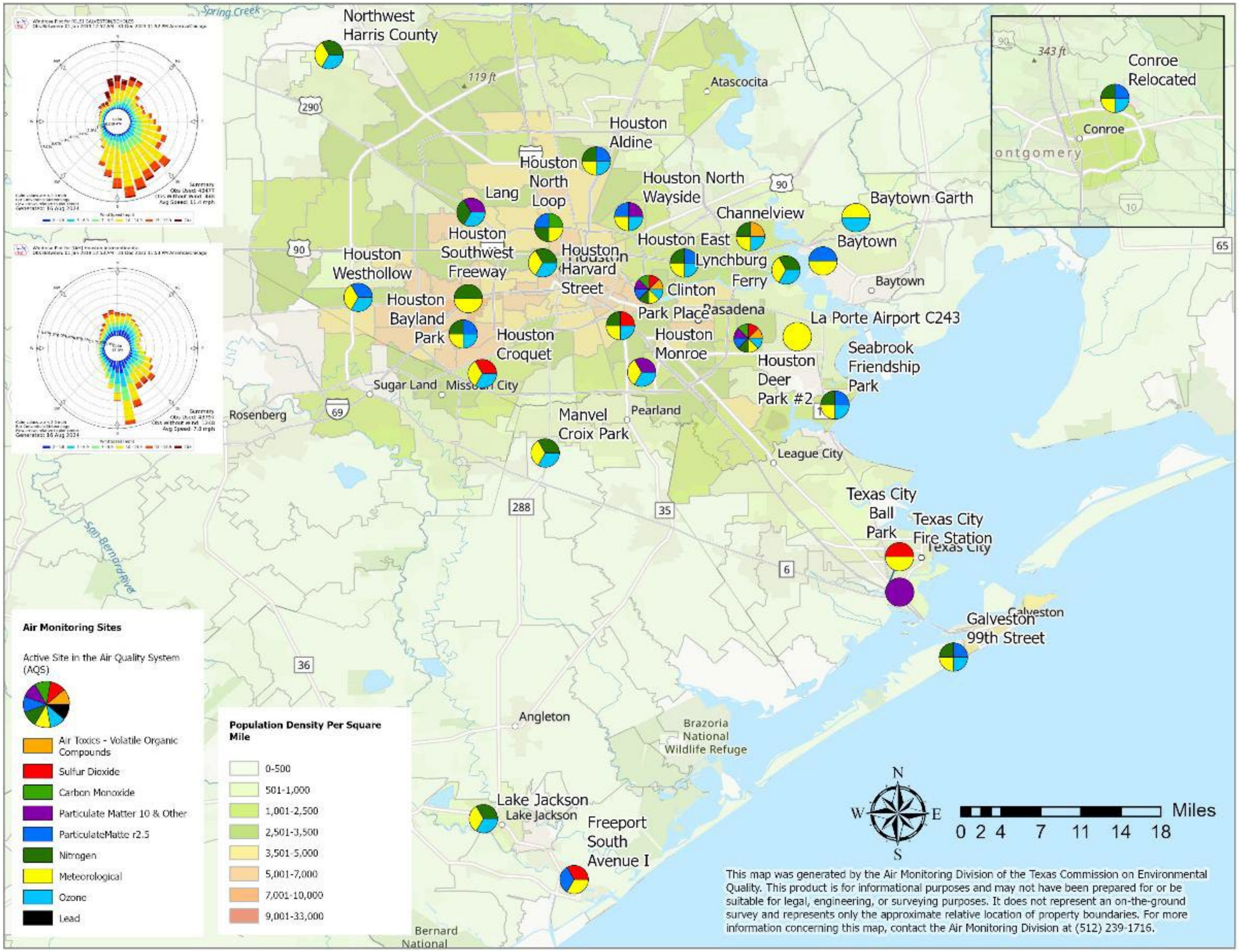


Figure 9: Houston Area Active Sites and Monitors, Population Density, and Wind Roses

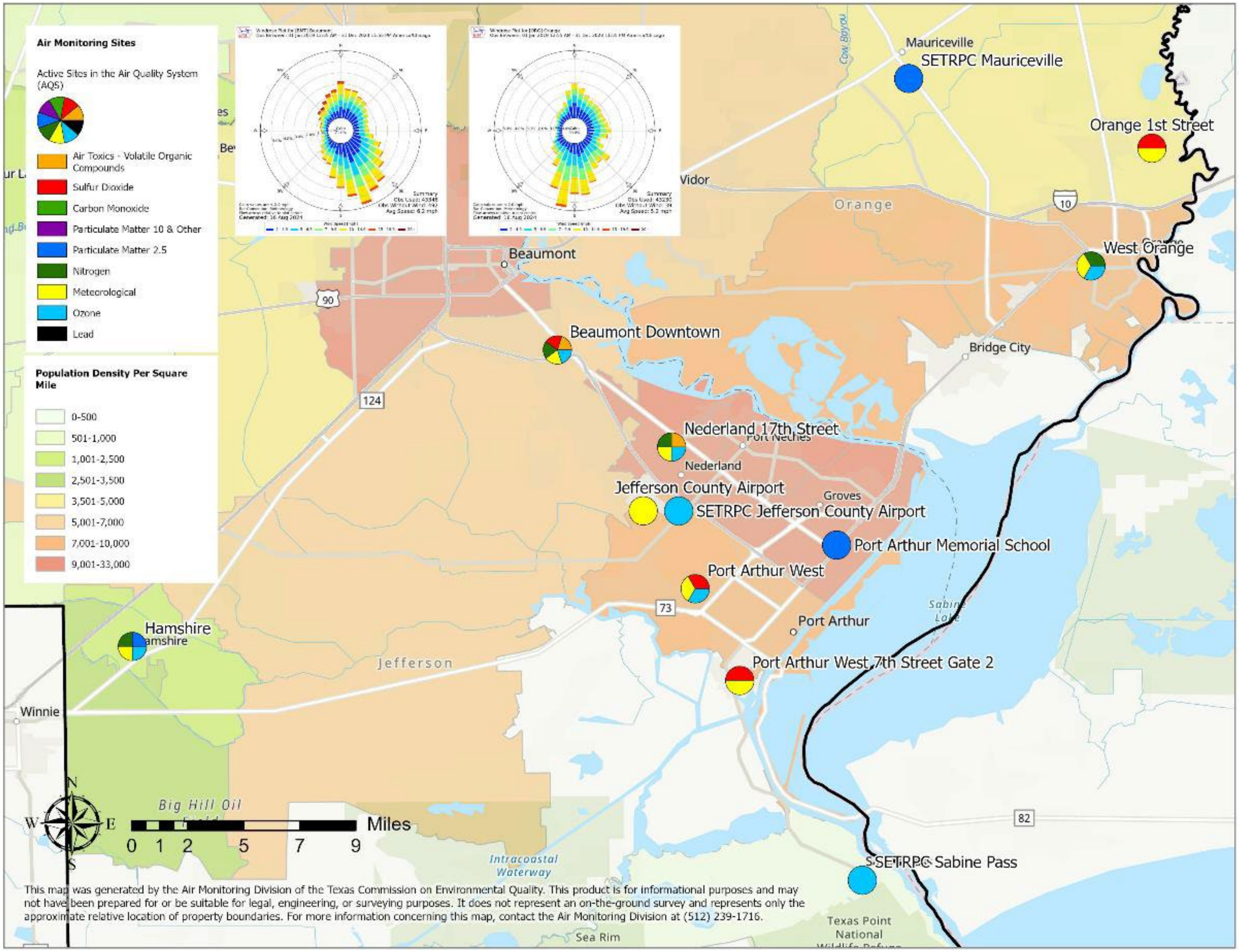


Figure 10: Beaumont Area Active Sites and Monitors, Population Density, and Wind Roses

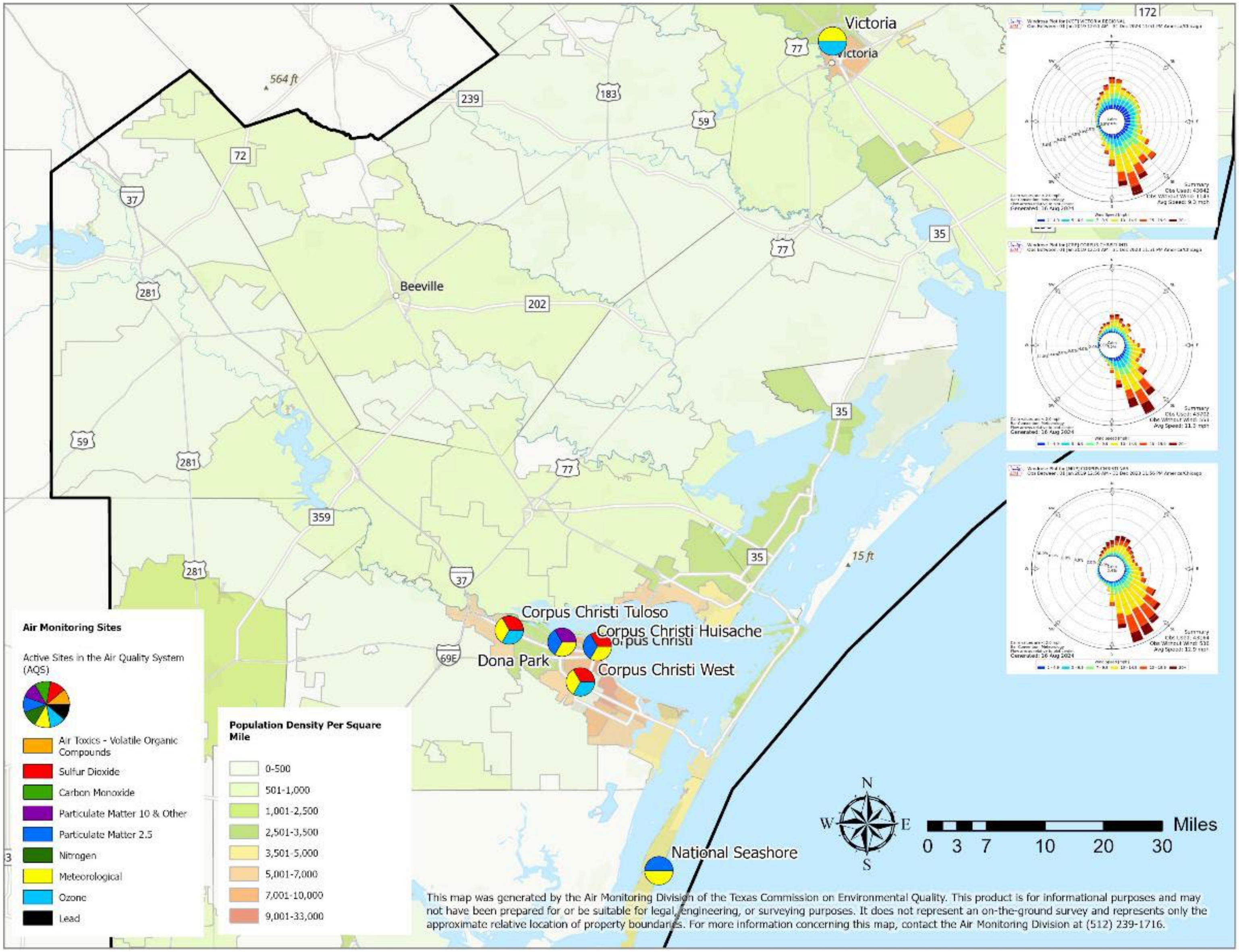


Figure 11: Corpus Christi and Victoria Areas Active Sites and Monitors, Population Density, and Wind Rose

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Coastal Texas EI source totals by pollutant by TCEQ Region are listed in Table 15. Data from EI source categories show the following for the Coastal Texas area:

- The majority of CO is emitted from on-road and non-road mobile sources.
- NO_x emissions are predominately from point sources for the Beaumont and Corpus Christi Regions and from non-road mobile and point sources for the Houston Region.
- Area sources account for the majority of VOC, $PM_{2.5}$, and PM_{10} emissions.
- Point sources are the primary contributors of SO_2 emissions.
- Non-road mobile sources contribute the majority of the total Pb emissions in the Houston and Corpus Christi Regions, while point sources contribute the majority in the Beaumont Region.

This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 15: Coastal Texas Area 2020 Emissions Inventory in Tons Per Year

Area*	Source	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
Region 10 Beaumont	Point	13,800	20,946	18,845	4,582	3,492	15,955	1.08
Region 10 Beaumont	Area	30,976	12,923	22,429	66,375	9,458	207	0.01
Region 10 Beaumont	On-Road Mobile	1,806	7,273	33,365	523	219	25	0.00
Region 10 Beaumont	Non-Road Mobile	2,852	9,396	32,000	325	307	170	0.35
Region 12 Houston	Point	24,897	34,729	30,176	9,696	8,214	32,511	0.64
Region 12 Houston	Area	112,989	14,331	40,405	129,326	20,854	1,151	0.05
Region 12 Houston	On-Road Mobile	11,102	27,517	204,442	3,255	998	162	0.00
Region 12 Houston	Non-Road Mobile	13,792	40,723	233,254	1,959	1,857	776	2.40
Region 14 Corpus Christi	Point	7,903	19,766	16,271	2,850	2,057	10,148	0.16
Region 14 Corpus Christi	Area	38,928	11,017	11,783	63,214	8,822	281	0.00
Region 14 Corpus Christi	On-Road Mobile	1,755	7,773	36,160	599	242	27	0.00
Region 14 Corpus Christi	Non-Road Mobile	4,449	10,275	39,038	407	388	180	0.45

*Appendix C details the counties included for each area.
CO – carbon monoxide
NO_x – oxides of nitrogen
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
PM_{10} - particulate matter of 10 micrometers or less in diameter
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

The Coastal Texas area has historically been affected by elevated $PM_{2.5}$ concentrations from long-range transport and wind flow patterns, as supported by speciation data, satellite imagery, and back trajectories. Smoke from North and Central America agricultural burning impacts the Coastal Texas area several times throughout the year, primarily in the spring. Dust from Africa typically impacts the Coastal Texas area three to six times each summer. Smoke is generally associated with abnormally high organic carbon concentrations. Smoke from agricultural burning affects the Coastal Texas area mainly from April to early June each year when the winds bring in air from eastern Mexico and Central America. Controlled burns, haze, and smoke accumulated from wildfires in the United States and Canada (also known as continental haze) are most common from May through October and often include high O_3 background levels. Long-range transport from other events also impacts the Coastal Texas area, including wildfires and dust from storms in the West Texas-New Mexico-Northern Mexico area. These smoke and dust events can impact $PM_{2.5}$ concentrations, and smoke events can also contribute to O_3 formation. Detailed information about these natural events and associated TCEQ particulate matter exceptional event demonstrations are available on the TCEQ webpage Exceptional Event Demonstrations for Particulate Matter - TCEQ.

Regional Air Quality and Attainment Status

Regional air quality history and current status were evaluated to determine monitoring needs, including the continued need for monitoring during maintenance periods after an area has met all air quality standards. As of January 1, 2025, the Corpus Christi, Victoria, and Beaumont-Port Arthur areas are designated attainment/unclassifiable for all current NAAQS. The Houston area counties of Harris, Galveston, Brazoria, Chambers, Fort Bend, Liberty, Montgomery, and Waller are designated as severe nonattainment for the 2008 eight-hour O_3 NAAQS. The Houston area counties of Harris, Galveston, Brazoria, Chambers, Fort Bend, and Montgomery are also designated as serious nonattainment for the 2015 eight-hour O_3 NAAQS. See FYA Appendix D for Houston area information on PAMS enhanced monitoring that supports O_3 precursor analysis and modeling. The Houston area is designated attainment/unclassifiable for all other current NAAQS. Details on the Coastal Texas area's current and historical air quality designations for the six criteria pollutants are detailed on TCEQ's SIP webpage.

Coastal Monitoring Network Evaluation

Ozone

The O_3 network in the Coastal Texas area fulfills SLAMS requirements for population and O_3 design values, and NCore and PAMS requirements. Figure 9, Figure 10, and Figure 11 show the area active O_3 monitors at sites with a light blue section. Appendix A lists active and recently activated O_3 monitors, locations, monitoring objectives, and associated spatial scales.

Houston Area

Network History and Current Status

Houston area O_3 monitoring began in the early 1970s with deployment of the Clinton, Houston East, and Houston Aldine monitors. Through the 1990s, the O_3 monitoring network expanded within the urban core and to the more populated suburban areas outside of Houston to meet evolving federal monitoring requirements and to assist in understanding the area's photochemical characteristics. Houston area O_3 monitors provide near real-time data to the public and allow for O_3 trends assessment.

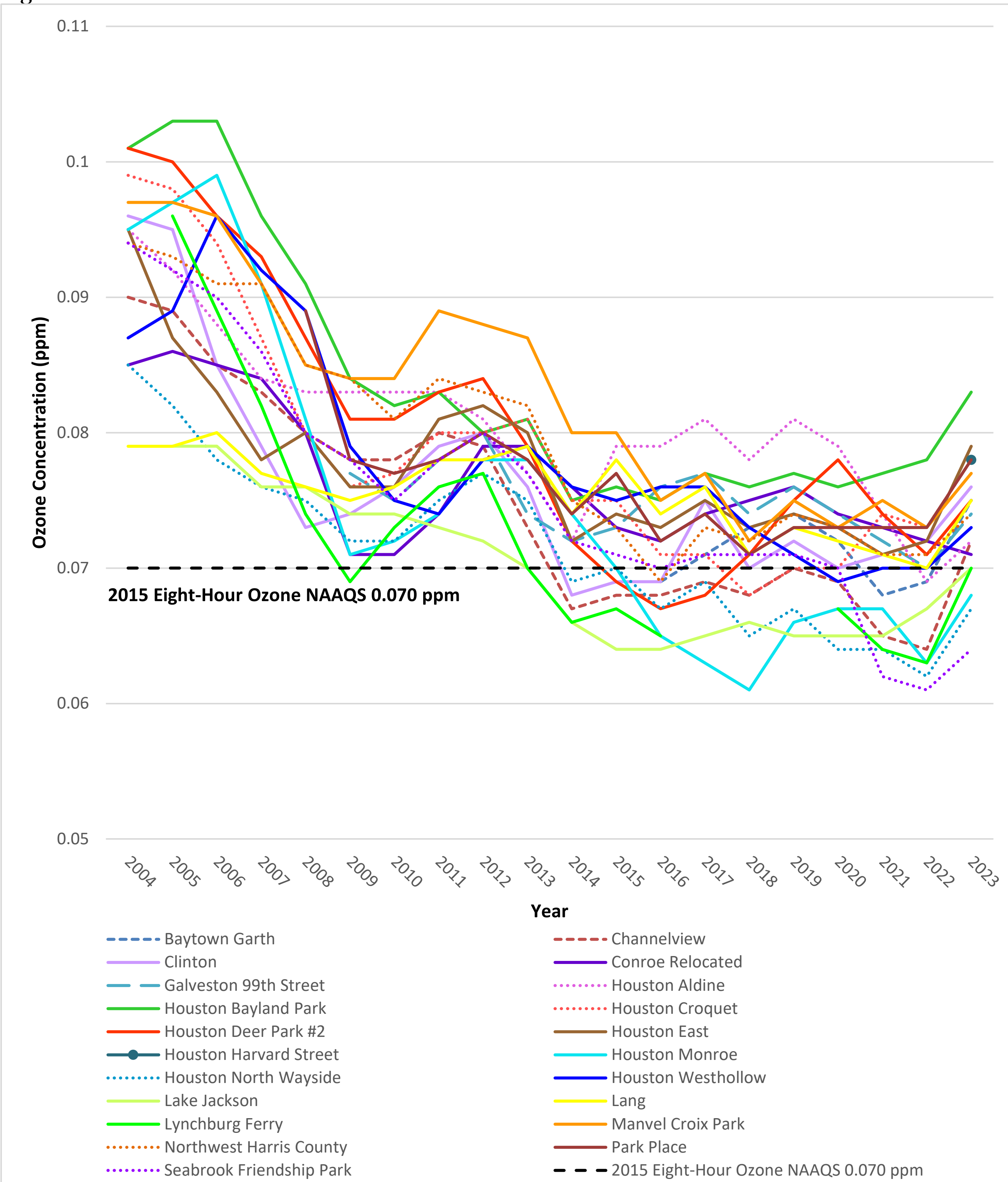
Several Houston area O_3 network changes occurred since the 2020 FYA. A special purpose O_3 monitor was activated in January 2021 at the new Houston Harvard Street site to improve central Houston spatial coverage and provide data to support trend analysis and modeling. The Houston Harvard Street site replaced the Houston Texas Avenue site that was deactivated in 2016 because the location no longer met siting criteria requirements due to adjacent building construction. The Baytown Garth air monitoring site and O_3 monitor were relocated less than one mile in September 2023, with no change to site name or AQS identification number, due to the property owner revoking the site usage agreement for planned property sale. The Baytown Garth relocation did not cause any significant data loss.

Federal standards require a minimum of four Houston MSA O_3 monitors based on population and current design values as of January 1, 2025. TCEQ greatly exceeds federal requirements with 21 O_3 monitors. The quantity of monitors and spatial distribution of the Houston O_3 network provides valuable data for evaluating the area's regional air quality concerns, trends assessment, forecasting daily air quality conditions, and informing regulatory decisions.

Design Values and Trends

Houston area eight-hour O3 design values have decreased slightly over the last ten years with some recent fluctuation due to above average Coastal Texas area temperatures and associated weather conditions. Figure 12 shows the Houston area O3 design value trends from 2004 through 2023 compared against the 2015 eight-hour O3 NAAQS of 0.070 ppm. The Houston Harvard O3 monitor, activated in 2021, obtained a valid three-year design value in 2023, represented with a single blue-green dot in

Figure 12.



- number
NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 12: Eight-Hour Ozone Design Value Trends in the Houston Area, 2004-2023

Network Evaluation

Table 16 shows how each Houston area O_3 monitor was evaluated using the scoring system described in the Evaluation Methods section. The Houston Deer Park #2 monitor satisfies the requirements for O_3 monitoring at a NCore and PAMS site as well as supporting minimum monitoring requirements, while the Channelview, Houston Aldine, and Houston Bayland Park monitors also support minimum monitoring requirements. The Channelview, Clinton, Conroe Relocated, Galveston 99th Street, Houston Aldine, and Northwest Harris County monitors support the PAMS enhanced monitoring plan. The remaining area O_3 monitors are critical due to current design values and spatial coverage. Based on these scores and the current spatial coverage, no changes to the Houston area O_3 network are recommended at this time.

Table 16: Houston Area Ozone Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Baytown Garth	1	4	2	2	1	10	critical
Channelview	4	4	2	4	1	15	critical
Clinton	1	4	3	4	1	13	critical
Conroe Relocated	1	4	2	4	1	12	critical
Galveston 99th Street	1	4	2	4	1	12	critical
Houston Aldine	4	4	2	4	1	15	critical
Houston Bayland Park	4	4	3	4	1	16	critical
Houston Croquet	1	4	2	4	1	12	critical
Houston Deer Park #2	4	4	2	4	1	15	critical
Houston East	1	4	2	4	1	12	critical
Houston Harvard Street	1	4	2	1	1	9	critical
Houston Monroe	1	4	2	4	1	12	critical
Houston North Wayside	1	4	2	4	1	12	critical
Houston Westhollow	1	4	2	4	1	12	critical
Lake Jackson	1	4	2	4	1	12	critical
Lang	1	4	2	4	1	12	critical

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Lynchburg Ferry	1	4	2	4	1	12	critical
Manvel Croix Park	1	4	2	4	1	12	critical
Northwest Harris County	1	4	2	4	1	12	critical
Park Place	1	4	2	4	1	12	critical
Seabrook Friendship Park	1	4	1	4	1	11	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
- number
NAAQS – National Ambient Air Quality Standards

Beaumont Area

Network History and Current Status

Like the Houston area, Beaumont area O_3 monitoring also began in the early 1970s and increased to meet revised federal standards and to provide data for evaluating maximum O_3 precursor emissions, maximum O_3 concentrations, regional transport, and background concentrations. Beaumont area O_3 monitors provide near real-time data to the public and allow for O_3 trends assessment.

One change to the O_3 monitoring network occurred in the Beaumont area since the 2020 FYA. The Nederland High School air monitoring site and O_3 monitor were temporarily deactivated for relocation in November 2021 due to the property owner revoking the site usage agreement for building expansion. The Nederland High School air monitoring site was relocated less than one mile to the Nederland 17th Street site in May 2022 with no change to AQS identification number. Data loss from the temporary deactivation for relocation disrupted the Nederland 17th Street O_3 design value for 2021-2023, and a valid design value is expected with 2024 certified data.

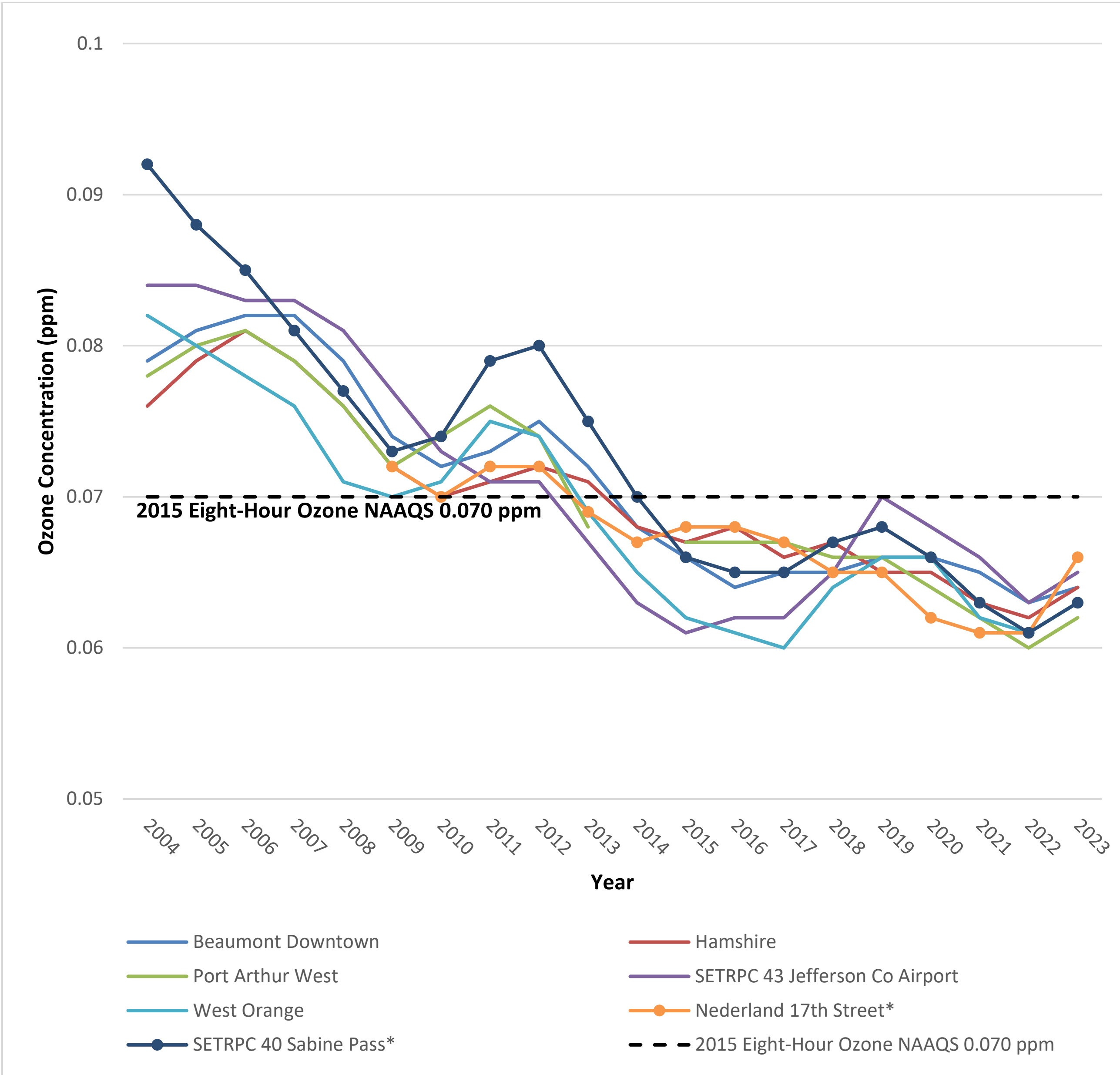
Federal standards require two O_3 monitors in the Beaumont MSA based on population and current design values as of January 1, 2025. TCEQ exceeds requirements with seven monitors, four located within the urban core in publicly frequented areas and three sited to measure background concentrations and O_3 transported from other urban areas. While the number of O_3 monitors exceeds area federal requirements, the spatial distribution of the network provides valuable data for evaluating background concentrations and the impact of regional transport.

Design Values and Trends

The Beaumont area eight-hour O_3 design values have declined since the early 2000's with design values below the 2015 eight-hour O_3 NAAQS of 0.070 ppm since 2014. Given coastal predominant wind patterns from the south, design values at the Southeast Texas Regional Planning Commission (SETRPC) 40 Sabine Pass site, located along the coastline, suggest that high background levels, wind flow reversals, and lower air mixing heights contribute to area O_3 concentrations. Figure 13 shows the O_3

design value trends in the Beaumont area from 2004 through 2023. Nederland 17th Street O_3 design values were incomplete for 2022 to 2023, since the site was temporarily inactive during the relocation, and the invalid design values for those years are included in Figure 13 for trends comparison. The SETRPC 40 Sabine Pass monitor experienced data loss due to low quality assurance resulting in an invalid design value for 2021 and 2022. The SETRPC 40 Sabine Pass invalid design value data are also included in Figure 13 for trends comparison. The Hamshire monitor experienced data loss due to low quality assurance resulting in an invalid design value for 2023, included in Figure 13 for trends comparison.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations. Design value determinations are summarized in the FYA *Pollutants* section. The valid data, surrounding the data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Nederland 17th Street design value not valid for 2022 to 2023; SETRPC 40 Sabine Pass design value not valid for 2021 and 2022, Hamshire design value not valid for 2023
NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 13: Eight-Hour Ozone Design Value Trends in the Beaumont Area, 2004-2023

Network Evaluation

Table 17 shows how each Beaumont area O_3 monitor was evaluated using the scoring system described in the Evaluation Methods section. The Nederland 17th Street, Beaumont Downtown, and SETRPC 40 Sabine Pass monitors support the PAMS network, and the Nederland 17th Street and Hamshire monitors fulfill minimum O_3 monitoring requirements based on area population and design values. The remaining area O_3 monitors are critical due to current design values. Based on these scores and the current spatial coverage, no changes to the Beaumont area O_3 network are recommended at this time.

Table 17: Beaumont Area Ozone Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Beaumont Downtown	1	4	2	4	1	12	critical
Hamshire	4	NA	2	4	1	11	critical
Nederland 17th Street (previously Nederland High School)	4	NA	2	4	1	11	critical
Port Arthur West	1	4	2	3	1	11	critical
SETRPC 40 Sabine Pass	1	4	1	4	1	11	critical
SETRPC 43 Jefferson Co Airport	1	4	2	4	1	12	critical
West Orange	1	4	2	4	1	12	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Corpus Christi and Victoria

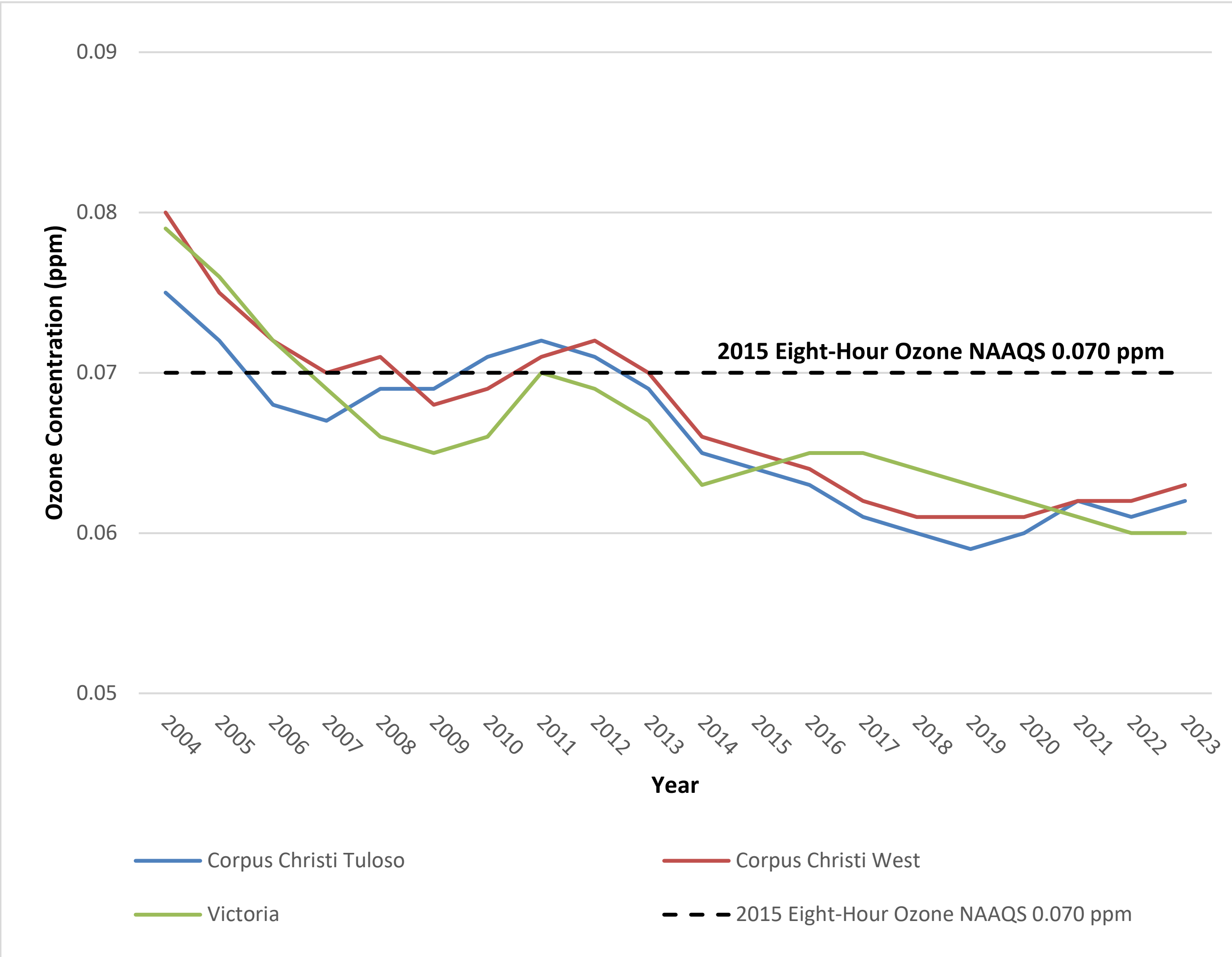
Network History and Current Status

As in other coastal cities, Corpus Christi O_3 monitoring began in the early 1970s to assess the influence of O_3 precursor emissions from industrial sources on O_3 formation in the area and to evaluate populated area concentrations. In the late 1980s, an O_3 monitor was added in Victoria to evaluate ambient O_3 concentrations likely affected by industrial source precursor emissions. Area O_3 monitors provide near real-time data to the public and allow for O_3 trends assessment. Since the 2020 FYA, TCEQ has made no changes to the O_3 monitoring networks in the Corpus Christi or Victoria MSAs.

Federal standards require two regulatory O_3 monitors in the Corpus Christi MSA and one regulatory O_3 monitor in the Victoria MSA based on population and current design values as of January 1, 2025. TCEQ has two sites in Corpus Christi providing ambient concentration data in publicly frequented areas likely impacted by maximum O_3 concentrations and one in Victoria, representative of population exposure.

Design Values and Trends

Consistent with the rest of the Coastal Texas area, eight-hour O_3 design value trends in Corpus Christi and Victoria show a slight decline over the last ten years and remain below the 2015 eight-hour O_3 NAAQS as shown in Figure 14. Sites in Corpus Christi are reporting near background O_3 levels (the amount of O_3 due to distant sources or natural processes) and show similar design values. Victoria O_3 levels have continually decreased from nonattainment levels in 2000 to 0.060 ppm in 2023.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 14: Eight-Hour Ozone Design Value Trends in the Corpus Christi and Victoria Areas, 2004-2023

Network Evaluation

Table 18 shows how each Corpus Christi and Victoria area O_3 monitor were evaluated using the scoring system described in the Evaluation Methods section. The Corpus Christi and Victoria O_3 monitors meet regulatory requirements based on area population and design value and were given an automatic “critical” Assessment Value. The monitor locations and spatial coverage, the different monitoring objectives, and historical O_3 trends data make each monitor valuable. Based on these scores, no changes to the area O_3 network are recommended at this time.

Table 18: Corpus Christi and Victoria Ozone Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Corpus Christi Tuloso	4	4	2	4	1	15	critical
Corpus Christi West	4	4	2	4	1	15	critical
Victoria	4	4	2	4	1	15	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Carbon Monoxide

The CO network in the Coastal Texas area includes ambient CO and high-sensitivity CO monitors that fulfill requirements for NCore and near-road programs in the Houston area. The PAMS CO monitoring requirement was removed in 2015. CO monitoring is not currently required in the Beaumont, Corpus Christi, or Victoria areas. There are no CO monitors and no changes in the Beaumont, Corpus Christi, or Victoria area. The Corpus Christi and Victoria areas are not discussed further in this section. Figure 15 shows the Coastal Texas area active CO monitors with green squares and the 2022 CO point sources with blue circles. Appendix A lists active CO monitors, locations, monitoring objectives, and associated spatial scales.

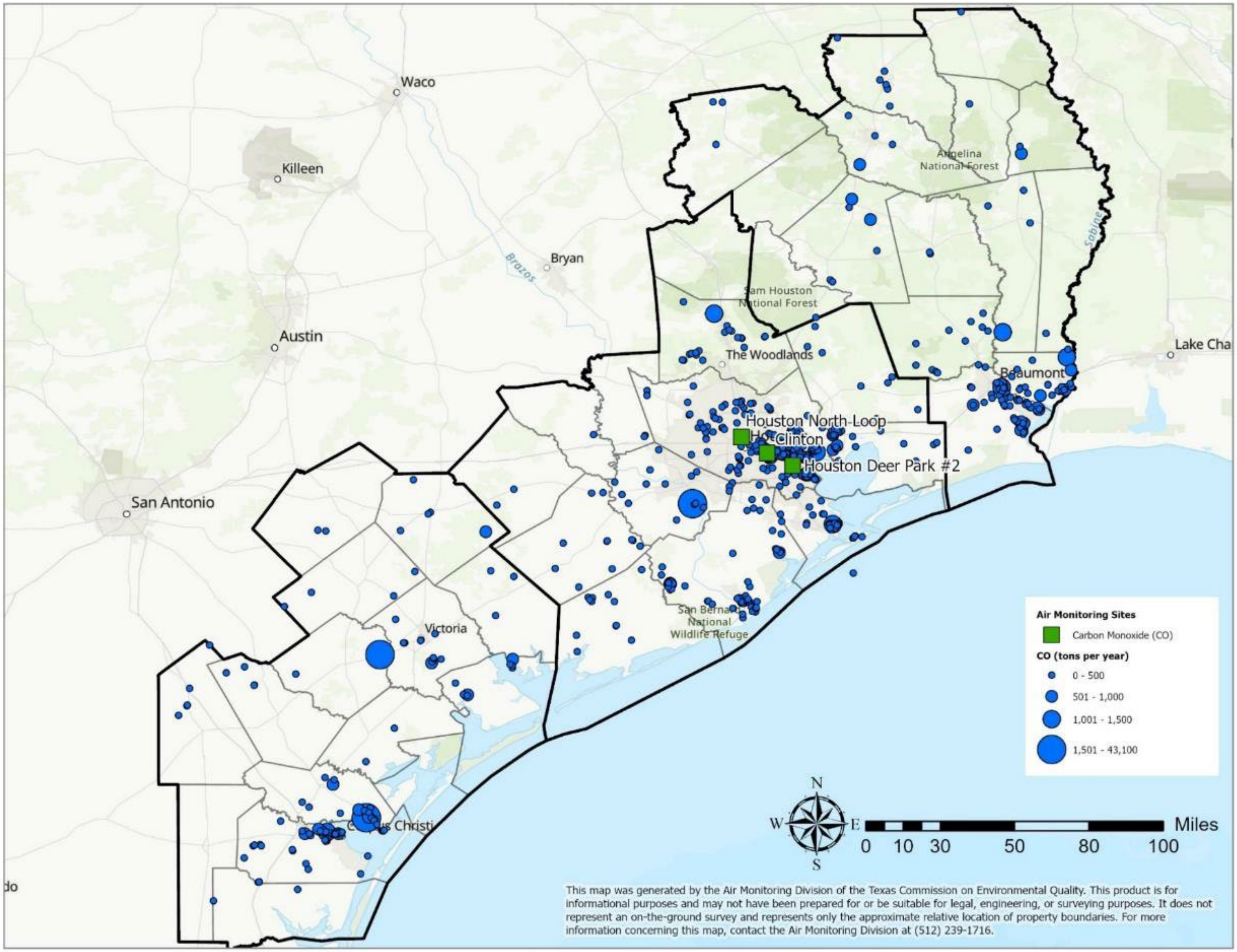


Figure 15: Coastal Texas Area Carbon Monoxide (CO) Monitors and 2022 Point Sources

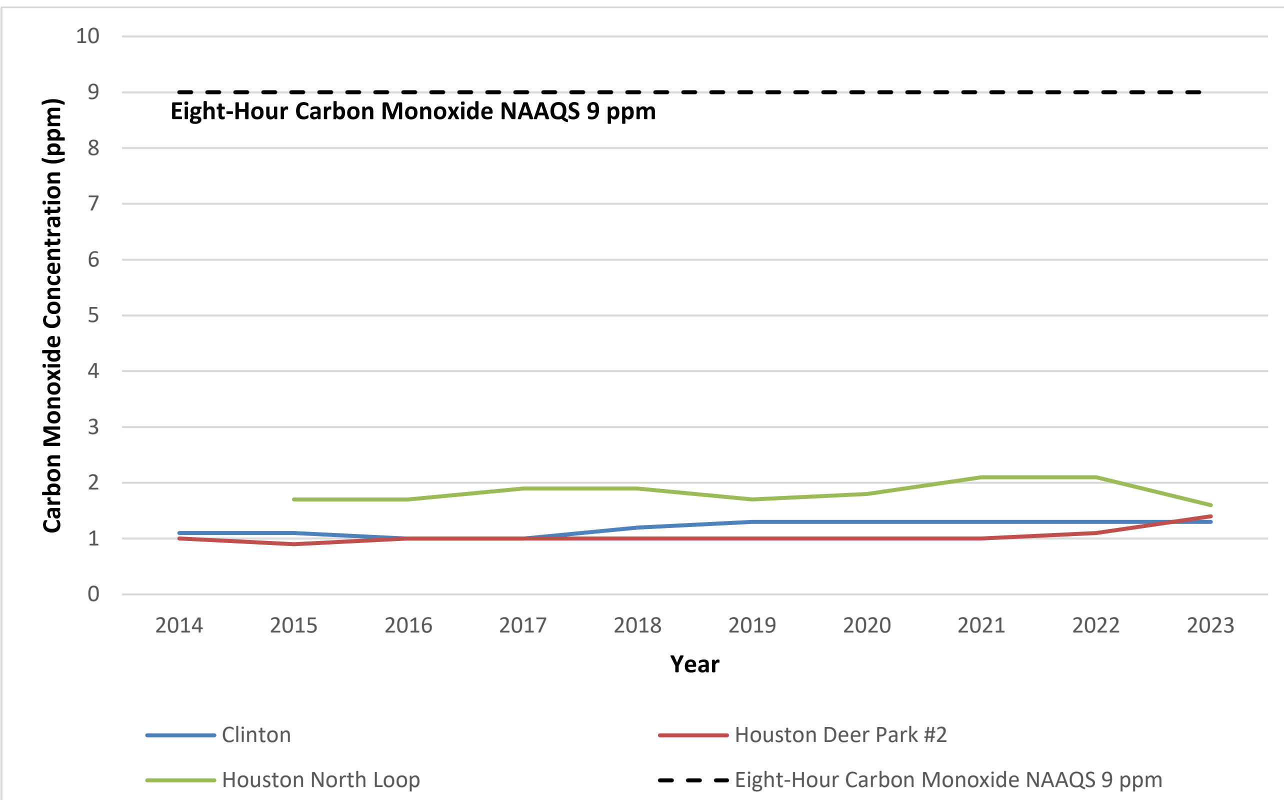
Houston Area

Network History and Current Status

Houston area CO monitoring began in the late 1970s with the deployment of the Clinton monitor. The network expanded in 2010 with a high sensitivity CO monitor at Houston Deer Park #2 to fulfill PAMS and NCore requirements. A CO monitor was deployed at the Houston North Loop site in April 2015 to fulfill the near-road CO monitoring requirement. Since the 2020 FYA, no Houston area CO network changes have occurred. Federal standards require a minimum of two Houston MSA CO monitors for NCore and near-road requirements as of January 1, 2025. Currently, CO is monitored at three sites illustrated in Figure 15 above.

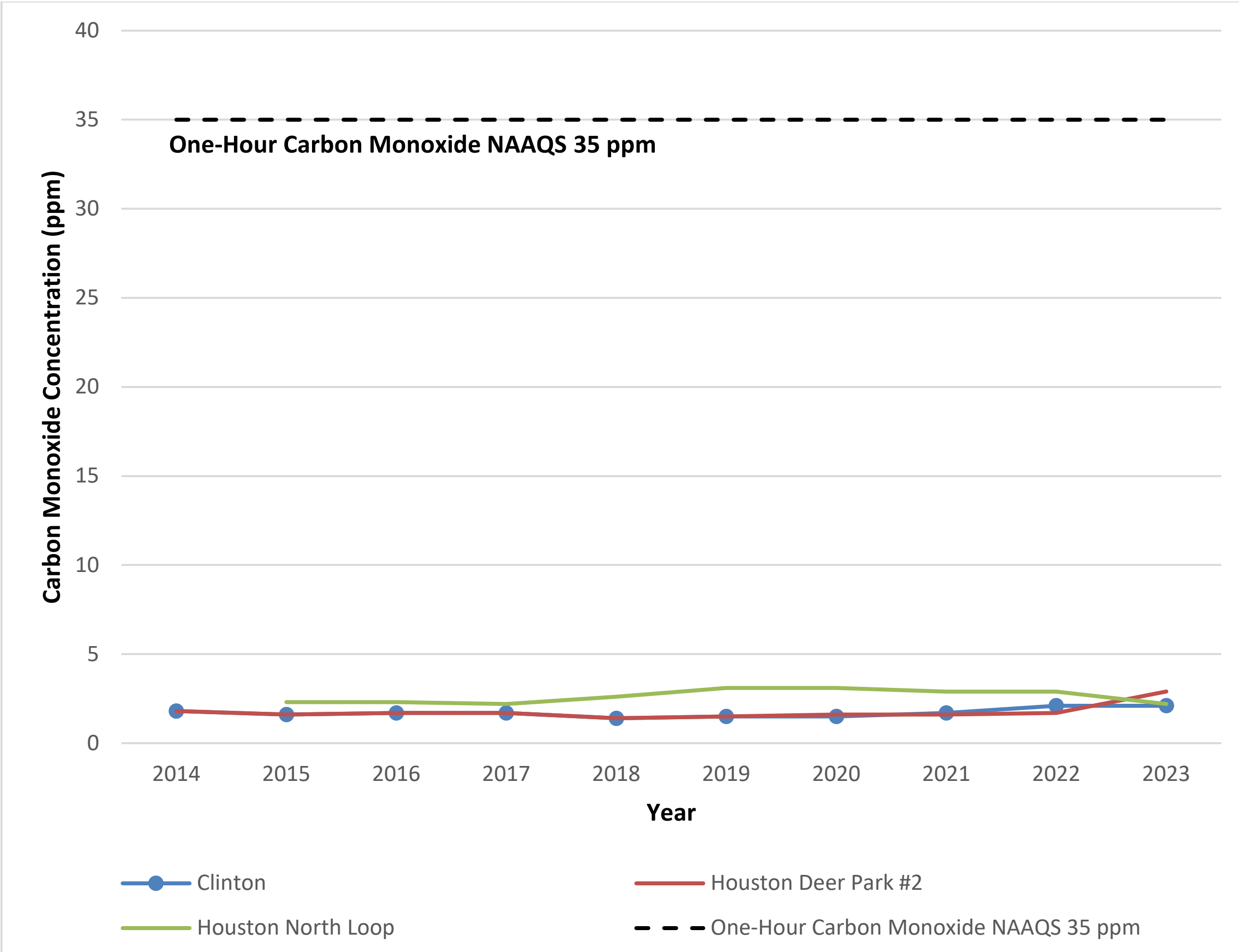
Design Values and Trends

Houston area CO design values remain below 20% of the eight-hour NAAQS of 9 ppm and 10% of the one-hour NAAQS of 35 ppm as shown in Figure 16 and Figure 17 below.



- number
NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 16: Houston Area Eight-Hour Carbon Monoxide Design Value Trends, 2014-2023



- number
NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 17: Houston Area One-Hour Carbon Monoxide Design Value Trends, 2014-2023

Network Evaluation

Table 19 shows how each CO monitor in the Houston area was evaluated using the scoring system described in the Evaluation Methods section. The Houston Deer Park #2 monitor satisfies the requirement for monitoring CO at an NCore site while the Houston North Loop monitor satisfies the Houston area near-road requirement. The remaining Clinton CO monitor provides data useful in enhanced O_3 precursor monitoring important to understanding the area's O_3 formation and for evaluating wildfire impacts for O_3 exceptional events. No changes to the Houston area CO network are recommended at this time.

Table 19: Houston Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Clinton**	1	1	3	4	1	10	medium
Houston Deer Park #2**	4	1	3	3	1	12	critical
Houston North Loop	4	1	2	2	3	12	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic high assessment value.
**high-sensitivity CO monitor
NAAQS – National Ambient Air Quality Standards

Beaumont Area

Network History, Trends, and Network Evaluation

Beaumont area CO monitoring began in 2006 to monitor CO as a PAMS network O_3 precursor. The Nederland High School CO monitor, no longer required for PAMS, was decommissioned in 2018 due to low measured CO concentrations. As of January 1, 2025, no CO monitoring requirements apply in the Beaumont area; therefore, no CO monitors are located there. No Beaumont area network changes are recommended at this time due to the improved Beaumont O_3 concentrations and historic CO design values well below both the one-hour and eight-hour CO NAAQS.

Oxides of Nitrogen

The NO_x network in the Coastal Texas area includes NO, NO_x, NO_2 (direct), and NO_y monitoring and is designed to meet NO_2 area-wide, Regional Administrator 40 (RA-40), near-road, PAMS (with NO_2 direct monitors), and NCore (with NO_y monitors) requirements. NO_2 monitoring is not required or performed in the Corpus Christi or Victoria areas and is not discussed in this section. Figure 18 shows the Coastal Texas area active NO_x, NO_2 (direct), and NO_y monitors with green squares and the NO_x 2022 point sources with blue circles. Sites with active NO_y monitors detailed in Figure 18 coincide with NO_x or NO_2 monitors and are not differentiated on the map. Appendix A lists active NO_x, NO_2, and NO_y monitors, locations, monitoring objectives, and associated spatial scales.

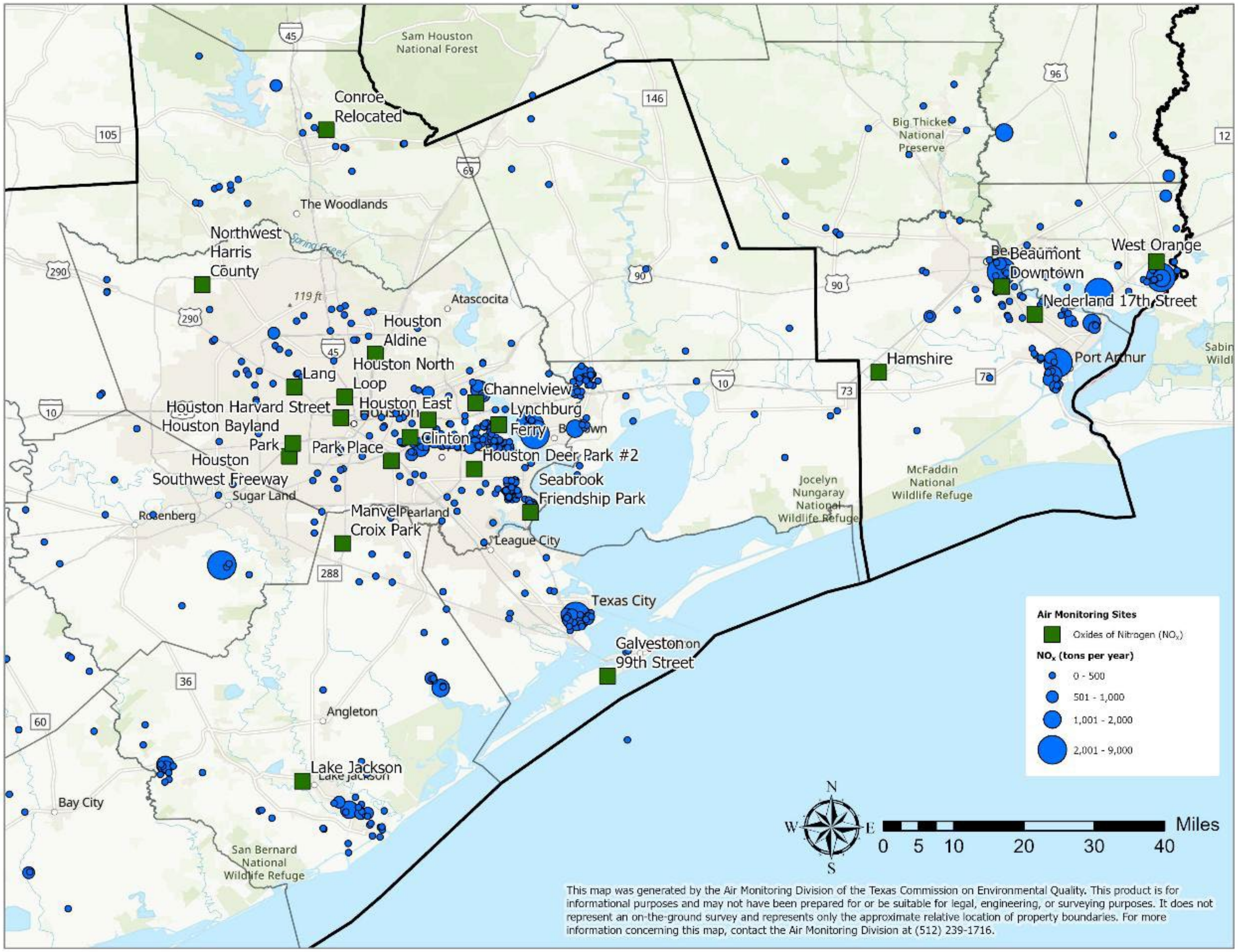


Figure 18: Coastal Texas Area Oxides of Nitrogen Monitors and 2022 Point Sources

Houston Area

Network History and Current Status

Houston area NO_x monitoring began in the mid-1980s with monitor deployments to the Channelview, Deer Park, Seabrook, and Texas City areas. Significant expansion of the NO_x monitoring network occurred in the late 1990s and early 2000s in response to new federal PAMS requirements and the need to improve understanding of O_3 formation and O_3 precursor transport in the Houston O_3 nonattainment area. In 2000, an NO_y monitor was deployed to Houston Aldine for PAMS and in late 2010 at Houston Deer Park #2 to meet NCore and PAMS requirements. In 2014 and 2015, NO_x monitors were added to Houston Southwest Freeway and Houston North Loop to fulfill NO_2 near-road requirements. An NO_2 (direct) monitor replaced the NO_x monitor at Houston Deer Park #2 to fulfill new PAMS requirements in March 2019. The distribution of the NO_x monitoring network in the Houston area provides valuable information to evaluate the effectiveness of NO_x control strategies, to assist in photochemical model performance in predicting O_3 formation and provides information on the spatial and diurnal variability of O_3 precursor emissions.

Since the last FYA, one Houston area network change occurred. A special purpose NO_X monitor was activated in January 2021 at the new Houston Harvard Street site to improve central Houston spatial coverage and provide data to support trend analysis and modeling. The Houston Harvard Street site replaced the Houston Texas Avenue site that was deactivated in 2016 because the monitor no longer met siting criteria due to adjacent building construction.

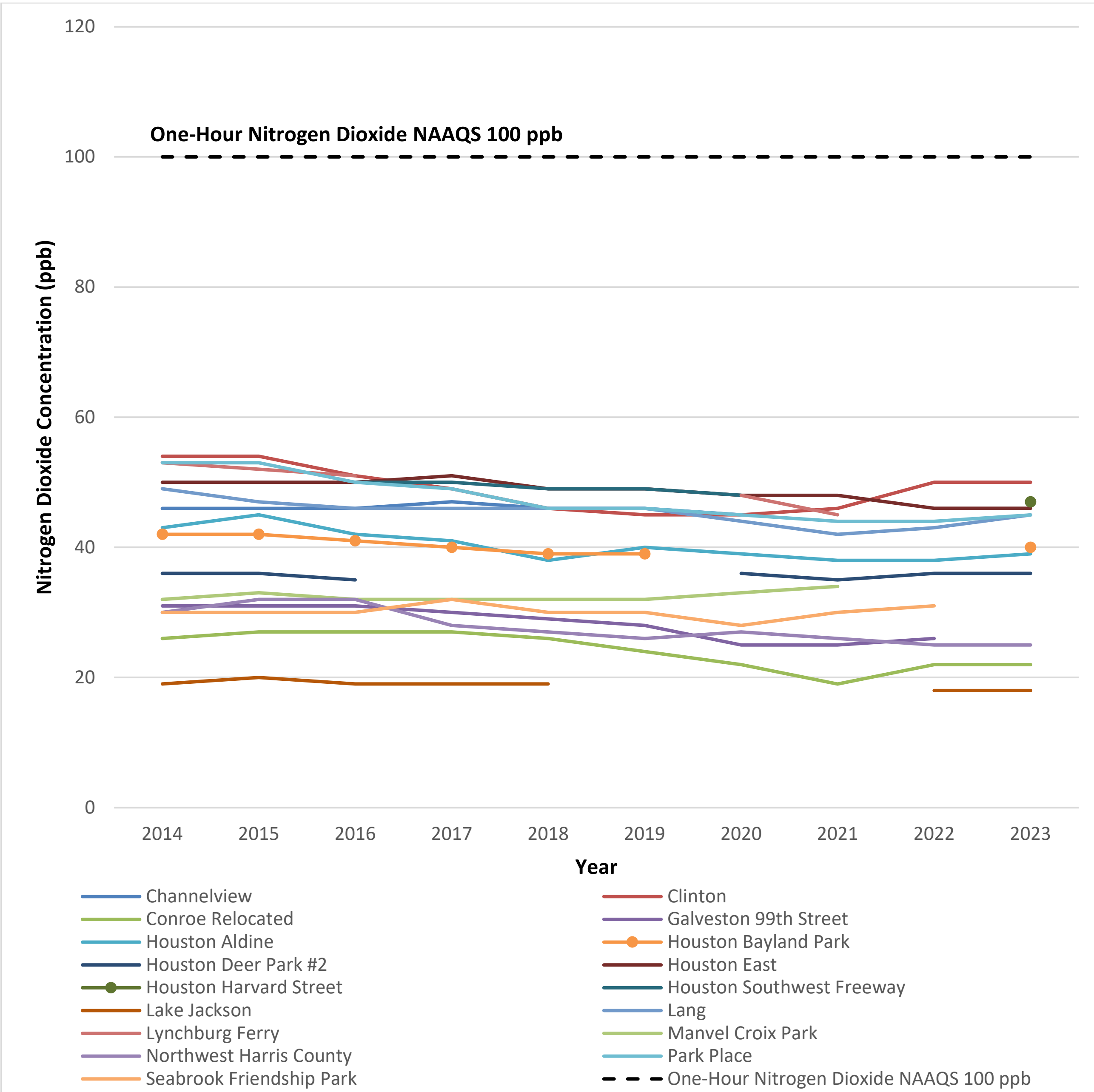
Federal standards require a minimum of five NO_X or NO_2 (direct) monitors and one NO_y monitor to satisfy area-wide, RA-40, near-road, PAMS, and NCore monitoring requirements, as of January 1, 2025. TCEQ exceeds requirements with 18 NO_X and NO_2 (direct) monitors, and two NO_y monitors. Monitoring objectives related to these federal requirements include collecting ambient data in populated areas, measuring O_3 precursor emissions impacts, characterizing upwind and background concentrations, and characterizing downwind transport of O_3 precursors.

Design Values and Trends

Houston area one-hour NO_2 design values and annual NO_2 concentrations have been stable over the past ten years. All Houston area monitors remain well below the one-hour and annual NO_2 NAAQS. Houston Harvard Street, activated in January 2021, achieved an annual NO_2 design value in 2021 and a (three-year) one-hour NO_2 design value in 2023 Figure 19 and Figure 20 show the valid design value trends in the Houston area from 2014 to 2023.

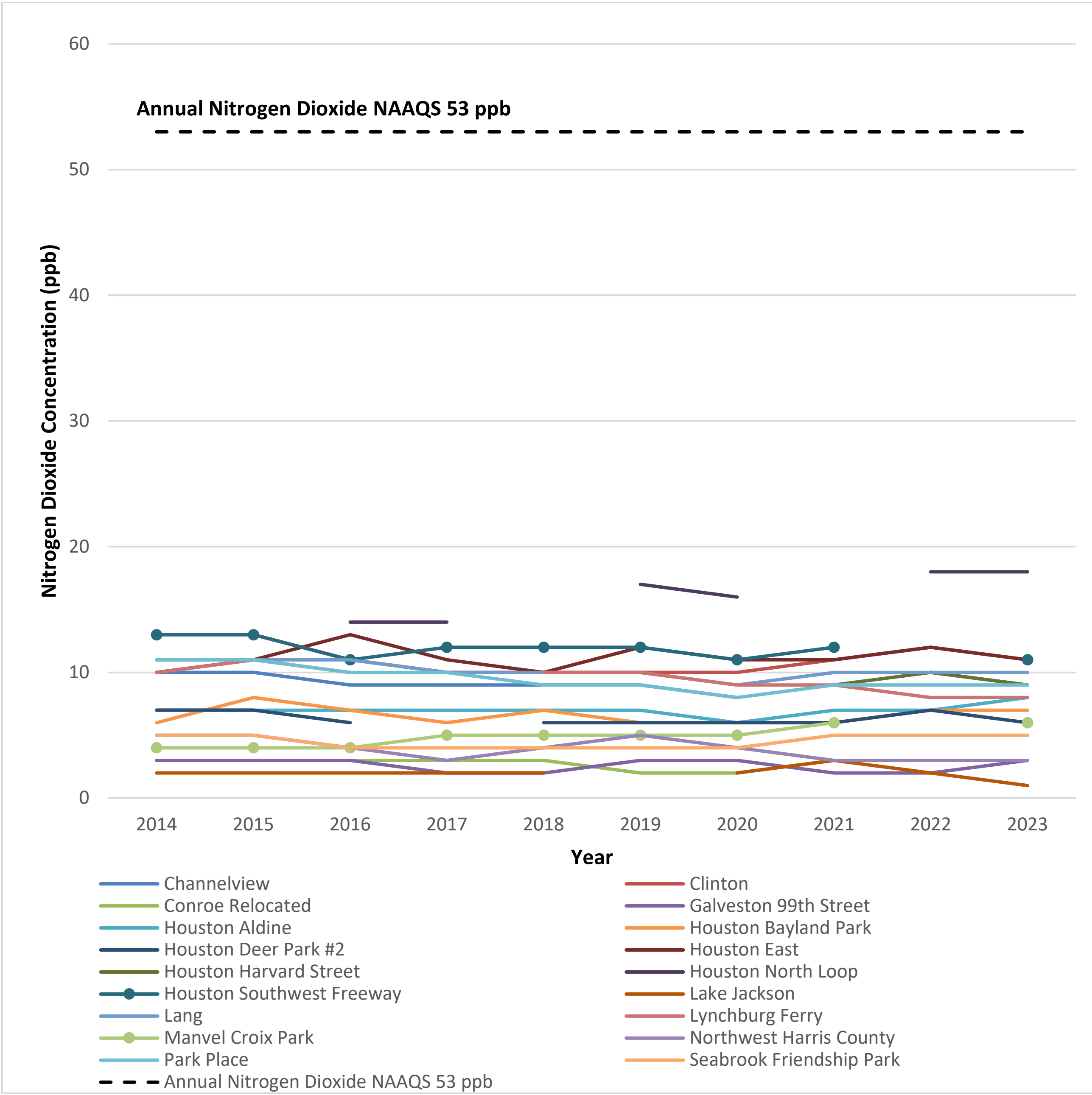
TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. Despite not showing a valid design value on the trend graphs, valid data collected during the years not shown are available online at TCEQ TAMIS.



- number
ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 19: Houston Area One-Hour Nitrogen Dioxide Design Value Trends, 2014–2023



\# - number
ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 20: Houston Area Annual Nitrogen Dioxide Design Value Trends, 2014–2023

Network Evaluation

Table 20 shows how each NO_x, NO_2, or NO_y monitor in the Houston area was evaluated using the scoring system described in the *Evaluation Methods* section. Valid 2023 annual or one-hour NO_2 design values were evaluated for the 2023 *NAAQS Value* metric. The Houston Deer Park #2 monitor satisfies the requirement for NO_2 (direct) monitoring at an NCore and PAMS site, the Clinton NO_x monitor data satisfies the area-wide and RA-40 requirements, and the Houston Southwest Freeway and Houston North Loop monitors satisfy near-road requirements. The Houston Deer Park #2 NO_y monitor satisfies the requirement at an NCore and PAMS site. The remaining area NO_x and NO_y monitors are important to understanding the area's O_3 formation and to evaluate the effectiveness of area NO_x control strategies. Based on these scores and the data usage, no changes to the Houston area NO_x network are recommended at this time.

Table 20: Houston Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Channelview	1	1	2	3	2	9	medium
Clinton	4	1	2	4	2	13	critical
Conroe Relocated	1	1	2	4	2	10	medium
Galveston 99th Street	1	1	2	4	2	10	medium
Houston Aldine	1	1	3	4	2	11	medium
Houston Aldine**	1	NA	NA	4	2	7	medium
Houston Bayland Park	1	1	3	4	2	11	medium
Houston Deer Park #2***	4	1	2	1	2	10	critical
Houston Deer Park #2**	4	NA	NA	3	2	9	critical
Houston East	1	1	3	4	2	11	medium
Houston Harvard Street	1	1	2	1	2	7	low
Houston North Loop	4	1	3	2	3	14	critical
Houston Southwest Freeway	4	1	2	2	3	12	critical
Lake Jackson	1	1	2	4	2	10	medium
Lang	1	1	2	4	2	10	medium
Lynchburg Ferry	1	1	1	4	2	9	medium
Manvel Croix Park	1	1	3	4	2	11	medium
Northwest Harris County	1	1	1	4	2	9	medium

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Park Place	1	1	1	4	2	9	medium
Seabrook Friendship Park	1	1	2	4	1	9	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
** NO_y monitor
*** NO_2 (direct) monitor
NAAQS – National Ambient Air Quality Standards
NO_2 – nitrogen dioxide
NO_Y – total reactive nitrogen compounds, provides nitrogen oxide data

Beaumont Area

Network History and Current Status

Beaumont area NO_x monitoring began in the early 1980's with a monitor deployment to Beaumont Downtown. The NO_x monitoring network was expanded to West Orange, Hamshire, and Nederland High School in the late 1990s and early 2000s in response to new federal PAMS requirements and the need to improve the agency's understanding of O_3 formation and O_3 precursor transport in the Beaumont area. Since the 2020 FYA, one Beaumont area network change occurred. The Nederland High School air monitoring site and NO_x monitor were temporarily deactivated for relocation in November 2021 due to the property owner revoking the site usage agreement for building expansion. The Nederland High School air monitoring site was relocated less than one mile to the Nederland 17th Street site in May 2022 with no change to the AQS identification number. Data loss experienced during the relocation affected the Nederland 17th Street NO_2 one-hour design value for 2021-2023 and the NO_2 annual design value for 2021-2022. The Nederland 17th Street monitor is expected to achieve a valid NO_2 one-hour design value with 2024 certified data.

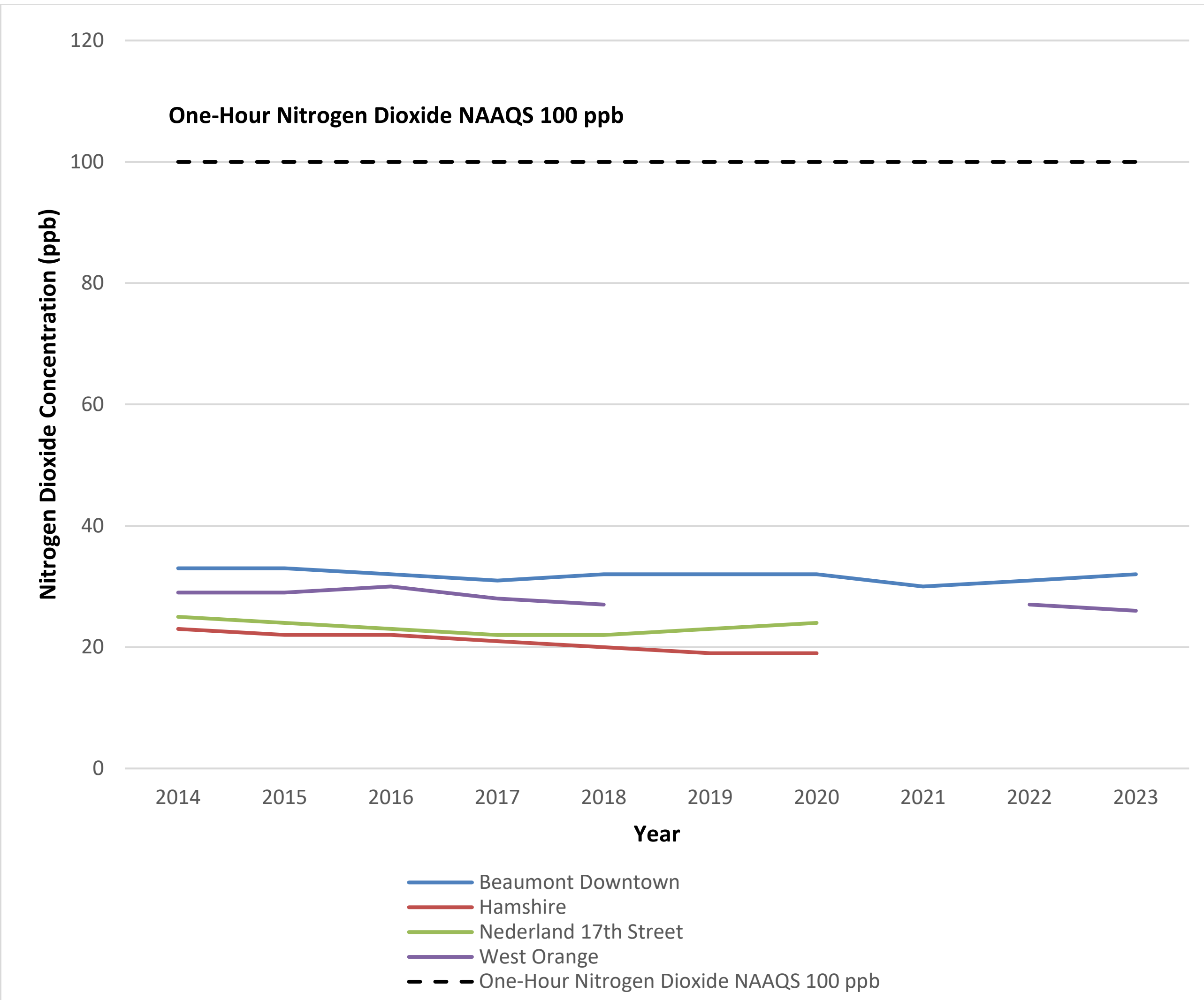
As of January 1, 2025, TCEQ is federally required to locate one Beaumont area NO_2 monitor to satisfy RA-40 requirements. TCEQ exceeds requirements with four Beaumont area NO_x monitors. While the number of NO_x monitors exceeds area federal requirements, the spatial distribution of the network provides valuable data to evaluate the effectiveness of NO_x control strategies, to assist in photochemical model performance in predicting O_3 formation and providing information on the spatial and diurnal variability of O_3 precursor emissions.

Design Values and Trends

One-hour NO_2 design values and annual NO_2 concentrations in the Beaumont area have shown a stable trend since 2014. All Beaumont monitors have remained well below the one-hour and annual NAAQS. Nederland 17th Street was temporarily deactivated during relocation, resulting in data loss for that period. The Nederland 17th Street one-hour and annual NO_2 design values were incomplete for 2021 and 2022 and the one-hour NO_2 design value, requiring three year's complete data, was also incomplete and invalid for 2023. Figure 21 and Figure 22 show the valid design value trends in the Beaumont area from 2014 through 2023.

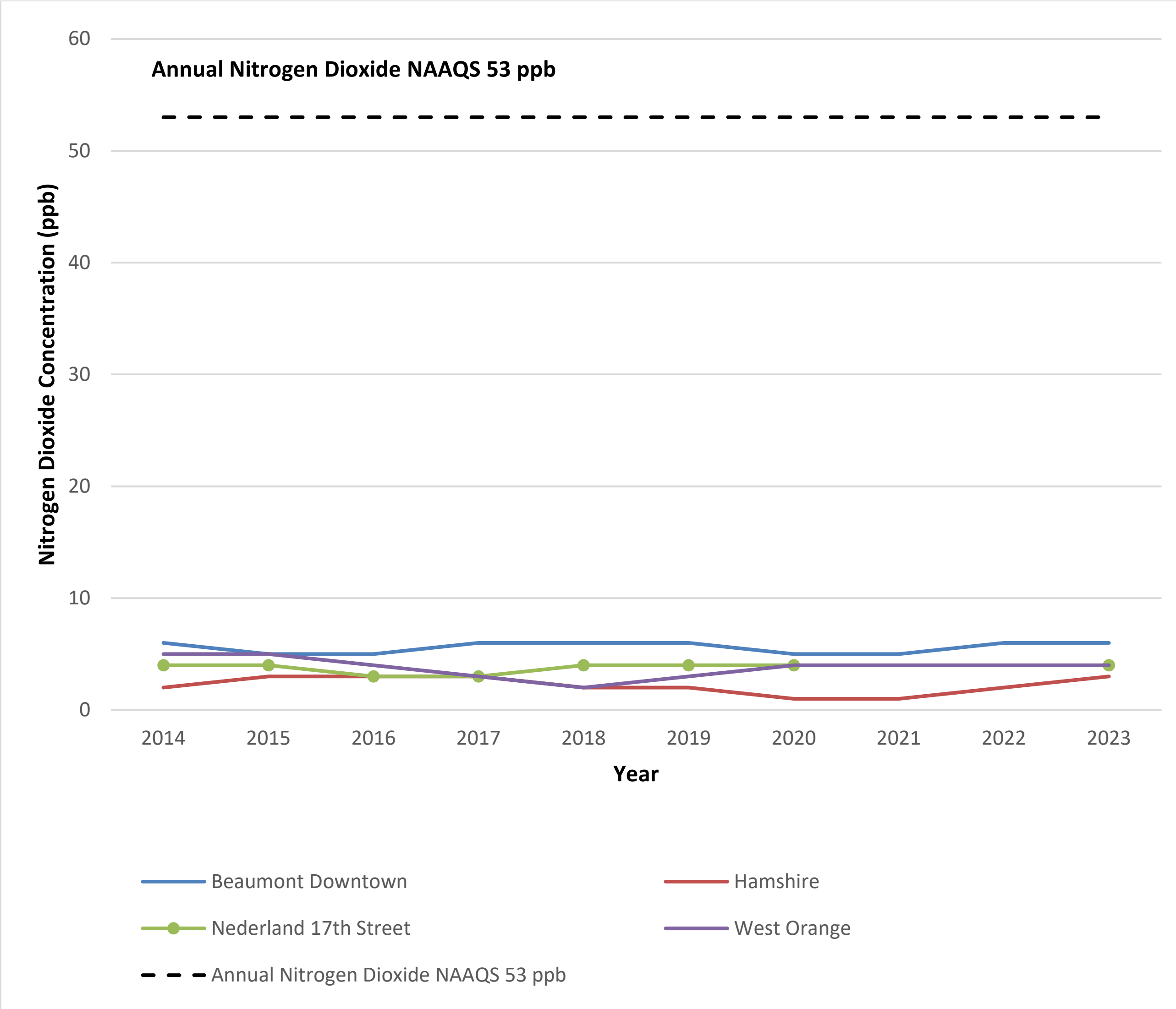
TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. Despite not showing a valid design value on the trend graphs, valid data collected during the years not shown are available online at TCEQ TAMIS.



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 21: Beaumont Area One-Hour Nitrogen Dioxide Design Value Trends, 2014–2023



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 22: Beaumont Area Annual Nitrogen Dioxide Design Value Trends, 2014–2023

Network Evaluation

Table 21 shows how each NO_x monitor in the Beaumont area was evaluated using the scoring system described in the *Evaluation Methods* section. The Nederland 17th Street monitor satisfies the RA-40 requirement, and the remaining monitors provide data important to understanding the area's O_3 formation and O_3 precursor transport in the Beaumont O_3 maintenance area. Based on these scores and the data usage, no changes to the Beaumont area NO_x network are recommended at this time.

Table 21: Beaumont Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Beaumont Downtown	1	1	2	4	2	10	medium
Hamshire	1	1	3	4	2	11	medium
Nederland 17th Street (previously Nederland High School)	4	1	2	4	2	13	critical
West Orange	1	1	1	4	2	9	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Sulfur Dioxide

The SO_2 network in the Coastal Texas area fulfill NCore, PWEI, and 2015 Data Requirements Rule requirements. Figure 23 shows the Coastal Texas area SO_2 monitors with red squares and the 2022 point sources with blue circles. SO_2 monitoring is not required or performed in the Victoria area and is not discussed further in this section. FYA Appendix A lists active and recently decommissioned SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

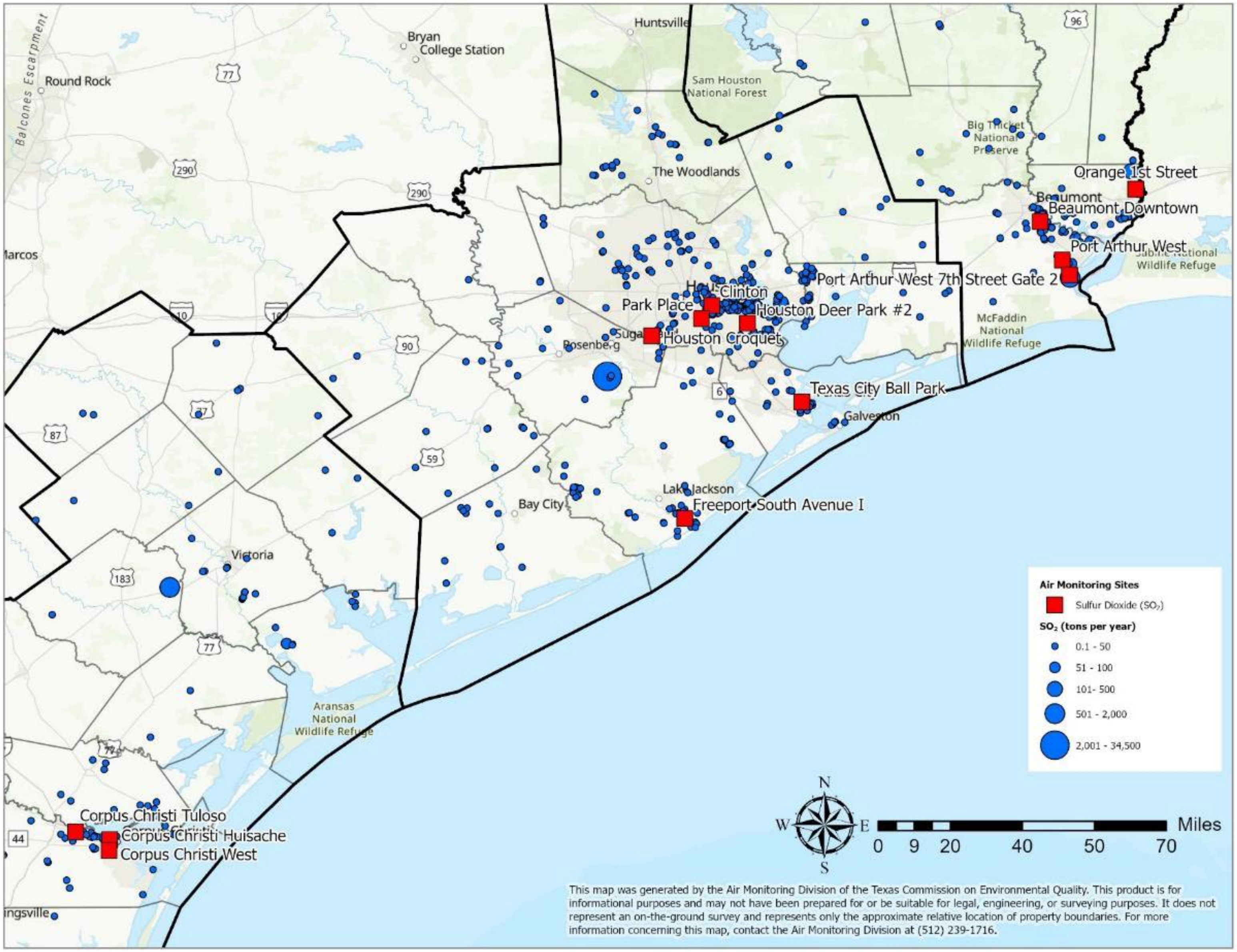


Figure 23: Coastal Texas Area Sulfur Dioxide Monitors and 2022 Point Sources

Houston Area

Network History and Current Status

Houston area SO_2 monitoring began in 1982 with the deployment of the Clinton monitor, located at the edge of a neighborhood and near the Houston Ship Channel. In the early 2000s, the monitoring network expanded in the Houston area with the deployment of Houston Croquet, Houston Monroe, Houston North Wayside, Park Place, Seabrook Friendship Park, and Texas City Ball Park. In late 2010, a high sensitivity SO_2 monitor was deployed at the Houston Deer Park # 2 site to fulfill NCore SO_2 monitoring requirements. In 2014, SO_2 monitoring was relocated from Baytown Eastpoint to Baytown Garth.

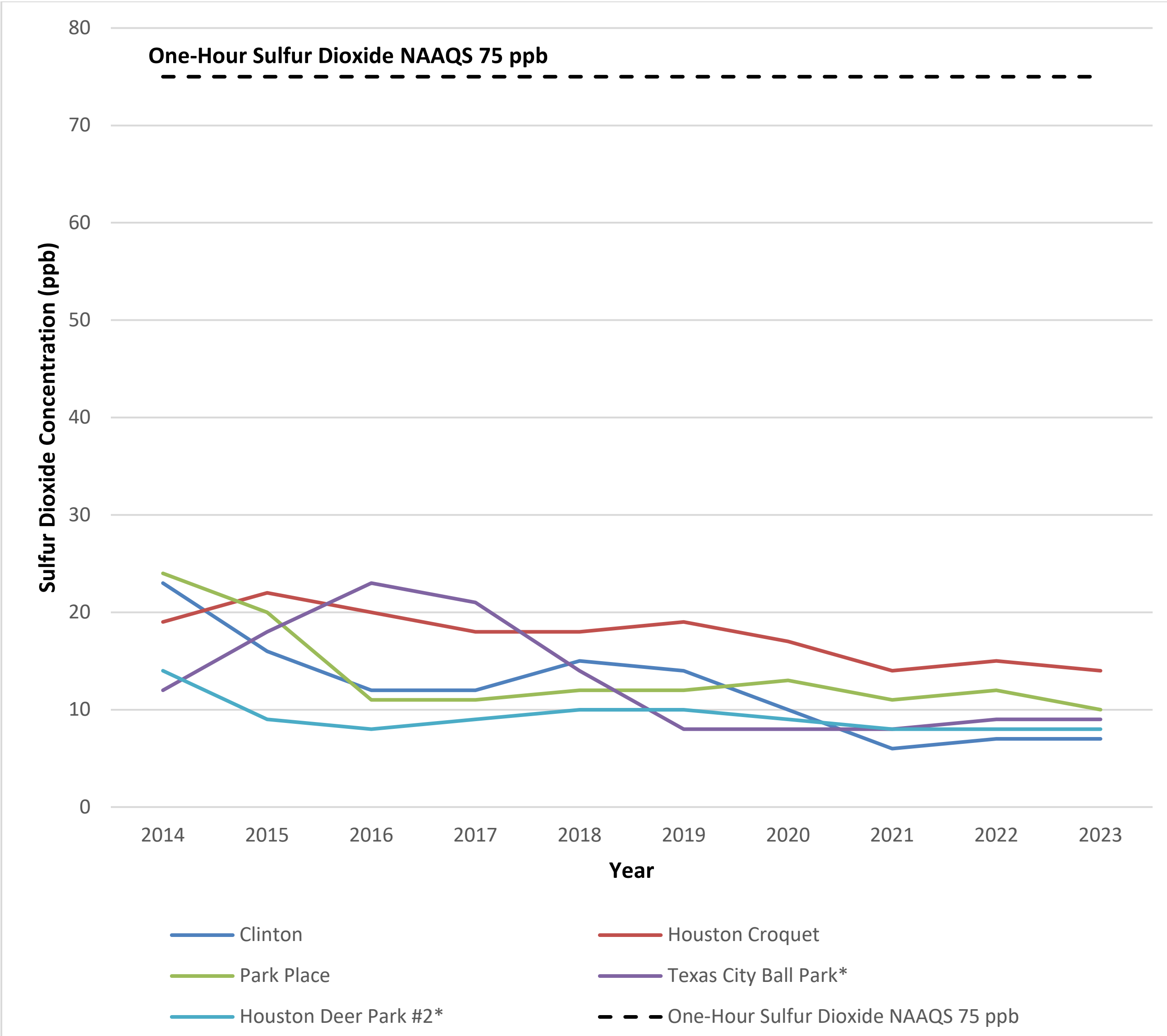
The Houston Monroe, Houston North Wayside, and Seabrook Friendship Park SO_2 monitors were deactivated in late 2017. These monitors were not federally required and maintained historic design values trending downward from 30% to 5% of the one-hour SO_2 NAAQS from 2010 to 2016. The Baytown Garth SO_2 monitor was assessed in the 2020 FYA as providing low monitor value. The EPA approved the Baytown Garth SO_2 monitor deactivation in the 2020 AMNP, and the monitor was deactivated in late 2020. Baytown Garth SO_2 data trends were among the lowest in the area with a design value of 6 ppb, 8% of the one-hour SO_2 NAAQS.

Since the last FYA, one Houston area SO_2 network change occurred. TCEQ redesignated an existing state-initiative SO_2 monitor at Freeport South Avenue I to the TCEQ's federal network in 2023. As of January 1, 2025, federal standards require a minimum of three area SO_2 monitors related to NCore and PWEI. TCEQ exceeds requirements with six federal SO_2 monitors.

Design Values and Trends

Houston area SO_2 design values have continued to decline since 2000 and remain less than 20% of the 2010 one-hour SO_2 NAAQS of 75 ppb. The lowest trending concentrations occurred at the Clinton and Houston Deer Park #2 monitors. The Freeport South Avenue I SO_2 monitor has not obtained a three-year design value due to activation in 2023 and will be assessed in the next FYA. Houston Deer Park #2 design values were invalid for 2018-2021 due to low quality assurance in one quarter of 2018 and one quarter in 2019. Texas City Ball Park design values were invalid for 2020-2021 due to low quality assurance in one quarter of 2020. Figure 24 shows the SO_2 design value trends in the Houston area from 2014 through 2023. Incomplete design values are included for trends comparison.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues such as power interruptions, or site relocations. Design value determinations are summarized in the FYA *Pollutants* section. The valid data, surrounding the data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Houston Deer Park #2 design value not valid for 2018 to 2021; Texas City Ball Park design value not valid for 2020 to 2021
- number
ppb – parts per billion
NAAQS – National Ambient Air Quality Standard

Figure 24: Houston Area One-Hour Sulfur Dioxide Design Value Trends, 2014-2023

Network Evaluation

Table 22 shows how each SO_2 monitor in the Houston area was evaluated using the scoring system described in the *Evaluation Methods* section. The Houston Deer Park #2 high-sensitivity SO_2 monitor satisfies the requirement for NCore while the Clinton and Houston Croquet sites satisfy the PWEI area requirements. Park Place SO_2 data has trended among the lowest in the area with a 2023 design value of 10 ppb, 13% of the one-hour SO_2 NAAQS, and the SO_2 monitor was scored with a low *Assessment Value* in both the 2020 and 2025 FYA. The Park Place SO_2 monitor will be proposed for deactivation in the 2025 AMNP. The Freeport South Avenue I monitor has not achieved the three years of data required for a design value and scored a medium *Assessment*

Value. The monitor provides spatial coverage for the Freeport area in Brazoria County. Based on these scores and the current spatial coverage, no further changes aside from the proposed deactivation of the Park Place SO_2 to the Houston area SO_2 network are recommended at this time.

Table 22: Houston Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value *	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Clinton	4	1	1	4	3	13	critical
Freeport South Avenue I	1	NA	1	1	2	5	medium
Houston Croquet	4	1	1	4	2	12	critical
Houston Deer Park #2**	4	1	1	3	2	11	critical
Park Place	1	1	1	4	1	8	low
Texas City Ball Park	1	1	1	4	2	9	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**SO_2 high sensitivity monitor
- number
NAAQS – National Ambient Air Quality Standard

Beaumont Area

Network History and Current Status

Beaumont area SO_2 monitoring began in 1980 with the deployment of the Beaumont Downtown monitor, located just east of Lamar University in an area of high population density. In 1997, a source-oriented monitor was added at the Port Arthur West site. In 2012, the Port Arthur West site was temporarily decommissioned for relocation due to the sale of the property. The site was re-established less than one mile away, and due to the proximity of the two sites, the site name and AQS identification number remained the same. Port Arthur West SO_2 monitor design values were affected for 2013 and 2014 due to data loss from the 2012 relocation.

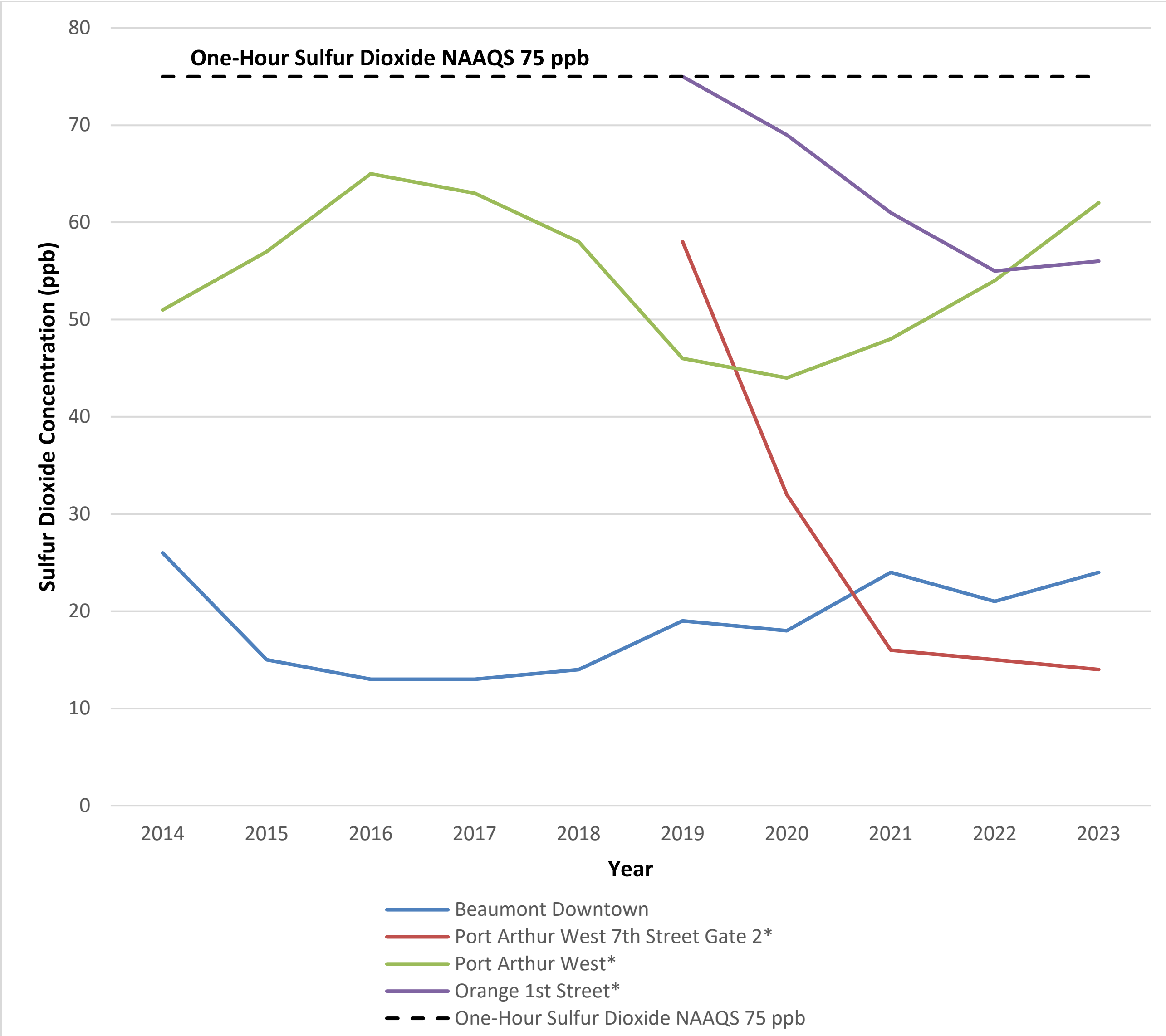
Title 40 CFR § 51.1202 (the DRR) required air agencies to characterize air quality around applicable sources that emitted 2,000 tons per year (tpy) or more of SO_2 in the latest emissions inventory year of 2014. TCEQ identified two sources in the Beaumont area that were selected for air quality characterization by ambient air monitoring. Therefore, two new source-oriented SO_2 monitoring sites were added at Port Arthur 7th Street and Orange 1st Street in late 2016. Data from these monitors are used to determine compliance with the 2010 one-hour SO_2 NAAQS. TCEQ was required to temporarily relocate the Port Arthur 7th Street monitor to Port Arthur West 7th Street in July 2019 due to revocation of site access and moved it permanently to Port Arthur West 7th Gate 2 in December 2019.

Since the 2020 FYA, no Beaumont area SO_2 network changes occurred. As of January 1, 2025, federal standards required a minimum of three area SO_2 monitors related to SO_2 DRR and PWEI. TCEQ exceeds area federal requirements with four SO_2 monitors.

Design Values and Trends

Beaumont area SO_2 design values show an overall stable to slight decreasing trend since 2014, and all monitors remain less than the 2010 one-hour SO_2 NAAQS of 75 ppb. The Port Arthur West 7th Street Gate 2 monitor obtained a complete three-year design value in 2019. The Port Arthur West 7th Street Gate 2 SO_2 monitor measured significant decreases from 2019 to 2021. Orange 1st Street SO_2 completed three years of monitoring in 2019, but design values were invalid for 2019 to 2020 due to low quality assurance in one quarter of 2018. Port Arthur West SO_2 design values were invalid for 2014 and 2017 to 2019 due to low quality assurance in a few quarters. Port Arthur West 7th Street Gate 2 SO_2 design values were invalid for 2023 due to low quality assurance in one quarter of 2023. Figure 25 shows the SO_2 design value trends in the Beaumont area from 2014 to 2023. Incomplete design values are included in Figure 25 for trends comparison.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues such as power interruptions, or site relocations. Design value determinations are summarized in the FYA *Pollutants* section. The valid data, surrounding the data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Orange 1st Street design value not valid for 2019 to 2020; Port Arthur West design value not valid for 2014 and 2017 to 2019; Port Arthur West 7th Street Gate 2 design value not valid for 2023
ppb – parts per billion
NAAQS – National Ambient Air Quality Standard

Figure 25: Beaumont Area One-Hour Sulfur Dioxide Design Value Trends, 2014-2023

Network Evaluation

Table 23 shows how each SO_2 monitor in the Beaumont area was evaluated using the scoring system described in the *Evaluation Methods* section. The Port Arthur West monitor satisfies the PWEI area requirement and is considered of critical value. The DRR source-oriented monitors at Port Arthur West 7th Gate 2 and Orange 1st Street are required to meet SO_2 DRR designations. The remaining SO_2 monitor at Beaumont Downtown is sited to measure ambient SO_2 levels in populated areas surrounding industrial facilities and continues to meet its monitoring objective. Based on these scores and the current spatial coverage, no changes to the Beaumont area SO_2 monitoring network are recommended at this time.

Table 23: Beaumont Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Beaumont Downtown	1	1	2	4	2	10	medium
Orange 1st Street	4	3	1	2	2	12	critical
Port Arthur West	4	4	2	3	2	15	critical
Port Arthur West 7th Street Gate 2	4	NA	1	2	2	9	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standard

Corpus Christi Area

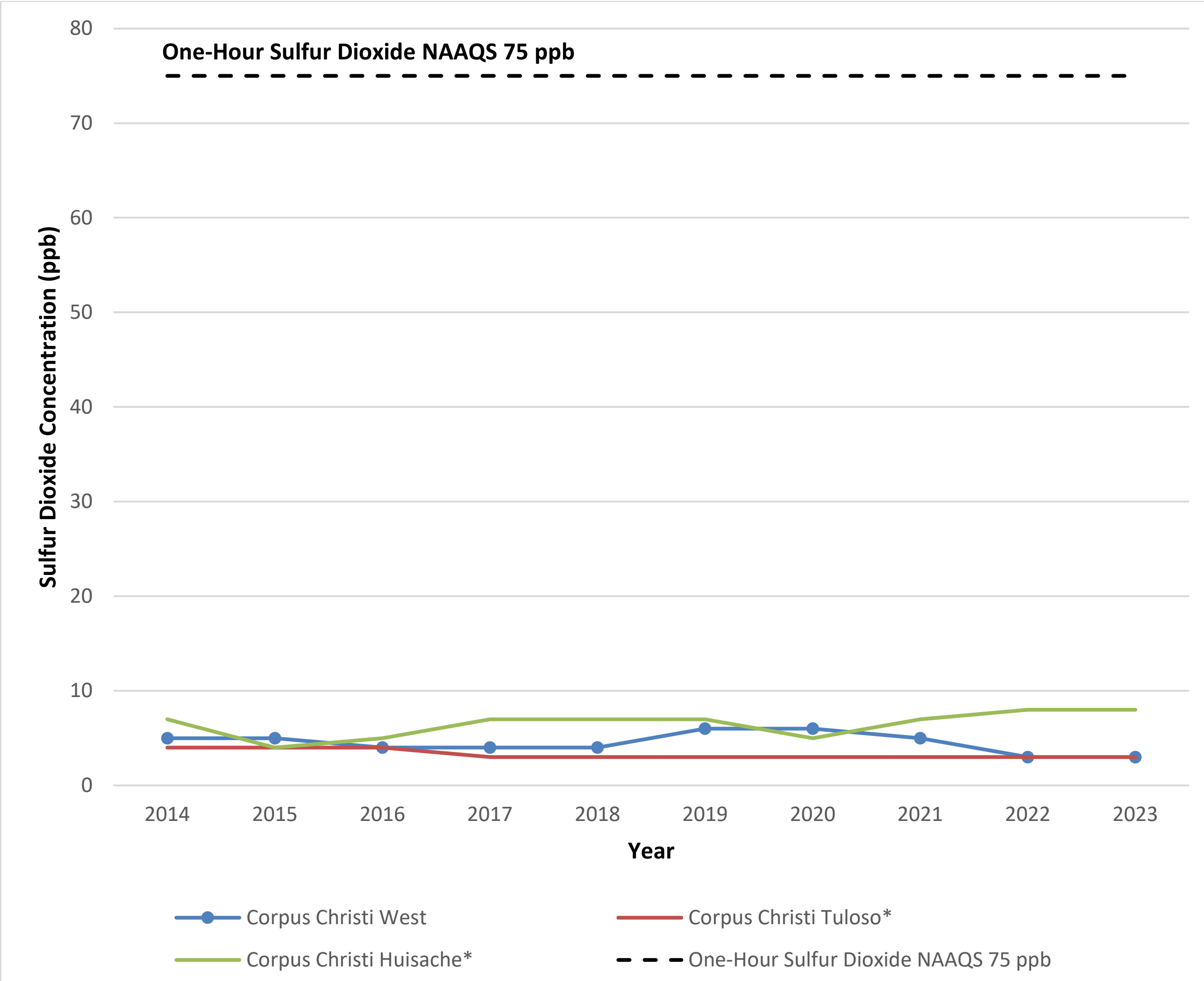
Network History and Current Status

Corpus Christi area SO_2 monitoring began in the late 1980s at Corpus Christi Tuloso and in the late 1990s at Corpus Christi West and Corpus Christi Huisache. The Corpus Christi Huisache site is located close to the heavily industrialized Corpus Christi Ship Channel area. The Corpus Christi Tuloso and Corpus Christi West sites are both located in more suburban areas and sited to monitor ambient concentrations near populated areas to the west and south of Corpus Christi. Since the 2020 FYA, no Corpus Christi area SO_2 network changes occurred. As of January 1, 2025, no federal requirements for SO_2 monitoring in the Corpus Christi area exist. TCEQ exceeds federal requirements with three SO_2 monitors.

Design Values and Trends

Corpus Christi area SO_2 design values show stable trends at less than 10 ppb, 90% less than the 2010 one-hour SO_2 NAAQS of 75 ppb since 2014. Corpus Christi Huisache SO_2 design values were invalid for 2016 to 2023. The Corpus Christi Huisache SO_2 monitor routinely measures extremely low ppb values exceedingly close to the instrument baseline, resulting in occasional low quality assurance. Corpus Christi Tuloso SO_2 design values were invalid for 2023 due to similar low quality assurance issues near the instrument baseline in 2023. Figure 26 shows the SO_2 design value trends in the Corpus Christi area from 2016 to 2023. Incomplete design values are included in Figure 26 for trends comparison.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues such as power interruptions, or site relocations. Design value determinations are summarized in the FYA *Pollutants* section. The valid data, surrounding the data loss incident, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Corpus Christi Huisache design value not valid for 2016 to 2023; Corpus Christi Tuloso design value not valid for 2023
ppb – parts per billion
NAAQS – National Ambient Air Quality Standard

Figure 26: Corpus Christi Area One-Hour Sulfur Dioxide Design Value Trends, 2014-2023

Network Evaluation

Table 24 shows how each SO_2 monitor in the Corpus Christi area was evaluated using the scoring system described in the Evaluation Methods section. The Corpus Christi area SO_2 network exceeds federal monitoring requirements and satisfies established monitoring objectives. While beyond minimum federal monitoring requirements, the three Corpus Christi SO_2 monitors are sited near residential areas. The Corpus Christi Huisache site is located just south of the ship channel north of a neighborhood and has historically monitored the area's highest SO_2 concentrations. The Corpus Christi West monitor was scored with a 2020 and a 2025 FYA *Assessment Value* of low. The Corpus Christi West and Corpus Christi Tuloso monitors measure similar design values and may be redundant. Corpus Christi West SO_2 data has trended among the lowest in the area with a 2023 design value of 3 ppb, 4% of the one-hour SO_2 NAAQS. The Corpus Christi West SO_2 monitor will be proposed for deactivation in the 2025 AMNP. While the Corpus Christi Tuloso monitor scored a medium *Assessment Value*, it provides special coverage for the areas north of the Corpus Christi Ship Channel. Based on these scores and the current spatial coverage, no further changes to the Corpus Christi area SO_2 network (aside from the Corpus Christi West SO_2 monitor deactivation) are recommended at this time.

Table 24: Corpus Christi Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value *	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Corpus Christi Huisache	1	NA	3	4	3	11	high
Corpus Christi Tuloso	1	NA	1	4	1	7	medium
Corpus Christi West	1	1	1	4	1	8	low

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standard

Particulate Matter of 2.5 Micrometers or Less in Diameter

The $PM_{2.5}$ network in the Coastal Texas area fulfills SLAMS, NCore, and near-road requirements using a combination of non-continuous FRM, continuous FEM, non-NAAQS comparable continuous, and speciation monitors. $PM_{2.5}$ monitoring is not required or performed in the Victoria area and is not discussed further in this section. Figure 27 shows the Coastal Texas area $PM_{2.5}$ monitors with a blue square and the 2022 point source emissions as yellow circles. FYA Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

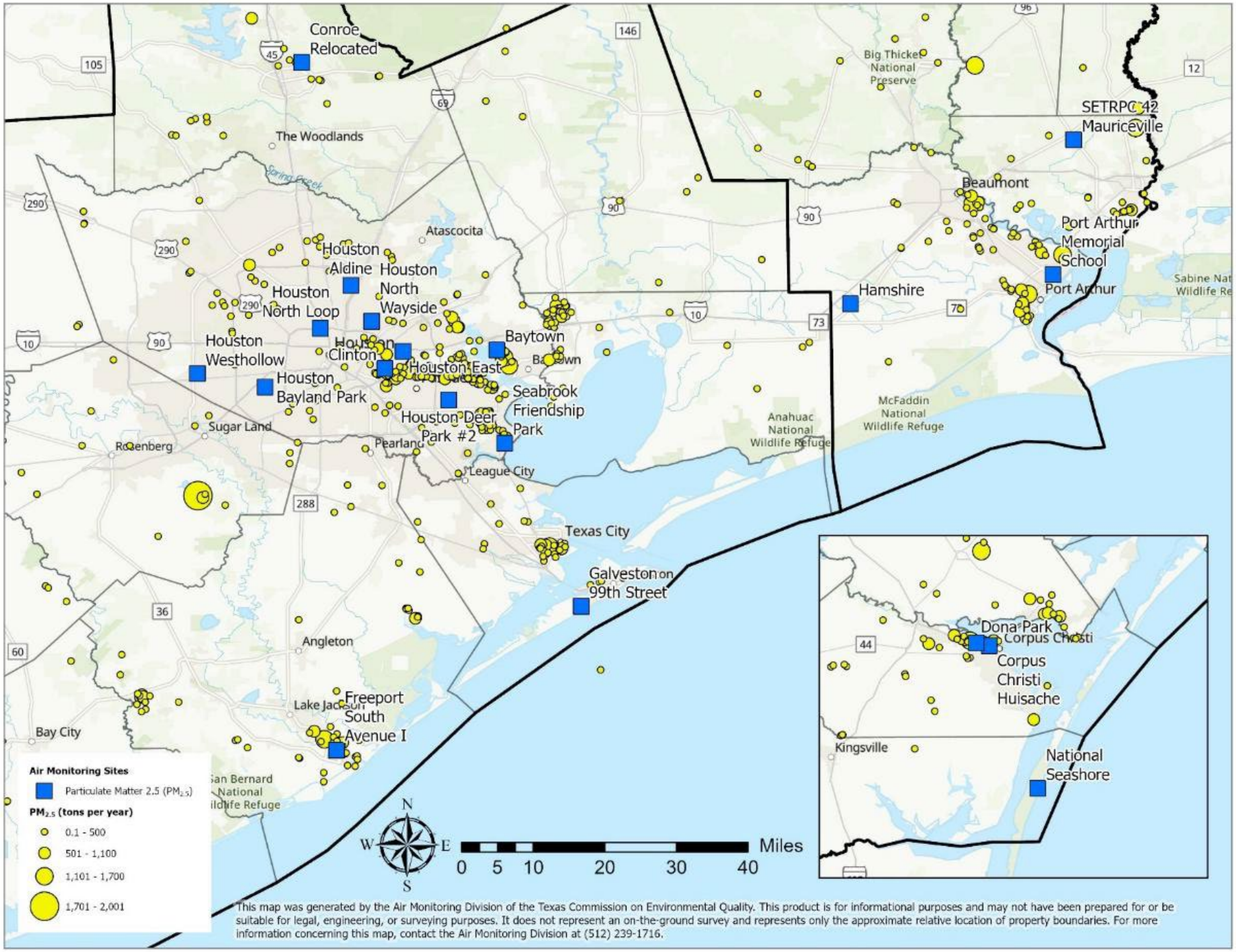


Figure 27: Coastal Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter Monitors and 2022 Point Sources

Houston Area

Network History and Current Status

Houston area $PM_{2.5}$ monitoring began in the late 1990s and early 2000s with the deployment of the Clinton and Houston Deer Park #2 monitors. Through the 2000s the $PM_{2.5}$ network expanded with a variety of $PM_{2.5}$ equipment with a monitor located on the coast, multiple monitors scattered throughout the urban core, and a downwind monitor located north of Houston. In April 2015, a $PM_{2.5}$ monitor was added to Houston North Loop to meet near-road requirements. Non-continuous $PM_{2.5}$ FRM monitors were upgraded to FEM continuous monitors at Baytown, Galveston 99th Street, and Houston Aldine. A non-NAAQS comparable continuous monitor was upgraded to a $PM_{2.5}$ FEM continuous monitor at Houston East.

Since the 2020 FYA, several changes occurred. All non-NAAQS comparable $PM_{2.5}$ continuous monitors were upgraded to $PM_{2.5}$ FEM continuous monitors, including the monitors at Conroe Relocated and Seabrook Friendship Park (both in 2021) and at Clinton (in 2024). $PM_{2.5}$ speciation was added to the federal network at Clinton (in 2020), previously part of TCEQ's state-initiative network. TCEQ expanded $PM_{2.5}$ monitoring spatial coverage in the Houston area by adding $PM_{2.5}$ FEM continuous monitors to three existing sites at Houston Bayland Park (2022), Houston North Wayside (2021), and Houston Westhollow (2021). State-initiative Freeport South Avenue I $PM_{2.5}$ FRM and $PM_{2.5}$ speciation monitors were added to the federal network (2023) to expand spatial coverage in Brazoria County. The Houston Bayland Park, Houston North Wayside, Houston Westhollow, and Freeport South Avenue I monitors have incomplete design values, pending three full years' data, due to their activation dates, and will not be assessed with the *NAAQS Value*.

Two new sites are pending in the Houston Fifth Ward and Houston Pleasantville neighborhoods with planned $PM_{2.5}$ FEM continuous monitors. TCEQ utilized input from community groups to evaluate areas for the establishment of the new ambient air monitoring sites at Finnigan Park in the Houston Fifth Ward and at Pleasantville Elementary School in the Houston Pleasantville area. Construction permits for the Houston Finnigan Park site are pending issuance by the City of Houston. Site construction is ongoing for the Houston Pleasantville Elementary site. TCEQ expects to activate these special purpose monitors in 2025, shortly after the site construction is completed.

As of January 1, 2025, federal standards require a minimum of eight $PM_{2.5}$ monitors. TCEQ exceeds requirements with 19 $PM_{2.5}$ monitors to measure ambient $PM_{2.5}$ concentration data through gravimetric, speciation, and continuous measurements to determine maximum concentrations, concentrations in areas of high population density, and background and transport concentrations.

$PM_{2.5}$ Micro-scale Near-Road Monitors

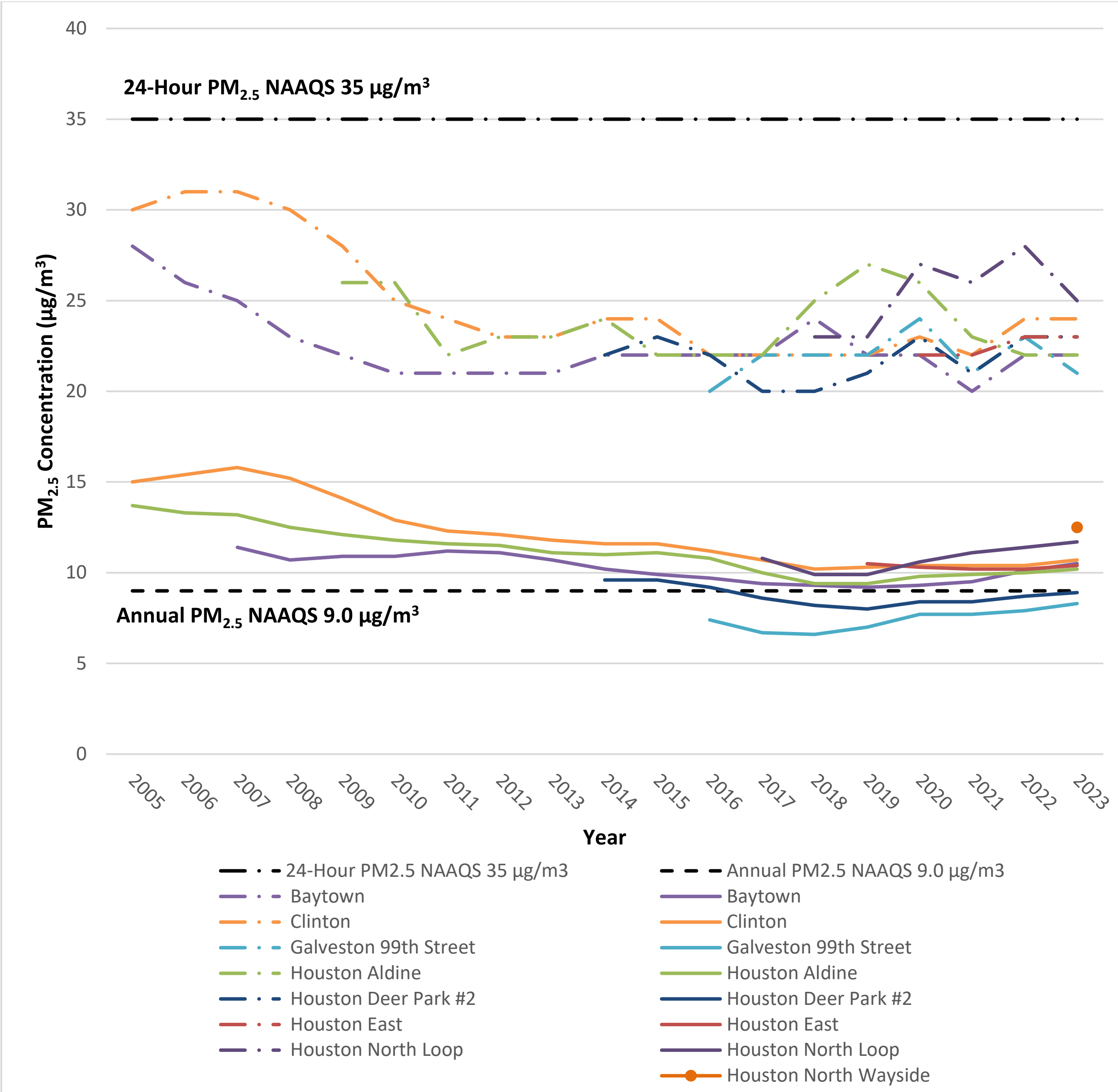
TCEQ established near-road monitoring sites in accordance with 40 CFR Part 58, Appendices D and E and the *Near-Road NO_2 Technical Assistance Document* guidelines. $PM_{2.5}$ monitors deployed to meet near-road monitoring requirements provide measurements of localized microenvironments near highly trafficked roadways that are not representative of a broader airshed.

The $PM_{2.5}$ concentrations measured at the near-road sites are impacted by particulate matter from the nearby localized traffic and are not representative of area-wide air quality. $PM_{2.5}$ measurement data from all eligible monitors that are representative of area-wide air quality are comparable to the annual and 24-hour $PM_{2.5}$ NAAQS. However, according to 40 CFR § 58.30, $PM_{2.5}$ measurement data from monitors that are not representative of area-wide air quality but rather of relatively unique micro-scale, localized hot spot, or unique middle-scale impact sites are not eligible for comparison to the annual $PM_{2.5}$ NAAQS but would remain eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS.

EPA noted in the response letter to the TCEQ's 2024 AMNP, that information on monitors that are not suitable for comparison against the annual $PM_{2.5}$ NAAQS, as described in 40 CFR § 58.30, should be identified in the 2025 AMNP. TCEQ requested approval in the 2025 AMNP to designate the micro-scale near-road site $PM_{2.5}$ monitor data as not suitable for comparison with the annual $PM_{2.5}$ NAAQS. The Houston area micro-scale near-road $PM_{2.5}$ monitoring site data are adjacent to a unique dominating local $PM_{2.5}$ source. Accordingly, the micro-scale $PM_{2.5}$ measurement data from the Houston North Loop monitor should only be eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS.

Design Values and Trends

The Houston area $PM_{2.5}$ annual design value trends are fairly stable, while 24-hour $PM_{2.5}$ design value trends tend to fluctuate from year to year. Several $PM_{2.5}$ monitors activated since 2021 have not achieved the required three years of data to calculate a design value. Sites with incomplete $PM_{2.5}$ monitor data include Conroe Relocated, Freeport South Avenue I, Houston Bayland Park, Houston North Wayside (24-hour only, due to the complex design value calculations in 40 CFR Part 50, Appendix N), Houston Westhollow, and Seabrook Friendship Park. These monitors are not evaluated in the trends graph below and will be assessed in the next FYA. Figure 28 shows the annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends in the Houston area from 2005 through 2023. Houston have consistently remained below the 24-hour $PM_{2.5}$ NAAQS of 35 µg/m^3. Annual mean $PM_{2.5}$ concentrations have exhibited an overall decrease since 2005 with recent design values showing some slight increases and some monitors measuring concentrations above the 9.0 µg/m^3 annual 2024 NAAQS.



\# - number
µg/m³ - microgram per cubic meter
NAAQS - National Ambient Air Quality Standards
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Figure 28: Houston Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2005-2023

Network Evaluation

Table 25 shows how each $PM_{2.5}$ monitor in the Houston area was evaluated using the scoring system described in the *Evaluation Methods* section. The Houston Deer Park #2 $PM_{2.5}$ monitors satisfy the $PM_{2.5}$ NCore requirements for FEM and FRM monitors. Clinton, Baytown, and Houston Aldine $PM_{2.5}$ FEM and FRM monitors satisfy $PM_{2.5}$ SLAMS requirements. The Houston North Loop monitor satisfies $PM_{2.5}$ near-road requirements.

The remaining area $PM_{2.5}$ monitors continue to provide valuable data since the current design values are within 80% of the NAAQS along with providing spatial coverage and/or unique information including background and transported particulate concentrations. The recent addition of four $PM_{2.5}$ monitors and the planned addition of two more $PM_{2.5}$ monitors provides a robust Houston area $PM_{2.5}$ monitoring network greatly exceeding federal requirements. Based on this information, other than the micro-scale near-road $PM_{2.5}$ monitoring site data exclusion request, no further changes to the Houston area $PM_{2.5}$ network are recommended at this time.

Table 25: Houston Area Particulate Matter of 2.5 Micrometers or Less in Diameter Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value**	Source Impact Value	Total Monitor Value	Assessment Value
Baytown	$PM_{2.5}$ FEM	4	4	2	2	2	14	critical
Clinton	$PM_{2.5}$ speciation	1	NA	NA	4	2	7	medium
Clinton	$PM_{2.5}$ FRM	4	4	2	4	2	16	critical
Clinton	$PM_{2.5}$ FEM	1	NA	NA	4	2	7	medium
Conroe Relocated	$PM_{2.5}$ FEM	1	NA	NA	4	2	7	medium
Freeport South Avenue I	$PM_{2.5}$ FRM	1	NA	NA	1	2	4	low
Freeport South Avenue I	$PM_{2.5}$ speciation	1	NA	NA	1	2	4	low
Galveston 99th Street	$PM_{2.5}$ FEM	1	4	3	4	2	14	critical
Houston Aldine	$PM_{2.5}$ FEM	4	4	2	4	2	16	critical
Houston Bayland Park	$PM_{2.5}$ FEM	1	NA	NA	1	2	4	low
Houston Deer Park #2	$PM_{2.5}$ speciation	4	NA	NA	4	2	10	critical
Houston Deer Park #2	$PM_{2.5}$ FRM	4	4	2	3	2	15	critical
Houston Deer Park #2	$PM_{2.5}$ FEM	4	4	2	3	2	15	critical
Houston Deer Park #2	$PM_{10-2.5}$	4	NA	NA	3	2	9	critical
Houston East	$PM_{2.5}$ FEM	1	4	2	4	2	13	critical
Houston North Loop	$PM_{2.5}$ FEM	4	4	2	2	3	15	critical
Houston North Wayside	$PM_{2.5}$ FEM	1	4	2	1	2	10	critical

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value**	Source Impact Value	Total Monitor Value	Assessment Value
Houston Westhollow	$PM_{2.5}$ FEM	1	NA	NA	1	2	4	low
Seabrook Friendship Park	$PM_{2.5}$ FEM	1	NA	NA	4	2	7	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Historical Value based on all years of site $PM_{2.5}$ monitoring (accounts for monitor upgrades over time)
- number
NAAQS – National Ambient Air Quality Standards
FEM – federal equivalent method
FRM – federal reference method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
$PM_{10-2.5}$ – coarse particulate matter

Beaumont Area

Network History and Current Status

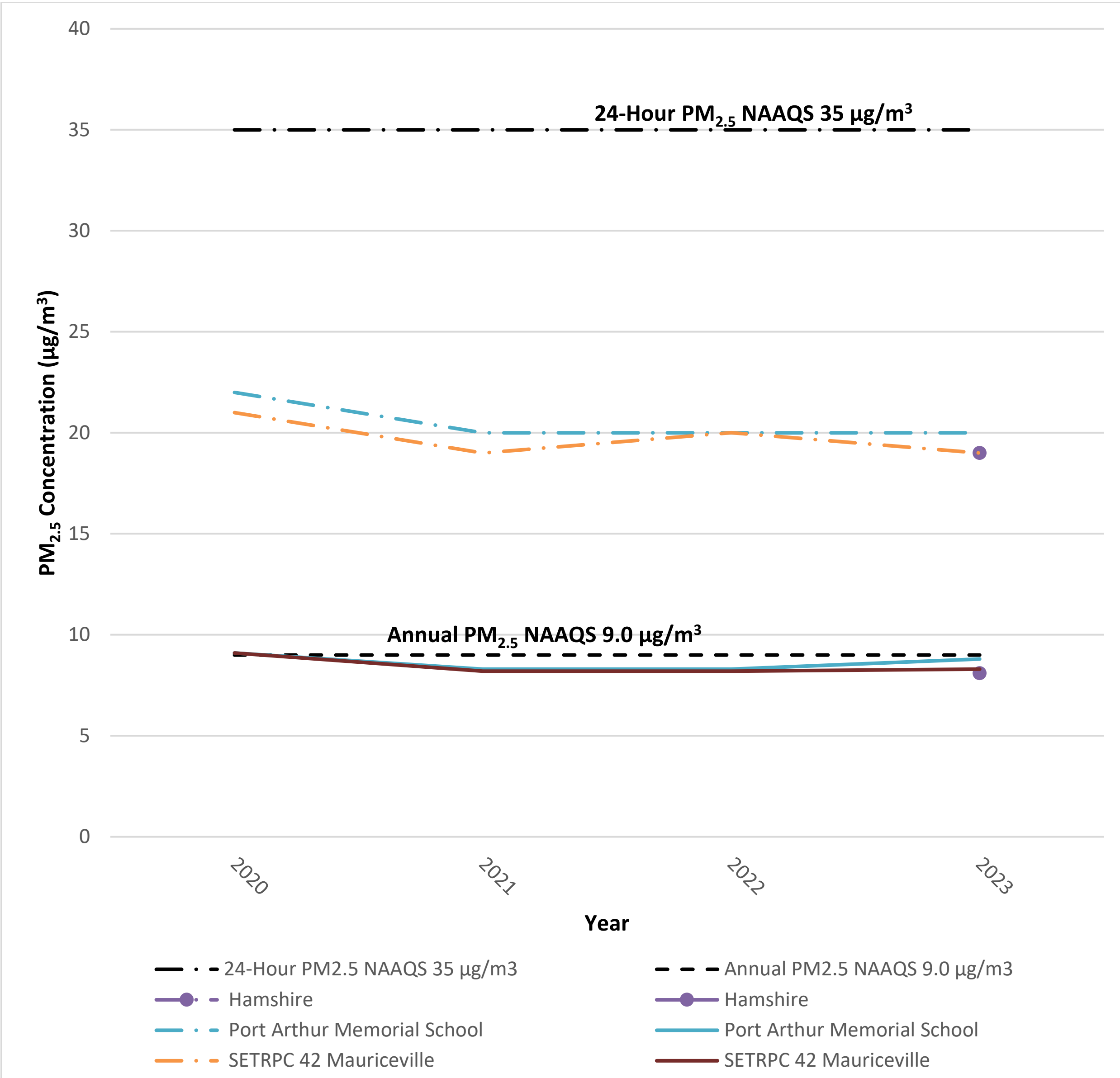
Beaumont area $PM_{2.5}$ monitoring began in the early 2000s with the deployment of continuous non-NAAQS comparable monitors at the Hamshire, Port Arthur Memorial School, and SETRPC 42 Mauriceville sites. The Beaumont area $PM_{2.5}$ monitors were upgraded to $PM_{2.5}$ FEM monitors in mid-2017, and the area obtained $PM_{2.5}$ design values after three years of complete data in 2020. As of January 1, 2025, the Beaumont MSA is required to have one $PM_{2.5}$ monitor. TCEQ exceeds federal requirements with three monitors providing valuable data related to $PM_{2.5}$ background and regional transport and concentrations in populated areas.

Design Values and Trends

The Beaumont area $PM_{2.5}$ annual and 24-hour $PM_{2.5}$ design values show stable trends with a slight decrease. The Beaumont area $PM_{2.5}$ FEM monitors were activated in mid-2017 and obtained complete three-year design values in 2020 with the exception of the Hamshire $PM_{2.5}$ monitor. The Hamshire $PM_{2.5}$ monitor had low quality assurance during one quarter of 2020, affecting the 2020-2022 three-year design value. Figure 29 shows the valid annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends in the Beaumont area from 2020 through 2023. Although $PM_{2.5}$ monitoring began in the Beaumont area in the early 2000's, these original monitors were non-NAAQS comparable and are thus not included in the trends assessment below. $PM_{2.5}$ non-NAAQS comparable data are available online at TCEQ TAMIS. Trends indicate that design values have consistently remained below the 24-hour $PM_{2.5}$ NAAQS of 35 µg/m^3. Annual $PM_{2.5}$ design value trends are just below the 9.0 µg/m^3 annual 2024 NAAQS.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. The valid data, surrounding the data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



µg/m³ - microgram per cubic meter
NAAQS - National Ambient Air Quality Standards
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Figure 29: Beaumont Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2020-2023

Network Evaluation

Table 26 shows how each $PM_{2.5}$ monitor in the Beaumont area was evaluated using the scoring system described in the *Evaluation Methods* section. The Port Arthur Memorial School $PM_{2.5}$ monitor satisfies $PM_{2.5}$ SLAMS requirements in the Beaumont area. The

SETRPC 42 Mauriceville $PM_{2.5}$ monitor supports background and regional transport concentrations. The Hamshire $PM_{2.5}$ monitor provides spatial coverage for population exposure. These monitors provide valuable spatial coverage and unique data about inter- and intra-regional transport of $PM_{2.5}$. No changes to the Beaumont area $PM_{2.5}$ network are recommended at this time.

Table 26: Beaumont Area Particulate Matter of 2.5 Micrometers or Less in Diameter Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value**	Source Impact Value	Total Monitor Value	Assessment Value
Hamshire	$PM_{2.5}$ FEM	1	4	2	4	2	13	critical
Port Arthur Memorial School	$PM_{2.5}$ FEM	1	4	2	4	2	13	critical
SETRPC 42 Mauriceville	$PM_{2.5}$ FEM	1	4	1	4	2	12	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Historical Value based on all years of site $PM_{2.5}$ monitoring (accounts for monitor upgrades over time)
NAAQS – National Ambient Air Quality Standards
FEM – federal equivalent method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Corpus Christi Area

Network History and Current Status

Corpus Christi area $PM_{2.5}$ monitoring began in the early 2000s with the deployment of the Corpus Christi Huisache, Dona Park (with speciation), and National Seashore monitors. The National Seashore monitor is on North Padre Island, just off the coastline in the Kingsville micropolitan statistical area, Kleberg County, and provides data to support the analysis of regional transport. The Corpus Christi Huisache and Dona Park monitors are located in populated areas in proximity to the heavily industrialized Corpus Christi Ship Channel area. The Corpus Christi Huisache non-continuous $PM_{2.5}$ FRM monitor and the National Seashore non-NAAQS comparable monitor were upgraded to $PM_{2.5}$ FEM monitors in 2018. Since the 2020 FYA, the Dona Park non-continuous $PM_{2.5}$ FRM monitor was upgraded to a FEM continuous monitor in 2022.

As of January 1, 2025, the TCEQ is federally required to have one Corpus Christi MSA $PM_{2.5}$ monitor. TCEQ exceeds requirements with three $PM_{2.5}$ monitors measuring ambient $PM_{2.5}$ concentration data with $PM_{2.5}$ continuous FEM and speciation monitors to determine maximum concentrations, concentrations in areas of high population density, and regional transport concentrations.

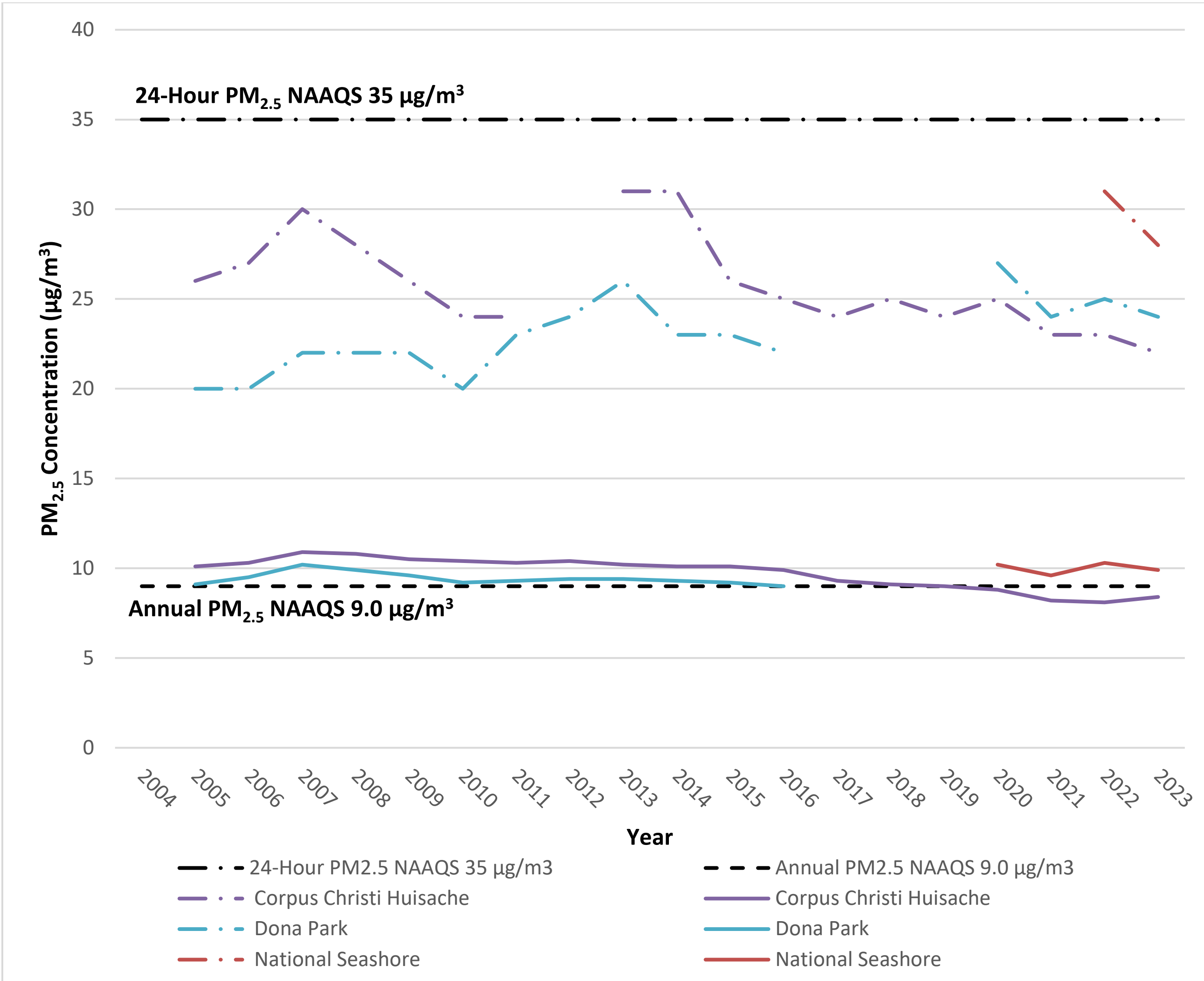
Design Values and Trends

Design values in the Corpus Christi area have consistently remained below the 24-hour and annual $PM_{2.5}$ NAAQS with the exception of 2022-2023 National Seashore design values that exceeded the 2024 annual $PM_{2.5}$ NAAQS. The National Seashore $PM_{2.5}$ monitor was activated in mid-2018 and had incomplete design values for 2019-2021 and valid design values for 2022 and 2023. National Seashore $PM_{2.5}$ data were impacted by exceptional events in 2022 and 2023. Exceptional events are unusual or naturally occurring events that affect air quality and are not reasonably controllable or preventable. States can request the EPA not consider air quality data affected by an exceptional event when determining if an area met an air quality health standard. TCEQ submitted an exceptional event demonstration to the EPA Region 6, after a 30-day public comment period, in February 2025. The exceptional event demonstration details information on the National Seashore $PM_{2.5}$ regulatory significant event days in 2022 and 2023. The EPA has not acted on this exceptional event demonstration as of the development of the 2025 FYA. Exceptional event regulations and guidance are provided on EPA's Treatment of Air Quality Data Influenced by Exceptional Events website.

National Seashore exceptional event data are included in the $PM_{2.5}$ graph in Figure 30 for trends analysis. Figure 30 shows the valid 24-hour and annual $PM_{2.5}$ design value trends in the Corpus Christi area from 2004 through 2023.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. The valid data, surrounding the data loss, are available and important to understanding the area’s air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Figure 30: Corpus Christi Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2004-2023

Network Evaluation

Table 27 shows how each $PM_{2.5}$ monitor in the Corpus Christi area was evaluated using the scoring system described in the *Evaluation Methods* section. The Dona Park $PM_{2.5}$ monitor satisfies $PM_{2.5}$ SLAMS requirements in the Corpus Christi area. The Dona Park FEM continuous and speciation monitors are sited near an urban neighborhood but downwind of industrial sources along the ship channel and provide data to assess $PM_{2.5}$ concentrations in a populated area. The Corpus Christi Huisache site, located in proximity to the urban core, industrial sources along the ship channel, and urban neighborhoods, is situated to provide $PM_{2.5}$ concentration data in an area of high population density. The National Seashore monitor, located on Padre Island to the southeast of the Corpus Christi city center, provides information about background $PM_{2.5}$ levels coming into Corpus Christi off the Gulf of America. These monitors provide valuable spatial coverage and unique $PM_{2.5}$ data. No changes to the Corpus Christi area $PM_{2.5}$ network are recommended at this time.

Table 27: Corpus Christi Area Particulate Matter of 2.5 Micrometers or Less in Diameter Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value**	Source Impact Value	Total Monitor Value	Assessment Value
National Seashore	$PM_{2.5}$ FEM	1	4	2	4	1	12	critical
Corpus Christi Huisache	$PM_{2.5}$ FEM	1	4	1	4	2	12	critical
Dona Park	$PM_{2.5}$ FEM	4	4	1	4	2	15	critical
Dona Park	$PM_{2.5}$ speciation	1	NA	2	4	2	9	high

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Historical Value based on all years of site $PM_{2.5}$ monitoring (accounts for monitor upgrades over time)
FEM – federal equivalent method
NAAQS – National Ambient Air Quality Standards
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Particulate Matter of 10 Micrometers or Less in Diameter

The PM_{10} network in the Coastal Texas area fulfills SLAMS requirements based on MSA populations and area concentrations using a combination of non-continuous FRM, continuous FEM, and non-NAAQS comparable continuous PM_{10} monitors. The PM_{10} network measures concentrations near populated areas and characterizes regional air quality. Figure 31 shows the area PM_{10} monitors with purple squares and the 2022 point sources with blue circles. PM_{10} monitoring is not required or performed in the Beaumont or Victoria areas, and these areas are not discussed further in this section. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

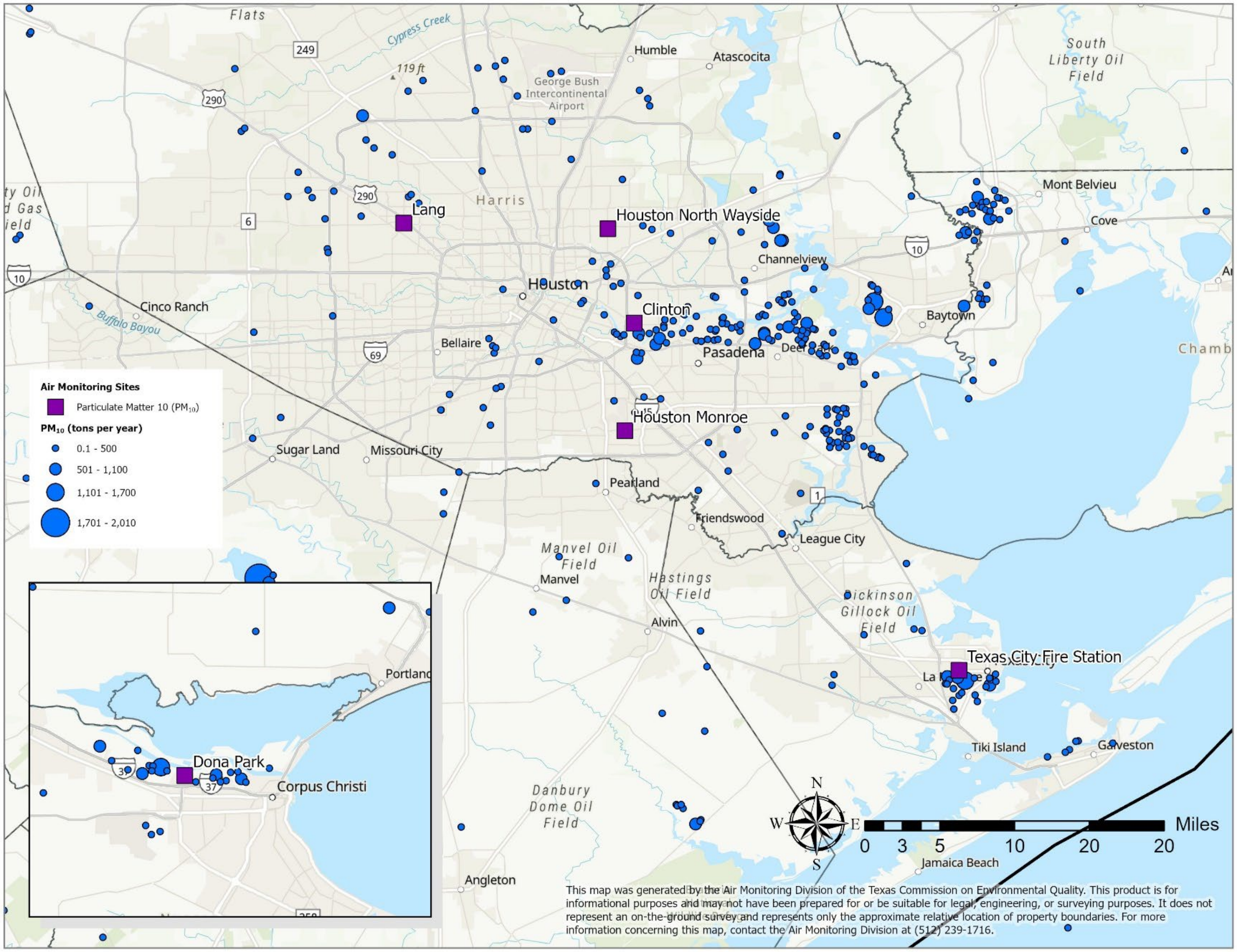


Figure 31: Coastal Texas Area Particulate Matter of 10 Micrometers or Less in Diameter Monitors and 2022 Point Sources

Houston Area

Network History and Current Status

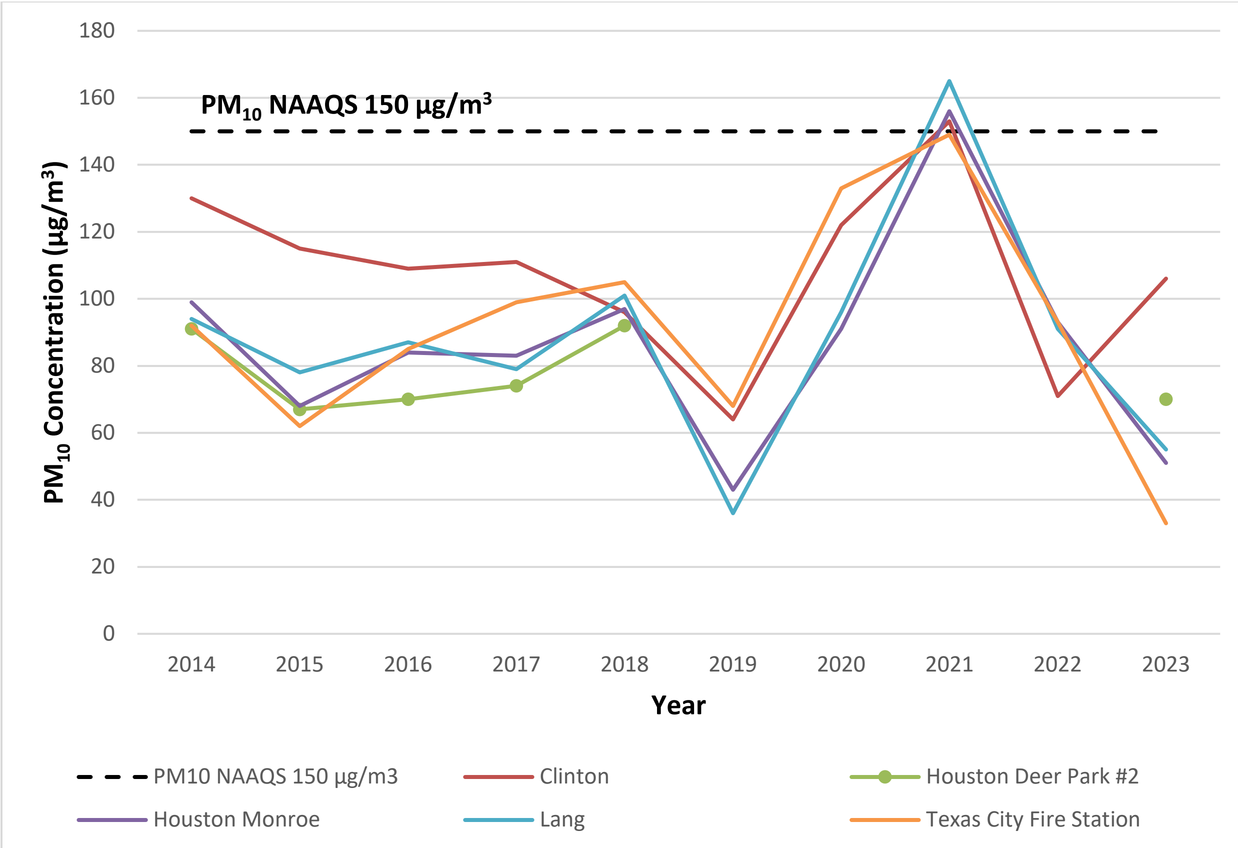
PM_{10} monitoring in the Houston area began in the late 1980s with deployment of the Houston Monroe and Texas City Fire Station monitors. Through the late 1990s, the PM_{10} monitoring network expanded in the urban core and along the Houston Ship Channel at Houston Westhollow, Clinton, and Lang. The PM_{10} monitors at Pasadena Houston Light and Power (HL&P), Houston Aldine, and Houston Deer Park #2 (including speciation) were decommissioned due to declining PM_{10} trends. A PM_{10} non-NAAQS comparable continuous monitor was activated in 2021 at Houston North Wayside. Since the Houston North Wayside PM_{10} monitor is non-NAAQS comparable, its data will not be included with the trends graph. The Houston Westhollow PM_{10} filter-based monitor was deactivated and replaced with a $PM_{2.5}$ FEM continuous monitor in late 2020. Since the 2020 FYA, two Houston area PM_{10} network changes occurred. PM_{10} FEM continuous was added to the Houston Deer Park #2 site in 2023. The Clinton PM_{10} filter-based monitor was upgraded to a PM_{10} FEM continuous monitor in 2024.

As of January 1, 2025, federal standards require a minimum of four to eight area PM_{10} monitors in the Houston MSA. Texas meets this requirement by monitoring PM_{10} at six sites in the Houston area to measure population exposure and highest concentrations.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 $\mu g/m^3$ standard averaged over three years. Exceptional events are unusual or naturally occurring events that affect air quality and are not reasonably controllable or preventable. States can request the EPA not consider air quality data affected by an exceptional event when determining if an area met an air quality health standard. High winds caused blowing dust on January 16, 2021, in Harris County. Due to these high winds, the levels of PM_{10} at monitors in Harris County were not reasonably controllable or preventable. TCEQ submitted an exceptional event demonstration to EPA Region 6, after a 30-day public comment period, in September 2023, to exclude these data. Detailed information on TCEQ particulate matter exceptional even demonstrations are available on the TCEQ webpage Exceptional Event Demonstrations for Particulate Matter - TCEQ. The EPA has not acted on this exceptional event demonstration as of the development of the 2025 FYA. These data are included in the PM_{10} graph in Figure 32. Exceptional event regulations and guidance are provided on EPA's Treatment of Air Quality Data Influenced by Exceptional Events webpage.

No exceedances at any Houston area sites have been recorded other than those occurring on January 16, 2021, since the last FYA. Figure 32 provides maximum daily PM_{10} concentration trends from 2014 to 2023, including the exceptional event exceedance data discussed in this section.



- number
NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less in diameter

Figure 32: Houston Area Particulate Matter of 10 Micrometers or Less in Diameter Maximum Concentration Trends, 2014-2023

Network Evaluation

Table 28 shows how each PM_{10} monitor in the Houston area was evaluated using the scoring system described in the *Evaluation Methods* section. No sites in the Houston area exceeded the PM_{10} NAAQS in this assessment, other than the exceptional event data in 2021 that were excluded. The Clinton, Houston Deer Park #2, Houston Monroe, and Lang PM_{10} monitors satisfy SLAMS requirements. Based on the scores, no changes to the Houston area PM_{10} network are recommended at this time.

Table 28: Houston Area Particulate Matter of 10 Micrometers or Less in Diameter Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Clinton	4	3	1	4	3	15	critical
Houston Deer Park #2	4	NA	NA	1	2	7	critical

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Houston Monroe	4	1	1	4	2	12	critical
Houston North Wayside	1	NA	NA	1	2	4	low
Lang	4	1	1	4	2	12	critical
Texas City Fire Station	1	1	1	4	2	9	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NA – not applicable
NAAQS – National Ambient Air Quality Standards

Corpus Christi Area

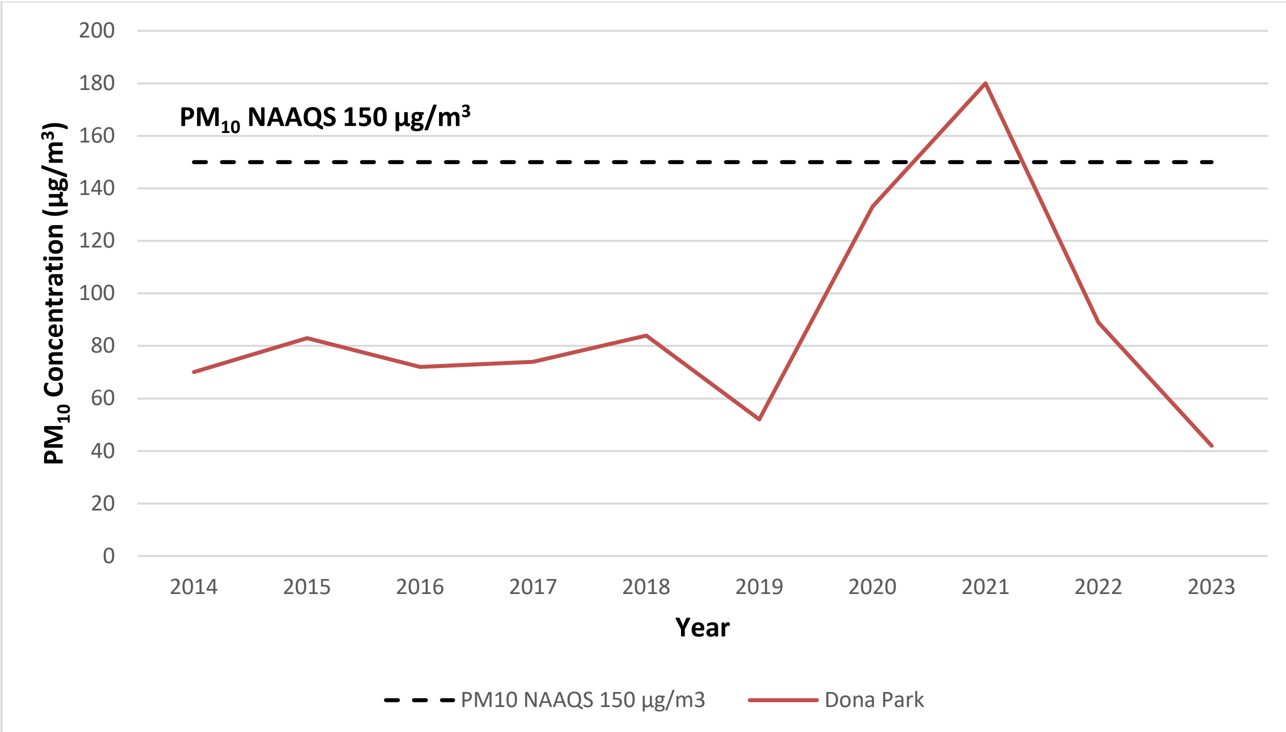
Network History and Current Status

PM_{10} monitoring in the Corpus Christi area began in the early 2000s with the deployment of the Dona Park monitor, located in a populated area close to the Corpus Christi Ship Channel. Since the 2020 FYA, one change occurred to the PM_{10} network in this area. The Dona Park PM_{10} filter-based monitor was upgraded to PM_{10} FEM continuous monitor in 2024. As of January 1, 2025, federal standards require between zero and one Corpus Christi MSA PM_{10} monitor. Texas meets this requirement in the Corpus Christi area by monitoring PM_{10} at one site to assess population exposure.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 $\mu g/m^3$ standard averaged over three years. States can request the EPA not consider air quality data affected by an exceptional event when determining if an area met an air quality health standard. High winds caused blowing dust on January 16, 2021, in Nueces County. Due to these high winds, the levels of PM_{10} at monitors in Nueces County were not reasonably controllable or preventable. TCEQ submitted an exceptional event demonstration to EPA Region 6, after a 30-day public comment period, in September 2023, to exclude these data. The EPA has not acted on these exceptional event demonstrations as of the development of the 2025 FYA. Detailed information on TCEQ particulate matter exceptional even demonstrations are available on the TCEQ webpage Exceptional Event Demonstrations for Particulate Matter - TCEQ. These data are included in the PM_{10} graph in Figure 33. Exceptional event regulations and guidance are provided on EPA's Treatment of Air Quality Data Influenced by Exceptional Events website.

No exceedances at the Corpus Christi area site have been recorded other than those occurring on January 16, 2021, since the last FYA. Figure 33 provides maximum daily PM_{10} concentration trends from 2014 to 2023, including the exceptional event exceedance data discussed in this section.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less in diameter

Figure 33: Corpus Christi Area Particulate Matter of 10 Micrometers or Less in Diameter Maximum Concentration Trends, 2014-2023

Network Evaluation

Table 29 shows how the PM_{10} monitor in the Corpus Christi area was evaluated using the scoring system described in the *Evaluation Methods* section. Zero to one PM_{10} monitor is required in the Corpus Christi area. The Dona Park PM_{10} monitor is located near an urban neighborhood downwind of industrial point sources along the ship channel and provides relevant data to assess PM_{10} concentrations in a populated area. No changes in the Corpus Christi area PM_{10} network are recommended at this time.

Table 29: Corpus Christi Area Particulate Matter of 10 Micrometers or Less in Diameter Network Evaluation

Site Name	Regulatory Value	2023 NAAQS Value	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Dona Park	1	1	1	4	2	9	medium

NAAQS – National Ambient Air Quality Standards

Lead

Network History and Current Status

The TCEQ Pb network is designed to meet source-oriented monitoring requirements to measure maximum Pb concentrations near point sources emitting 0.50 tpy or more of Pb. There is no source-oriented Pb monitoring required in the Coastal Texas area. Pb monitoring was required at the Houston area NCore site, Houston Deer Park #2, however, the requirement was eliminated in the EPA's final rule published in the Federal Register on March 28, 2016, Revisions to the *Ambient Monitoring Quality Assurance and Other Requirements; Final Rule*. The Houston Deer Park #2 Pb monitor was deactivated at the end of 2016.

Photochemical Assessment Monitoring

The VOC and carbonyl network in the Coastal Texas area fulfills requirements for and supports PAMS enhanced monitoring activities important to understanding the area's O_3 formation. Figure 34 and Figure 35 show the Houston area and Beaumont area VOC monitors and 2022 point sources. Sites with active carbonyl monitors detailed in the sections below coincide with VOC monitors and are not differentiated in the maps below. Federal monitoring for VOCs and carbonyls are not required or performed in the Corpus Christi or Victoria areas, and these areas are not discussed further in this section. Appendix A lists active and recently decommissioned VOC and carbonyl monitors, locations, monitoring objectives, and associated spatial scales.

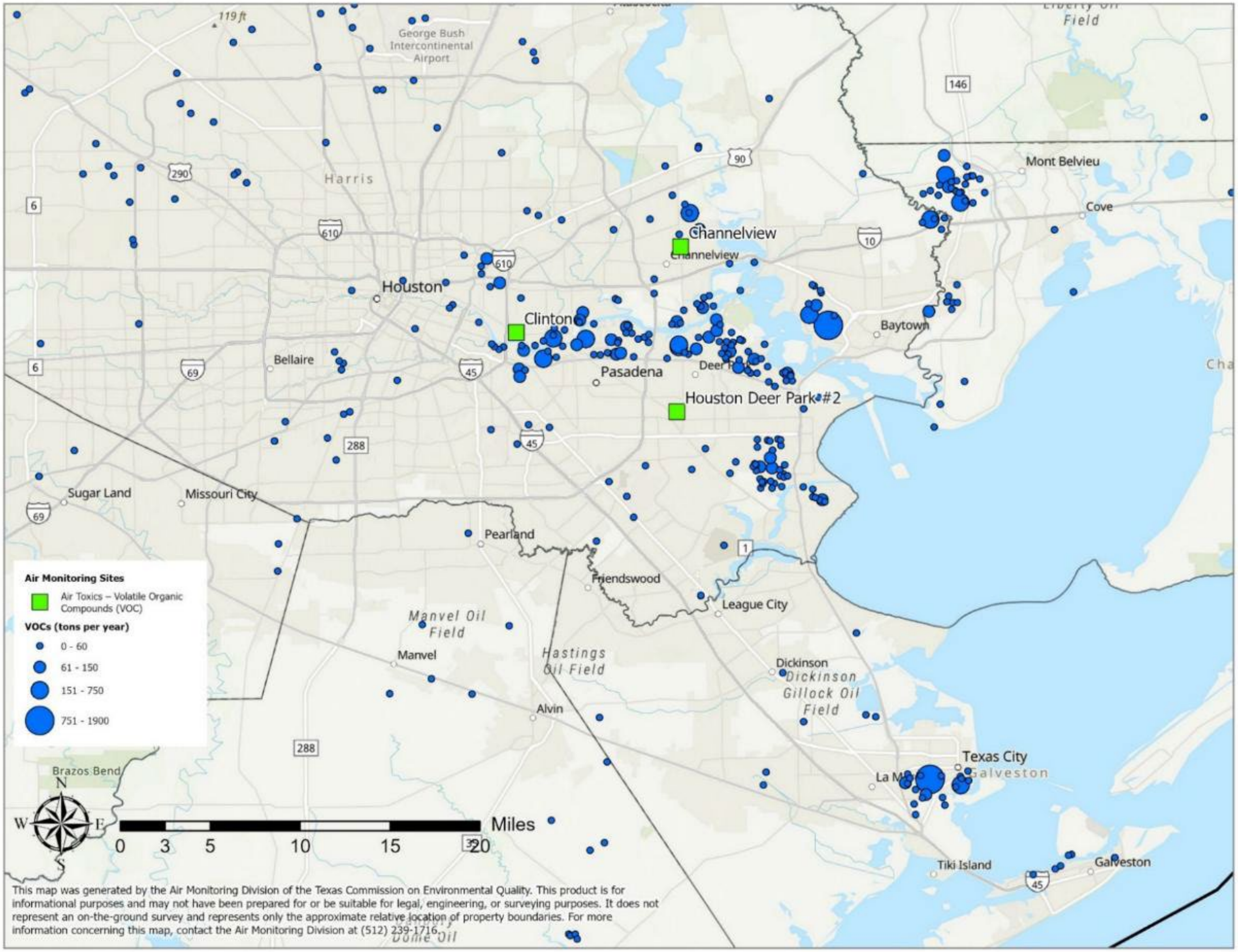


Figure 34: Houston Area Volatile Organic Compounds Monitors and 2022 Point Sources

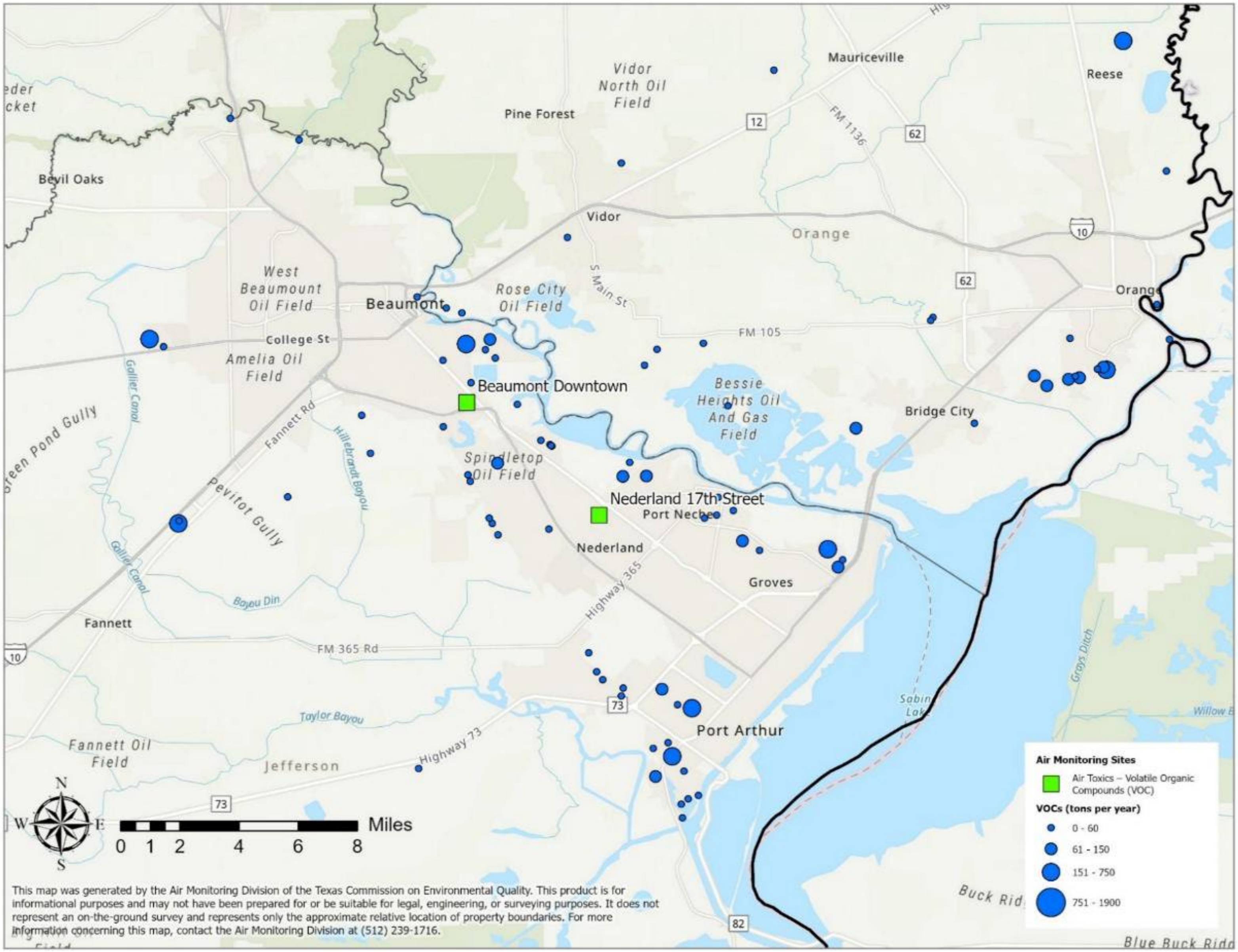


Figure 35: Beaumont Area Volatile Organic Compounds Monitors and 2022 Point Sources

Houston Area

Network History and Current Status

Houston area VOC monitoring began in the early 1990s with canister sampling, and the network expanded by adding continuous VOCs by autoGC to assist in understanding the area's photochemical characteristics and the area's O_3 formation. In 1995, 1997, and 2001, autoGCs were added to the Clinton, Houston Deer Park #2, and Channelview sites to further evaluate O_3 precursors in populated areas. The Houston Deer Park #2 and Clinton carbonyl monitors were deployed in 1996 and 1998, respectively, to provide additional information on O_3 precursors not captured in VOC monitoring. No changes to the network have occurred since the 2020 FYA. As of January 1, 2025, federal standards require a minimum of one autoGC and one carbonyl sampler related to PAMS at Houston Deer Park #2. The TCEQ exceeds requirements with three autoGCs and two carbonyl samplers associated with the federal network.

Design Values and Trends

Design values and associated trends are not applicable to VOCs and carbonyl monitoring. Monitoring objectives for photochemical assessment monitoring of O_3 precursors include creating a representative VOC and carbonyl ambient air database useful in photochemical grid modeling, developing emission control strategies, and furthering the understanding of pollution transport mechanisms to aid in reaching attainment designations. These data are part of TCEQ's Enhanced Monitoring Plan detailed in FYA Appendix D.

Network Evaluation

Table 30 shows how each VOC and carbonyl monitor in the Houston area were evaluated using the scoring system described in the *Evaluation Methods* section. The Houston Deer Park #2 autoGC and carbonyl monitors satisfy PAMS requirements. The remaining autoGCs and carbonyl monitor still provide valuable data in support of PAMS enhanced monitoring. Monitors are located in areas of dense population and are meeting the original monitoring objectives. Based on these scores, no changes to the Houston area network are recommended at this time.

Table 30: Houston Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value *	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Channelview	Speciated VOC (AutoGC)	1	NA	NA	4	2	7	medium
Clinton	Carbonyl	1	NA	NA	4	2	7	medium

Site Name	Sampler Type	Regulatory Value*	NAAQS Value *	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Clinton	Speciated VOC (AutoGC)	1	NA	NA	4	2	7	medium
Houston Deer Park #2	Carbonyl	4	NA	NA	4	2	10	critical
Houston Deer Park #2	Speciated VOC (AutoGC)	4	NA	NA	4	2	10	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
autoGC – automated gas chromatograph
NA – not applicable
NAAQS – National Ambient Air Quality Standards
VOC – volatile organic compound

Beaumont Area

Network History and Current Status

Beaumont area VOC monitoring began in the early 1990s with canister sampling at Beaumont Downtown and expanded with autoGC deployments to Beaumont Downtown and Nederland High School in 2006 to assist in understanding the area's photochemical characteristics. Carbonyl monitoring is not required or performed in the Beaumont area. No changes to the network have occurred since the 2020 FYA. As of January 1, 2025, federal standards do not require VOC or carbonyl monitoring in the Beaumont area. TCEQ exceeds requirements with two autoGCs supporting PAMS in the Beaumont area.

Design Values and Trends

Design values and associated trends are not applicable to VOC monitoring. Monitoring objectives for photochemical assessment monitoring of O_3 precursors include creating a representative VOC ambient air database useful in photochemical grid modeling, developing emission control strategies, and furthering the understanding of pollution transport mechanisms to aid in reaching attainment designations. These data are part of TCEQ's Enhanced Monitoring Plan detailed in FYA Appendix D.

Network Evaluation

Table 31 shows how each VOC monitor in the Beaumont area was evaluated using the scoring system described in the *Evaluation Methods* section. The Beaumont Downtown and Nederland 17th Street autoGC monitors support the PAMS network. Monitors are located in areas of dense population and are meeting the original monitoring objectives. Based on these scores, no changes to the Beaumont area network are recommended at this time.

Table 31: Beaumont Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value	NAAQS Value	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Beaumont Downtown	Speciated VOC (AutoGC)	1	NA	NA	4	2	7	medium
Nederland 17th Street (previously Nederland High School)	Speciated VOC (AutoGC)	1	NA	NA	4	2	7	medium

autoGC – automated gas chromatograph
NA – not applicable
NAAQS – National Ambient Air Quality Standards
VOC – volatile organic compound

Central Texas Area Evaluation

(Austin-Round Rock-San Marcos, College Station-Bryan, Killeen-Temple, San Antonio-New Braunfels, and Waco Areas)

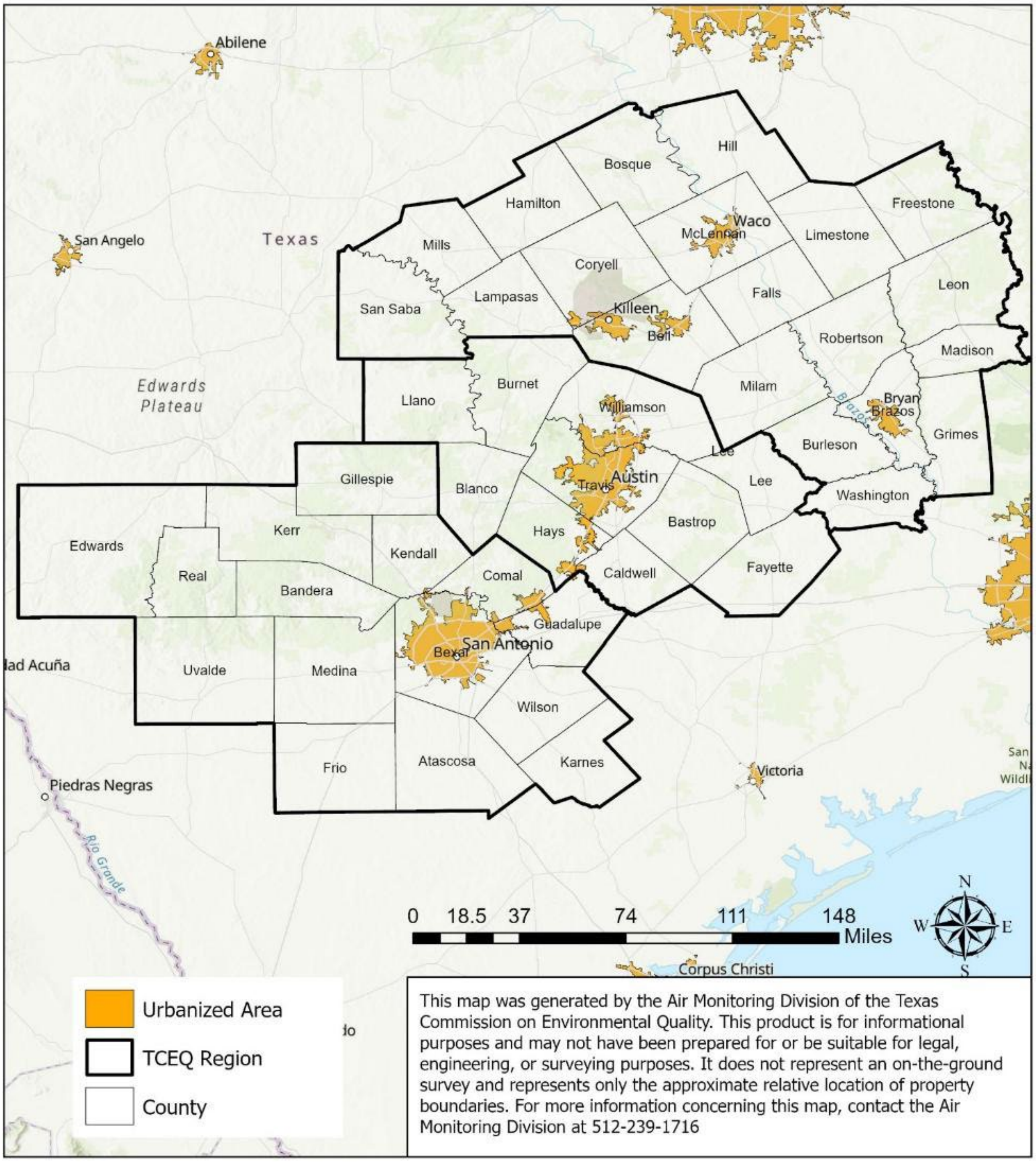


Figure 36: Central Texas Area Counties and Urban Areas

Central Texas Area Characteristics and Background

Population and Monitoring Requirements

The Central Texas area is comprised of three TCEQ Regional Areas: Region 9 Waco, Region 11 Austin, and Region 13 San Antonio. There are five CBSAs in these TCEQ Regions that include multiple counties as well as counties in the regions that are not located in CBSAs. Monitoring is conducted in Freestone and Karnes Counties that are not included in a CBSA or micropolitan statistical area. TCEQ Regions, CBSAs, and associated counties are summarized below for areas containing ambient air monitors. Details regarding each Central Texas county, CBSA, and micropolitan statistical area are detailed in FYA Appendix B.

TCEQ Region 9 – Waco

- Waco CBSA: Bosque, Falls, and McLennan Counties
- Killeen-Temple (Killeen) CBSA: Bell, Coryell, and Lampasas Counties
- College Station-Bryan (College Station) CBSA: Brazos, Burleson, and Robertson Counties
- Non-CBSA: Freestone County

TCEQ Region 11 – Austin

- Austin-Round Rock-San Marcos (Austin) CBSA: Bastrop, Caldwell, Hays, Travis, and Williamson Counties

TCEQ Region 13 – San Antonio

- San Antonio-New Braunfels (San Antonio) CBSA: Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina, and Wilson Counties
- Non-CBSA: Karnes County

The Texas Demographics Center projects the combined population of the five Central Texas area CBSAs will exceed 6.25 million persons in 2025. The 2030 projection estimates a 6% population increase from 2025 in the Central Texas area with the largest growth at 7% in the Austin CBSA. Table 32 shows the Central Texas CBSA population projections. Figure 37, Figure 38, and Figure 39 illustrate the population densities across the Central Texas urban areas with active sites and monitors and wind roses. Population density is illustrated by square mile for each area zip code. Population densities were obtained from TDC Population Density in Texas, 2022 data using the 2018-2022 five-year population estimates (latest available data at the time the FYA was drafted).

Table 32: Central Texas Area Population Projections

Core Based Statistical Area (CBSA)	2020 Census Count	2025	2030	Change (2020 - 2025)	Change (2025- 2030)
Austin-Round Rock-San Marcos	2,283,371	2,468,534	2,645,809	8%	7%
College Station-Bryan	268,248	290,916	307,559	8%	6%
Killeen-Temple	475,367	495,824	513,059	4%	3%
San Antonio-New Braunfels	2,558,143	2,693,273	2,825,602	5%	5%
Waco	295,782	305,067	313,829	3%	3%
CBSA Totals	5,880,911	6,253,614	6,605,858	6%	6%

Minimum monitoring network design requirements under 40 CFR Part 58, Appendix D are evaluated annually in TCEQ's AMNP based on the latest available census population estimates.

The Austin CBSA is required to have the following:

- two O_3 monitors,
- one CO monitor,
- two NO_2 monitors,
- three $PM_{2.5}$ monitors (monitors fulfill multiple requirements), and
- between two and four PM_{10} monitors.

The College Station CBSA is required to have the following:

- one SO_2 monitor,
- one $PM_{2.5}$ monitor, and
- zero to one PM_{10} monitor.

The Killeen CBSA is required to have the following:

- two O_3 monitors,
- one $PM_{2.5}$ monitor, and
- one to two PM_{10} monitors (new requirement based on 2023 U.S. Census data, pending activation).

The San Antonio CBSA is required to have the following:

- two O_3 monitors,
- one CO monitor,
- three NO_2 monitors,
- one SO_2 monitor,
- four $PM_{2.5}$ monitors, and
- two to four PM_{10} monitors.

The Waco CBSA is required to have the following:

- one O_3 monitor, and
- zero to one PM_{10} monitor.

Freestone and Karnes Counties have zero requirements.

TCEQ evaluated population projection data illustrated in Table 3 and Table 32 against minimum monitoring design requirements. Based on the projected population assessment, monitoring requirements are expected to increase in one Central Texas CBSA. The Austin CBSA may require one SO_2 PWEI monitor by the end 2030; however, an existing SO_2 monitor at Austin North Hills Drive would fulfill this potential future requirement. The Austin CBSA will require an additional near-road NO_2 monitoring site when the population exceeds 2,500,000, likely before 2030 based on the population projections. The TCEQ meets and exceeds current monitoring requirements with the monitors illustrated in Figure 37, Figure 38, and Figure 39.

Wind Patterns

Central Texas area annual average wind speed and direction wind roses from local airport meteorological sensors are illustrated in Figure 37, Figure 38, and Figure 39 with data averaged from 2019 to 2023. Figure 37 wind roses were derived from Austin Bergstrom International Airport. Figure 38 wind roses were derived from Waco Regional Airport and Robert Gray Army Airfield. Figure 39 wind roses were derived from Boerne Stage Airfield and New Braunfels Municipal Airport. Wind data indicate the predominant flow is typically south and south-southeasterly from the Texas Gulf Coast to the north and north-northwest. Winds can originate from the North American continent or in the Caribbean Sea or Atlantic Ocean. The Central Texas area is susceptible to transported pollution due to its location, predominant wind patterns, and flat terrain.

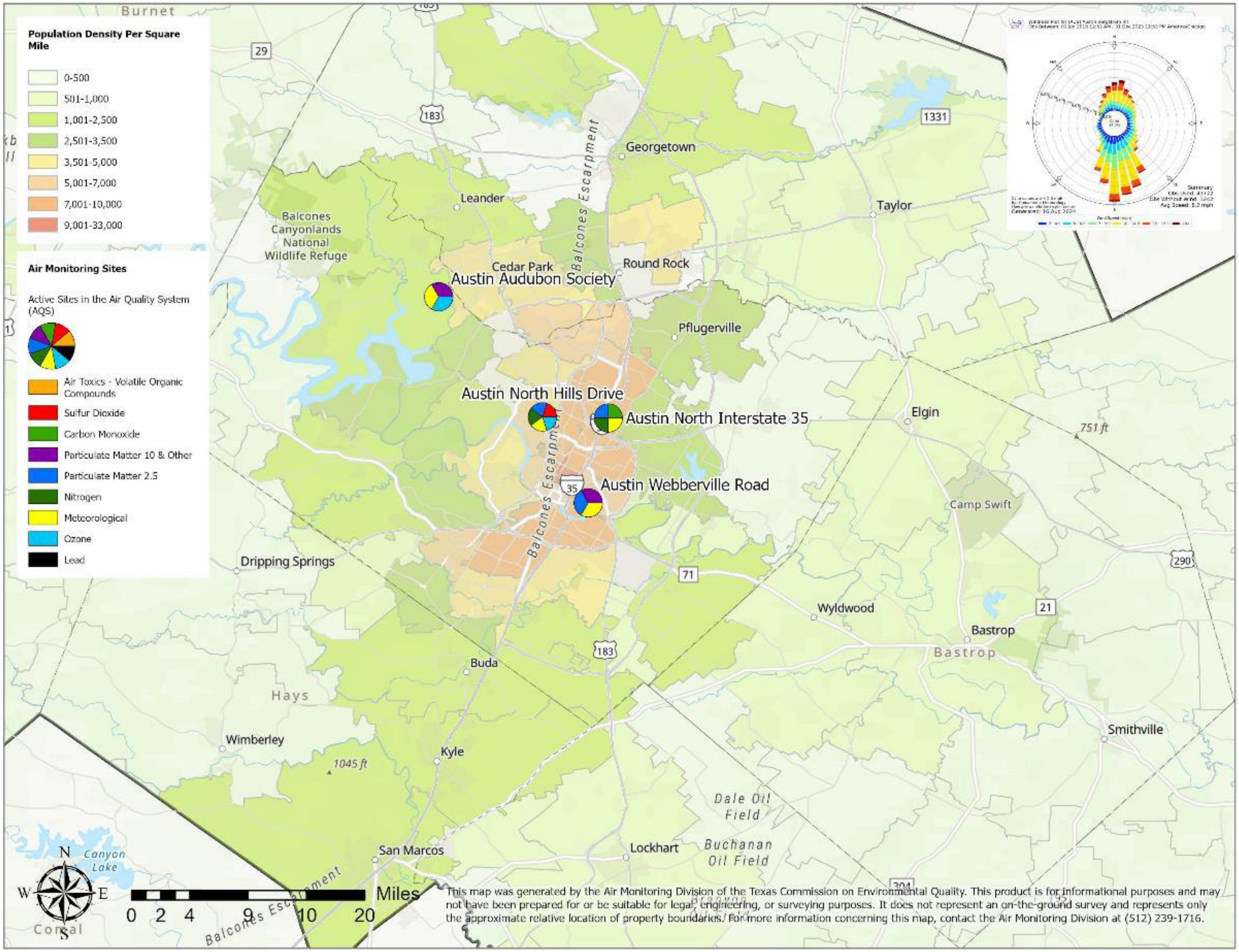


Figure 37: Austin Area Active Sites and Monitors, Population Density, and Wind Rose

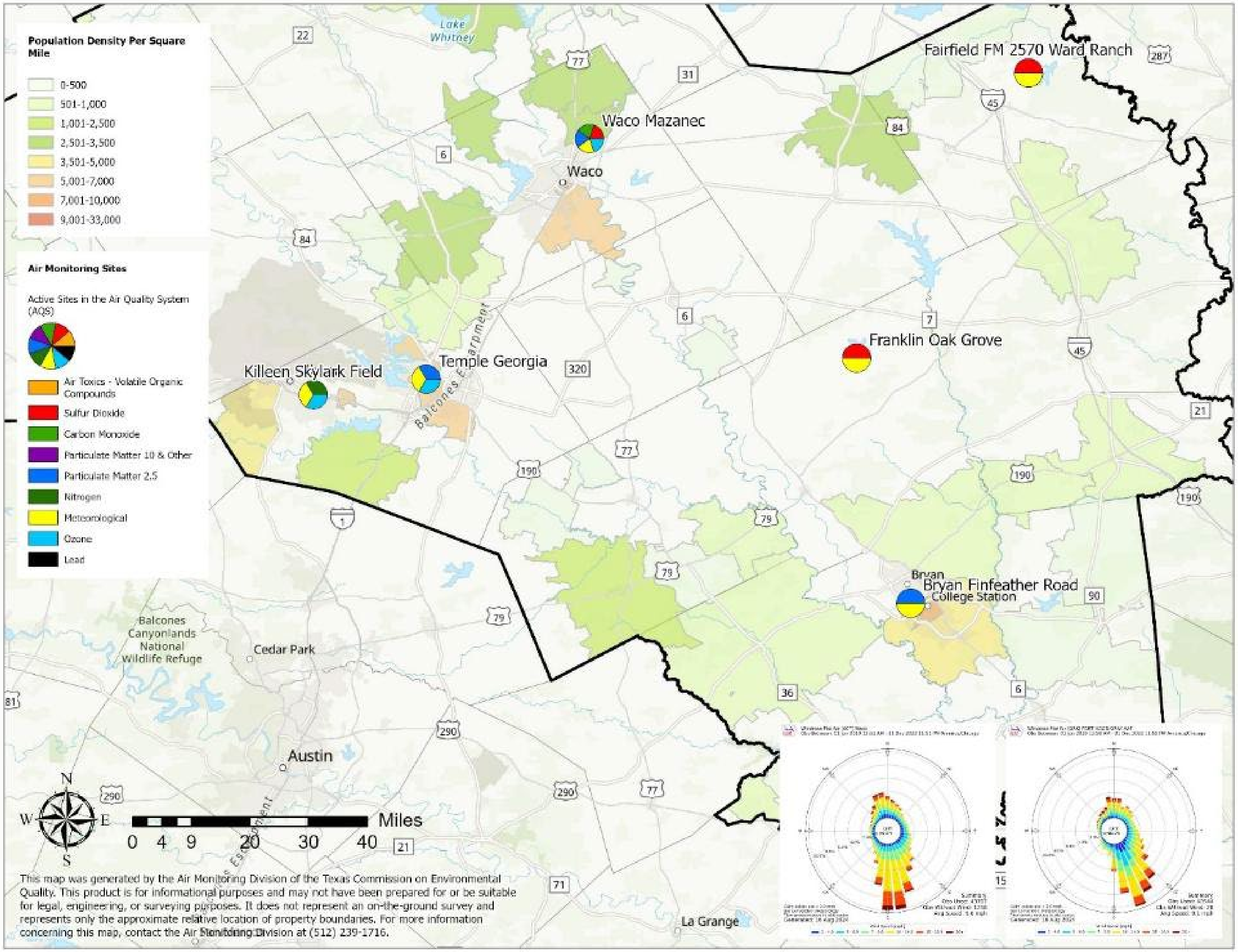


Figure 38: College Station, Killeen, and Waco Area Active Sites and Monitors, Population Density, and Wind Roses

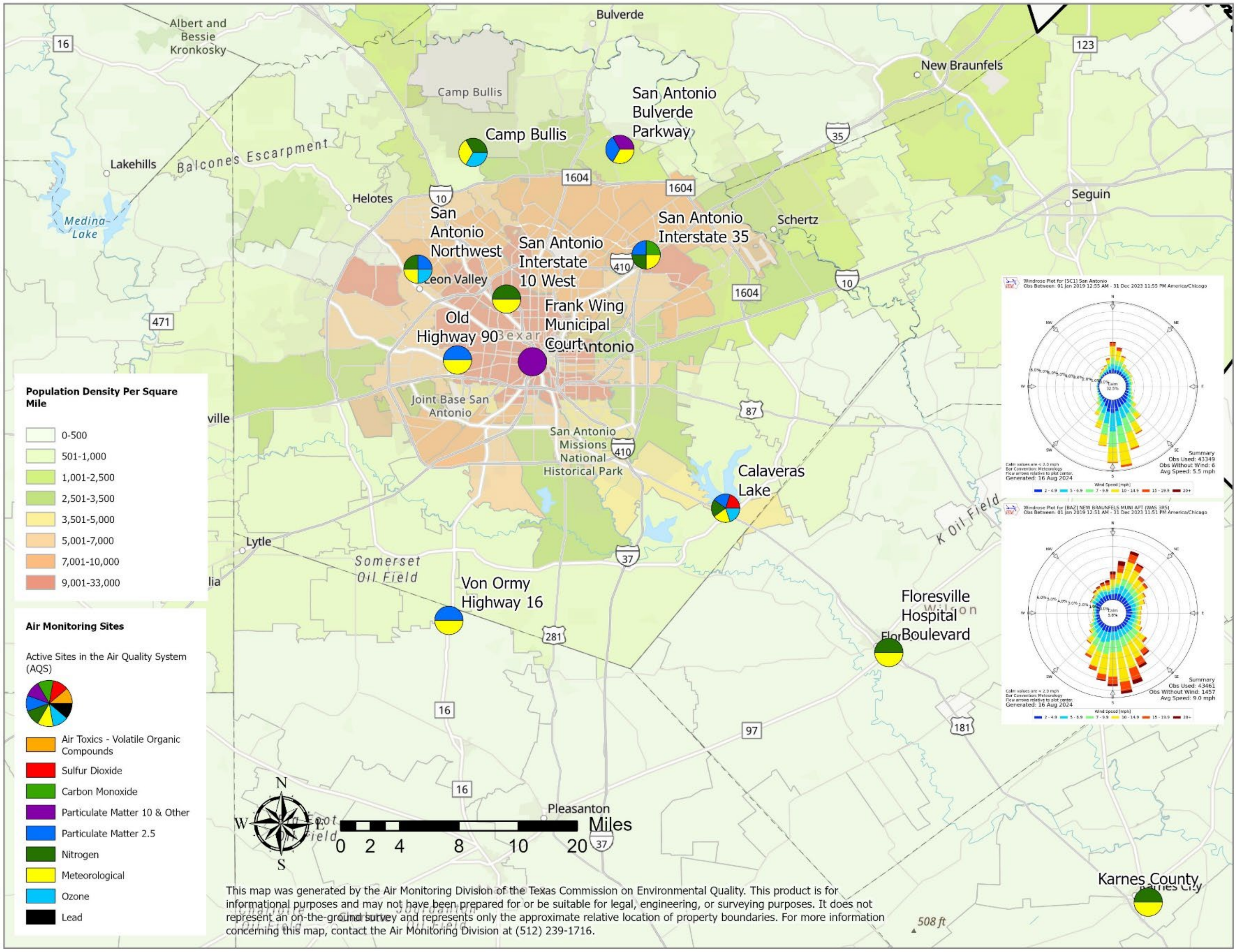


Figure 39: San Antonio Area Active Sites and Monitors, Population Density, and Wind Roses

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Central Texas EI 2020 source totals by pollutant, by TCEQ Region, are listed in Table 33. Data from EI source categories show the following for the Central Texas area:

- The majority of CO is emitted from on-road and non-road mobile sources in the Austin, San Antonio, and Waco Regions.
- NO_x emissions are predominately from point, area, and on-road mobile sources in the Austin and San Antonio Regions, and from point sources and on-road mobile in the Waco Region.
- Area sources account for the majority of VOCs, PM_{10}, and $PM_{2.5}$ emissions in all regions.
- Point sources are the primary contributors of SO_2 emissions for all regions.
- Non-road mobile sources contribute the majority of the total Pb emissions in all regions.

This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 33: 2020 Central Texas Area Emissions Inventory in Tons Per Year

Area*	Source	VOC	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R9 Waco	Point	894	12,006	12,077	1,575	1,233	2,623	0.13
R9 Waco	Area	35,307	5,678	11,162	64,174	9,222	290	0.02
R9 Waco	On-Road Mobile	3,381	9,295	63,848	915	310	50	0.00
R9 Waco	Non-Road Mobile	4,429	5,397	69,666	495	469	75	1.20
R11 Austin	Point	3,035	16,907	11,117	1,916	1,204	13,145	0.68
R11 Austin	Area	84,317	19,620	25,718	53,167	8,421	1,069	0.01
R11 Austin	On-Road Mobile	5,270	13,555	96,328	1,558	477	66	0.00
R11 Austin	Non-Road Mobile	5,614	7,416	83,335	592	560	71	1.04
R13 San Antonio	Point	2,442	17,018	20,283	3,696	3,096	20,295	0.46
R13 San Antonio	Area	43,333	12,175	15,358	121,658	15,507	250	0.01
R13 San Antonio	On-Road Mobile	2,588	11,853	56,355	828	342	41	0.00

Area*	Source	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R13 San Antonio	Non-Road Mobile	2,437	6,237	31,518	352	337	39	0.82

*Appendix C details the counties included for each area.
CO – carbon monoxide
NO_x – oxides of nitrogen
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
PM_{10} – particulate matter of 10 micrometers or less in diameter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Point-Source Emissions Lead Waiver Request

The EPA Regional Administrator may waive the requirement in 40 CFR Part 58, Appendix D, 4.5(a) for monitoring near specific Pb sources with sufficient demonstration that the Pb source will not contribute to a maximum concentration in ambient air greater than 50% of the NAAQS based on historical monitoring data, modeling, or other means. TCEQ submitted a Pb modeling analysis for the Lower Colorado River Authority Fayette Power Plant, with a request to renew the Pb waiver, in the 2020 TCEQ *Texas Five-Year Ambient Monitoring Network Assessment,* and the EPA Region 6 granted the waiver request. The Lower Colorado River Authority Fayette Power Plant 2021, 2022, and 2023 Pb point-source emission data, listed in TCEQ's 2025 AMNP Table 4, do not trigger a monitoring requirement; therefore, the waiver is no longer required. All Texas point source reported Pb emissions are below levels that would require monitoring or a Pb waiver request; therefore, no Pb waiver is requested.

Natural Sources

The Central Texas area is impacted by the same seasonal pollutant transport that impacts the Coastal and North Texas areas. Smoke events, which can impact both $PM_{2.5}$ concentrations and O_3 formation, typically occur in the summer months. Accumulated smoke and haze from the eastern United States arrives in late spring through early fall, while smoke from agricultural burning in North and Central America arrives in April and May. In addition, $PM_{2.5}$ concentrations can be elevated from June to August and during the spring months typically from African dust and dust storms in the western Great Plains and North and Central America, respectively.

Regional Air Quality and Attainment Status

Criteria Pollutants

Current and historical regional air quality data were evaluated to determine monitoring needs, including the continued need for monitoring during maintenance periods after an area has met all air quality standards. Details on the Central Texas area's current and historical air quality designations for the six criteria pollutants are detailed on TCEQ's SIP webpage. As of January 1, 2025, the College Station, Kileen, and Waco CBSAs are designated as attainment/unclassifiable for all current NAAQS.

2015 Ozone

Bexar County in the San Antonio CBSA is designated as serious nonattainment for the 2015 eight-hour O_3 NAAQS of 0.070 ppm, effective July 22, 2024. Travis, Williamson, Bastrop, Hays, and Caldwell Counties in the Austin CBSA are designated attainment/unclassifiable for the 2015 eight-hour ozone NAAQS of 0.070 ppm, effective January 16, 2018.

2010 One-Hour SO_2

In June 2010, the primary SO_2 NAAQS was revised to a one-hour standard of 75 ppb. EPA completed initial designations in July 2013, and no areas in Texas were designated at that time. A March 2015 consent decree between the Sierra Club and the EPA set deadlines for the EPA to complete designations for the one-hour SO_2 NAAQS. EPA designated a portion of Freestone County (Freeston-Anderson) and a portion of Titus County as nonattainment for the 2010 one-hour SO_2 NAAQS, effective January 2017. The EPA published final clean data determinations for the Freestone-Anderson and Titus nonattainment areas, effective June 2021 (86 FR 26388). The EPA made these determinations based on the shutdown of the primary emissions sources in both nonattainment areas, and the determinations were supported by monitoring data from within or near those areas along with an evaluation of previous modeling.

TCEQ adopted the Redesignation Request and Maintenance Plan SIP Revision for the Freestone-Anderson and Titus 2010 SO_2 NAAQS Nonattainment Areas on February 23, 2022. The SIP revision included a request that the EPA redesignate the Freestone-Anderson (and Titus) nonattainment areas to attainment for the 2010 SO_2 NAAQS and provided 10-year maintenance plans for both areas consistent with FCAA, §175A requirements. In December 2024, EPA finalized their determination that the SO_2 nonattainment area in Freestone and Anderson Counties attained the 2010 one- hour primary SO_2 NAAQS by the applicable attainment date of January 12, 2022 (81 FR 89870). This determination was based on primary source shutdowns, available ambient air quality monitoring data from the 2019–2021 monitoring period, relevant modeling analysis, and additional emissions inventory information. This action did not constitute a redesignation of the Freestone-Anderson and Titus nonattainment area to attainment of the 2010 one-hour SO2 NAAQS under section 107(d)(3) of the FCAA. As of the FYA publication, EPA has not acted on the TCEQ's 2022 proposal to redesignate the Freestone-Anderson (and Titus) areas as attainment; therefore, the area remains as designated nonattainment for the 2010 SO_2 NAAQS until EPA revises the area's designation. All other Central Texas counties were designated as unclassifiable/attainment for the 2010 primary SO_2 NAAQS.

Central Texas Monitoring Network Evaluation

Ozone

The O_3 network in the Central Texas area fulfills SLAMS requirements based on population and O_3 design values. , Figure 38, and Figure 39 show the area active O_3 monitors at sites with a light blue section. Monitoring for O_3 is not required or performed in the College Station area and is not discussed further in this section. Appendix A lists active and recently decommissioned O_3 monitors, locations, monitoring objectives, and associated spatial scales.

Central Texas Area

Network History and Current Status

Central Texas area O_3 monitoring began in the late 1970s and early 1980s with deployment of the Austin Northwest and San Antonio Northwest monitors. In the late 1990s, the O_3 monitoring network expanded to Austin Audubon, Calaveras Lake, and Camp Bullis to meet evolving federal monitoring requirements. In 2007, 2009, and 2013, the O_3 network expanded to urban areas along the Interstate 35 corridor at Waco Mazanec, Killeen Skylark Field, and Temple Georgia. Central Texas area O_3 monitors provide near real-time data to the public measuring maximum concentrations in populated areas and measuring concentrations upwind of urban areas to evaluate regional transport.

One change to the O_3 monitoring network occurred in the Austin area since the 2020 FYA. The Austin Northwest air monitoring site and O_3 monitor were temporarily deactivated for relocation in February 2020 due to the property owner revoking the site usage agreement for building expansion. The Austin Northwest air monitoring site was relocated within one mile to the Austin North Hills Drive site in October 2020 with no change to AQS identification number. Data loss experienced during the relocation affected the Austin North Hills Drive O_3 design value for 2020-2022.

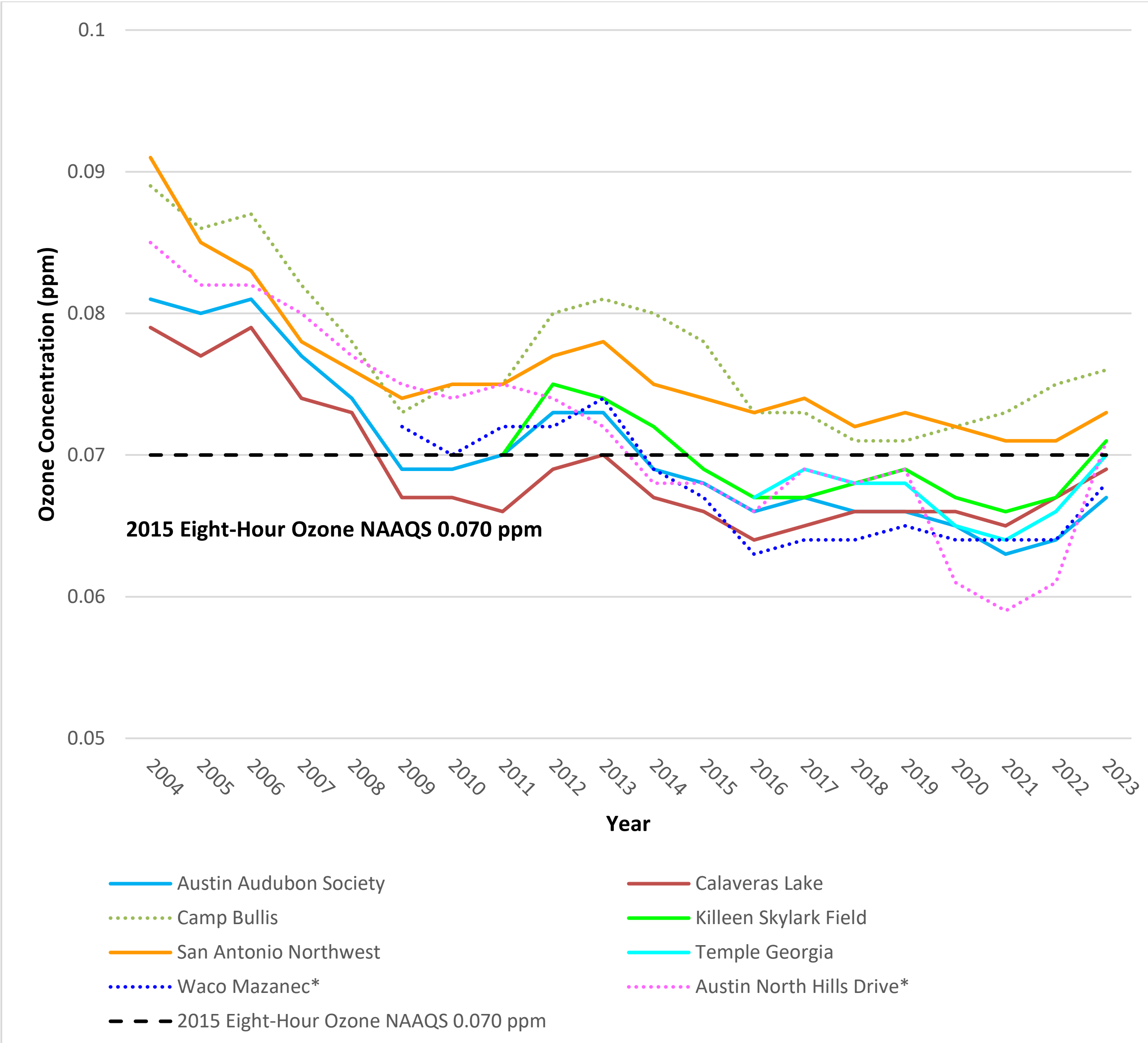
As of January 1, 2025, federal standards require a minimum of seven Central Texas area O_3 monitors. TCEQ meets area requirements in the Austin and Waco MSAs, and exceeds requirements in the San Antonio MSA, with a total of eight Central Texas area O_3 monitors. The spatial distribution of the network provides valuable data for evaluating population exposure and maximum concentrations in the area.

Design Values and Trends

Central Texas area eight-hour O_3 design values have declined since the early 2000’s and have been fairly stable over the last ten years. Figure 40 shows the Central Texas area O_3 design value trends from 2004 through 2023 compared with the 2015 eight-hour O_3 NAAQS of 0.070 ppm. Design values from the Waco Mazanec O_3 monitor were invalid for 2017 to 2019 due to data quality concerns. Design values for Austin North Hills Drive were invalid for 2020 to 2022 due to relocation. While these monitors do not have valid design values for each year, invalid O_3 design values are included in Figure 40 for trends comparison.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. The valid data, surrounding data loss, are available and important to understanding the area’s air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



* Waco Mazanec design value not valid for 2017-2019; Austin North Hills Drive design value not valid for 2020 to 2022
NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 40: Eight-Hour Ozone Design Value Trends in the Central Texas Area, 2004-2023

Network Evaluation

Table 34 shows how each O_3 monitor in the Central Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Austin North Hills Drive, Austin Audubon Society, Camp Bullis, Killeen Skylark Field, San Antonio Northwest, Temple Georgia, and Waco Mazanec monitors in Central Texas satisfy SLAMS requirements. The remaining area monitor at Calaveras Lake continues to provide valuable data due to current design values and spatial coverage. Based on these scores and the current spatial coverage, no changes to the Central Texas area O_3 network are recommended at this time.

Table 34: Central Texas Area Ozone Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Austin Audubon Society	4	4	2	4	1	15	critical
Austin North Hills Drive (previously Austin Northwest)	4	4	2	4	1	15	critical
Calaveras Lake	1	4	2	4	1	12	critical
Camp Bullis	4	4	2	4	1	15	critical
Killeen Skylark Field	4	4	2	4	1	15	critical
San Antonio Northwest	4	4	2	4	1	15	critical
Temple Georgia	4	4	2	3	1	14	critical
Waco Mazanec	4	4	2	4	1	15	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Carbon Monoxide

The CO network in the Central Texas area includes ambient CO monitors fulfilling near-road requirements in the Austin and San Antonio areas. CO monitoring is also conducted in the Waco area. CO monitoring is not required or performed in the Killeen or College Station areas; therefore, these areas are not discussed further in this section. Figure 41 shows the area active CO monitors with green squares and the 2022 CO point sources with blue circles. Appendix A lists active CO monitors, locations, monitoring objectives, and associated spatial scales.

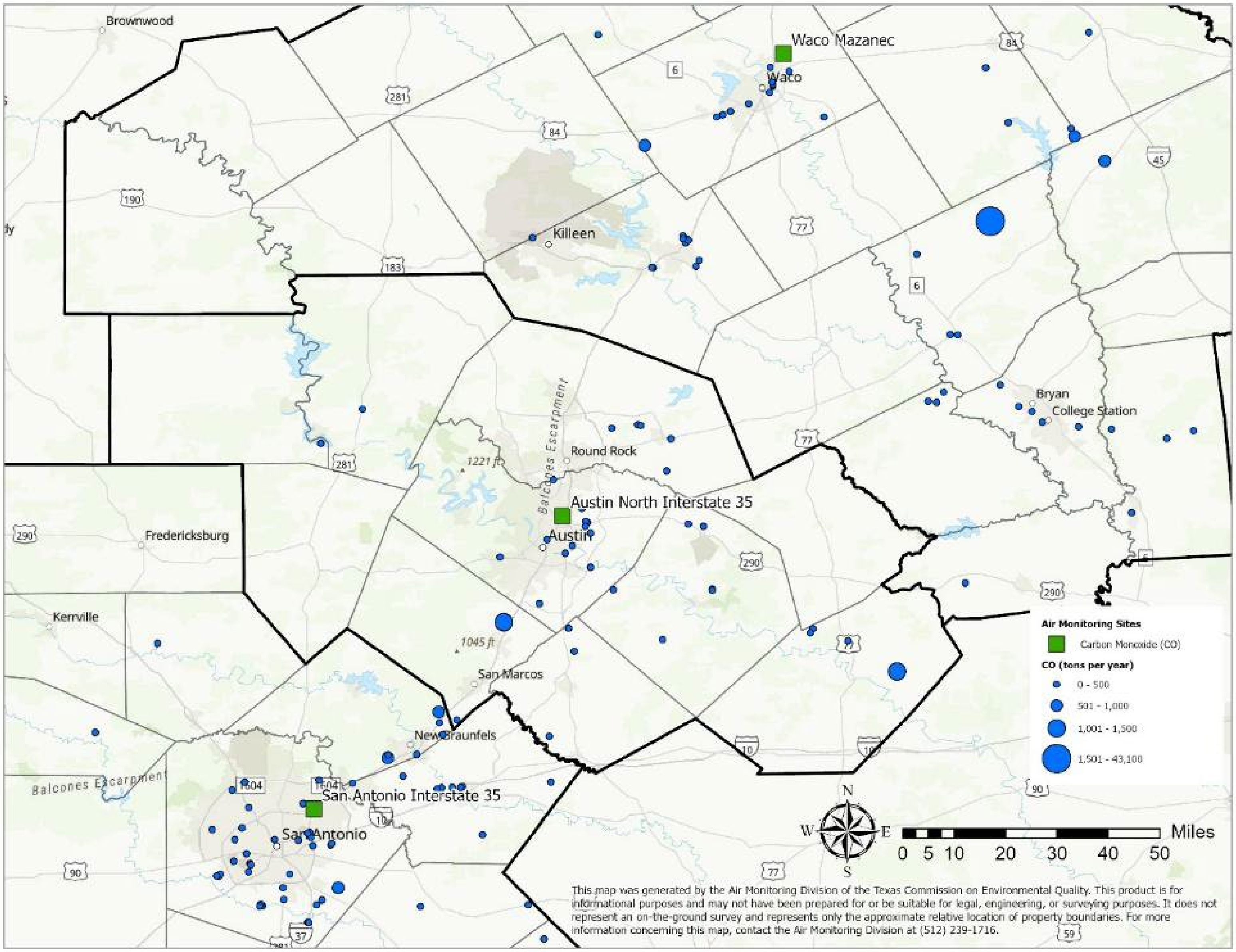


Figure 41: Central Texas Area Carbon Monoxide Monitors and 2022 Point Sources

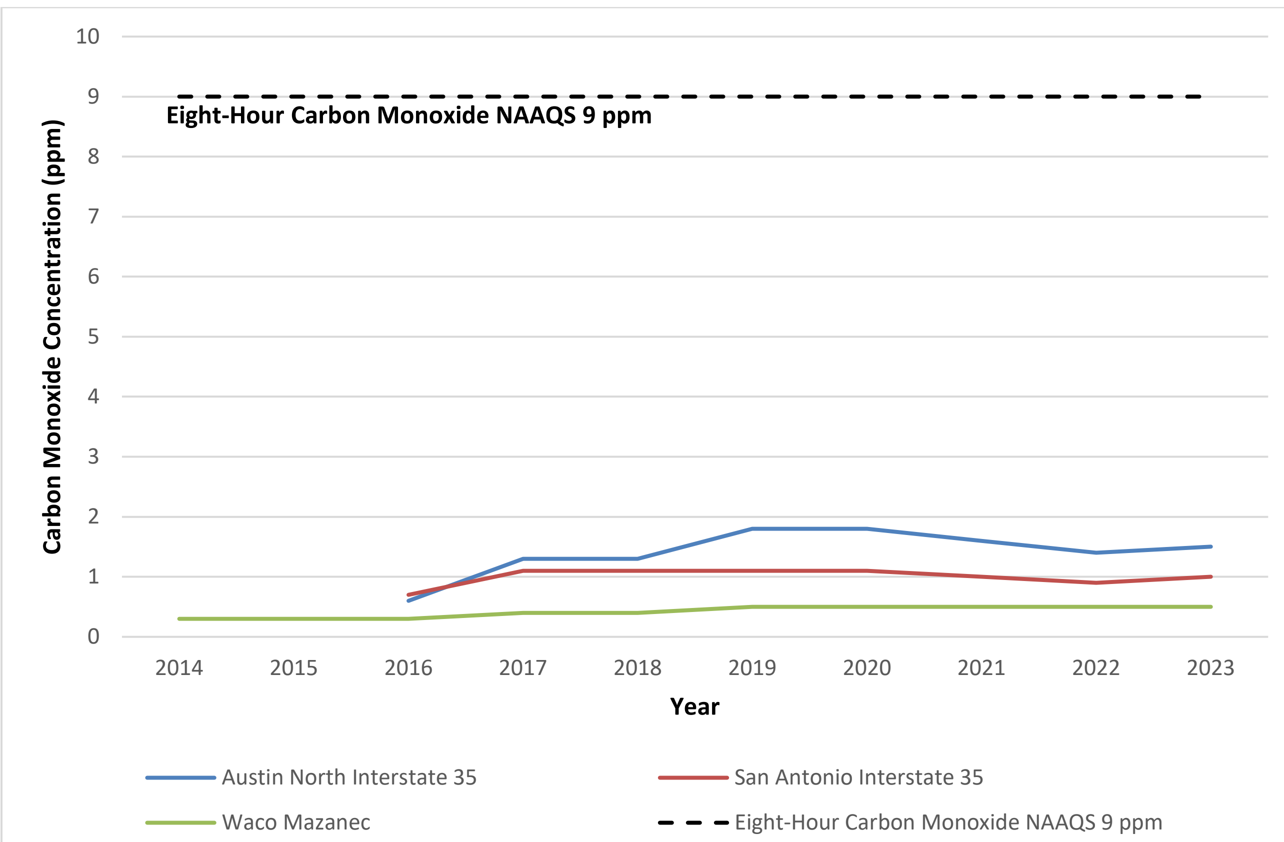
Central Texas Area

Network History and Current Status

Central Texas area CO monitoring began in the late 1970s in Austin and San Antonio. Monitoring decreased in the early 2000s as CO regulations changed, concentrations declined, and monitors were decommissioned. In 2007, CO monitoring began at Waco Mazanec to provide upwind background measurements for the area. CO monitors were added at the Austin North Interstate 35 site and San Antonio Interstate 35 site in December 2016 to fulfill the near-road CO monitoring requirement. No CO monitoring changes have occurred in the Central Texas area since the 2020 FYA. As of January 1, 2025, federal standards require a minimum of two area CO monitors fulfilling near-road requirements. TCEQ exceeds CO monitoring requirements in the Central Texas area with CO monitored at three sites.

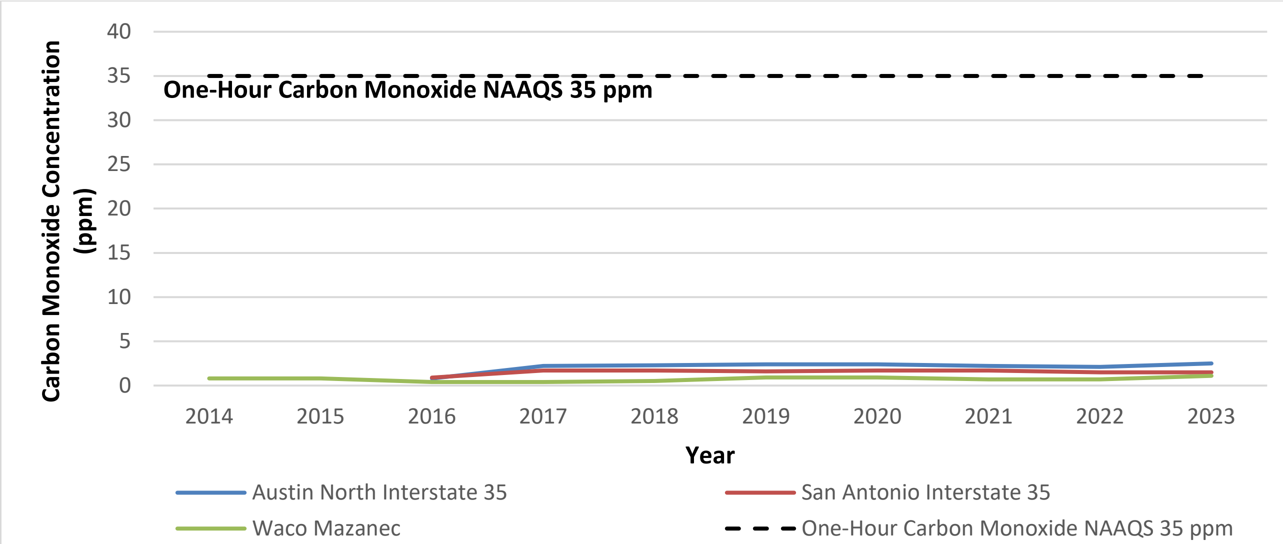
Design Values and Trends

Central Texas area CO design values remain below 17% of the eight-hour NAAQS of 9 ppm and below 7% of the one-hour NAAQS of 35 ppm, as shown in Figure 42 and Figure 43.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 42: Eight-Hour Carbon Monoxide Design Value Trends in the Central Texas Area, 2014-2023



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 43: One-Hour Carbon Monoxide Design Value Trends in the Central Texas Area, 2014-2023

Network Evaluation

Table 35 shows how each CO monitor in the Central Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Austin North Interstate 35 and San Antonio Interstate 35 monitors satisfy near-road CO monitoring requirements. The remaining Waco Mazanec monitor is useful for evaluating background concentrations. No changes in the Central Texas area CO network are recommended at this time.

Table 35: Central Texas Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Austin North Interstate 35	4	1	3	2	3	13	critical
San Antonio Interstate 35	4	1	3	2	3	13	critical
Waco Mazanec	1	1	3	4	2	11	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Oxides of Nitrogen

The NO_x network in the Central Texas area includes NO_x, NO_2, and NO monitoring and is designed to meet NO_2 area-wide and near-road monitoring requirements. NO_x, NO_2, and NO monitoring is not required or performed in the College Station, Killeen, or Waco areas and is not discussed further in this section. Figure 44 shows the area active NO_x monitors with green squares and the NO_x 2022 point sources with blue circles. Appendix A lists active NO_x monitors, locations, monitoring objectives, and associated spatial scales.

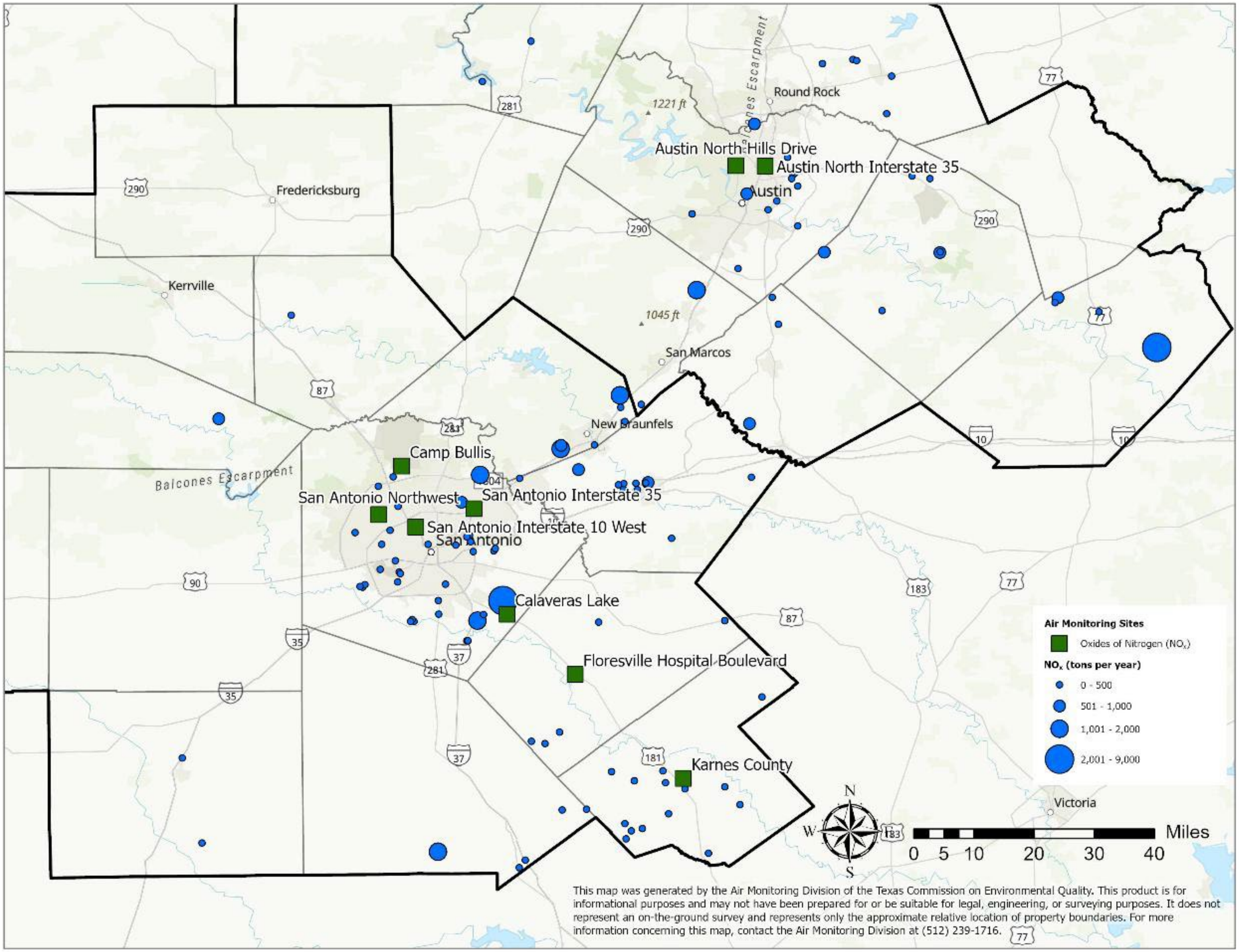


Figure 44: Central Texas Area Oxides of Nitrogen Monitors and 2022 Point Sources

Central Texas Area

Network History and Current Status

Central Texas area NO_x monitoring began in the late 1990s with a NO_x monitor deployed at Calaveras Lake. In 2007, a NO_x monitor was deployed to Waco Mazanec to provide upwind background data. In 2012, NO_x monitors were deployed to Austin Northwest and San Antonio Northwest to fulfill new area-wide NO_2 requirements. In early 2014, NO_x monitors were deployed at Austin North Interstate 35 and San Antonio Interstate 35 to fulfill NO_2 near-road requirements.

In EPA's response to TCEQ's *2015 Five-Year Ambient Air Monitoring Network Assessment,* EPA recommended deactivating the NO_x monitor at Waco Mazanec due to low design values and relocating to the Killeen Skylark Field site. O_3 design values historically trended higher in the Killeen area than in the Waco area (shown in Figure 45). Killeen Skylark Field NO_x monitoring would provide O_3 precursor data important to understanding the area's O_3 formation. Therefore, the Waco Mazanec NO_x monitor was deactivated in December 2017 and relocated to Killeen Skylark Field in April 2018 to provide general background data important to understanding O_3 formation in the area. The state-initiative NO_x monitors at Camp Bullis, Floresville Hospital Boulevard, and Karnes County were redesignated as federal network special purpose monitors in January 2020 measuring O_3 precursor emissions impacts, characterizing upwind and background concentrations, and characterizing transport of O_3 precursors. The Austin Northwest air monitoring site and NO_x monitor were temporarily deactivated for relocation in February 2020 due to the property owner revoking the site usage agreement for building expansion. The Austin Northwest air monitoring site was relocated within one mile to the Austin North Hills Drive site in October 2020 with no change to AQS identification number. Data loss experienced during the site inactivation during the relocation affected the Austin North Hills Drive NO_2 design value for 2020-2022.

Since the last FYA, several Central Texas area network changes occurred. TCEQ recommended deploying a second near-road monitoring station in the San Antonio CBSA to meet the near-road requirement in CBSAs with 2,500,000 or more persons based on the latest available census figures. EPA approved a revised location for a second near-road site named San Antonio Interstate 10 West in November 2023. TCEQ experienced unexpected challenges in securing power to the site, including lengthy power provider delays and theft of electrical infrastructure. TCEQ deployed the San Antonio Interstate 10 West site and NO_x monitor on March 31, 2025.

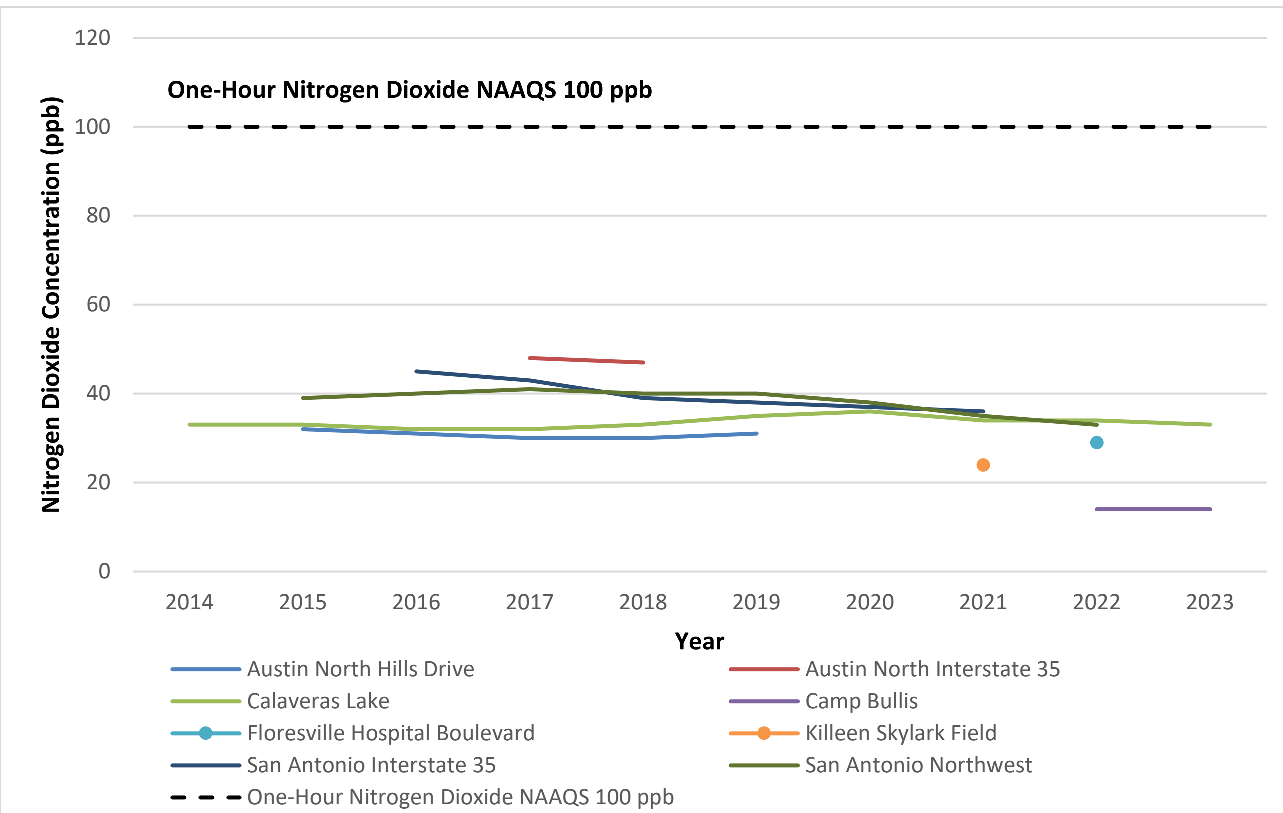
As of January 1, 2025, federal standards require a minimum of five NO_2 monitors to satisfy NO_2 area-wide and near-road monitoring requirements. The TCEQ exceeds requirements with ten NO_x monitors. Monitoring objectives related to these federal requirements include collecting ambient data in populated areas, measuring maximum O_3 precursor emissions impacts, characterizing upwind and background concentrations, and characterizing downwind transport of O_3 precursors.

Design Values and Trends

Central Texas area one-hour and annual NO_2 concentrations have been stable with some declining trends over the past ten years. All Central Texas area monitors remain well below the one-hour and annual NO_2 NAAQS. Figure 45 and Figure 46 show the design value trends in the Central Texas area from 2014 to 2023. The San Antonio Interstate 10 West NO_x monitor, deployed in March 2025, has not yet obtained three complete years of data for design value calculations; therefore, this monitor will not be assessed with the *NAAQS Value* and *Data Trend* metrics in this FYA. Austin North Hills Drive one-hour NO_2 design values were invalid for 2020 to 2022 due to data loss that occurred during the site's temporary deactivation for relocation. The Karnes County valid annual NO_2 design value was assessed with the *NAAQS Value* and *Data Trend* metrics in this FYA, and one-hour NO_2 design values are expected with 2024 certified data.

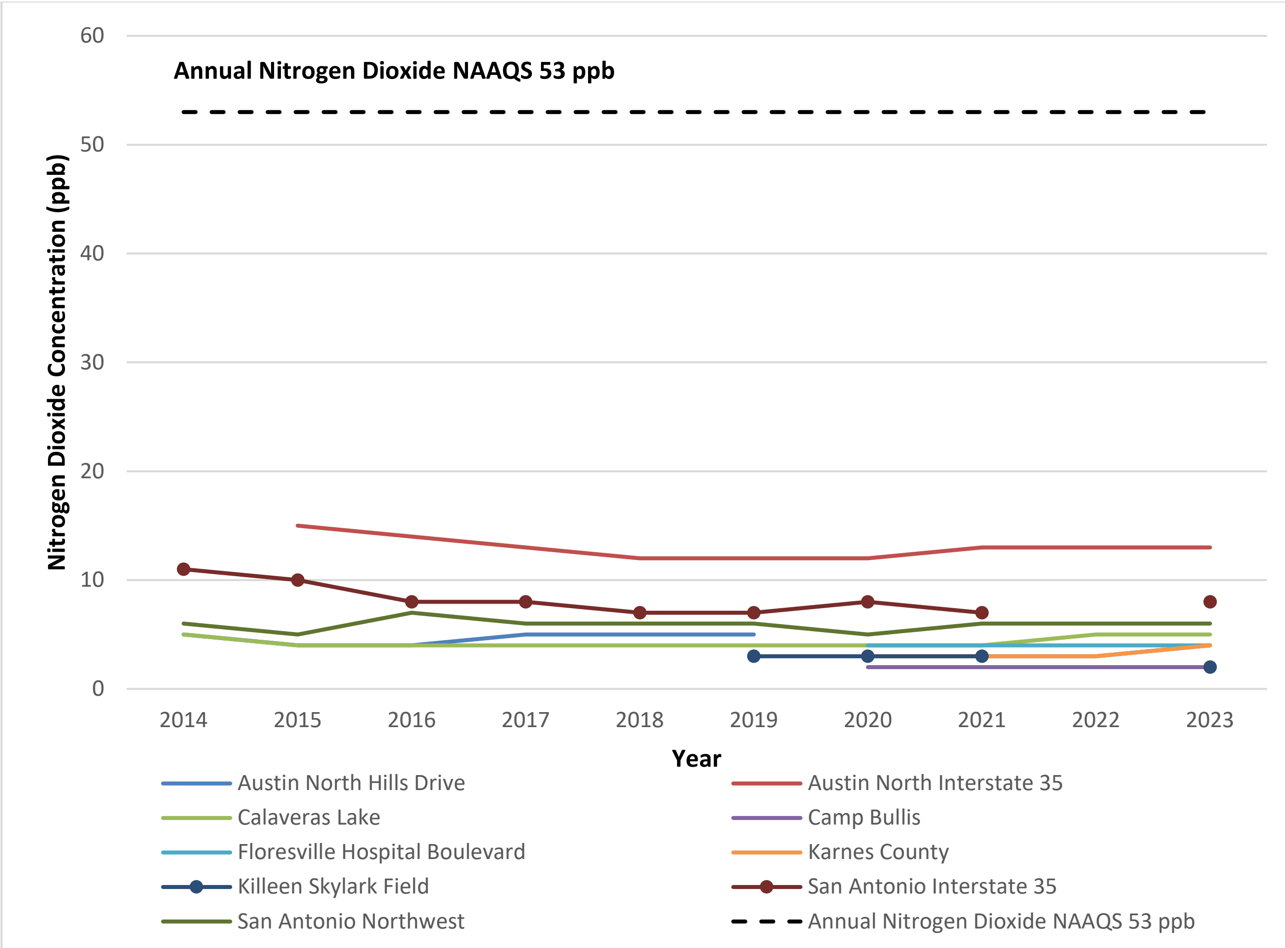
TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. The valid data, surrounding the data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 45: Central Texas Area One-Hour Nitrogen Dioxide Design Value Trends, 2014–2023



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 46: Central Texas Area Annual Nitrogen Dioxide Design Value Trends, 2014–2023

Network Evaluation

Table 36 shows how each NO_x monitor in the Central Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The San Antonio Northwest and Austin North Hills Drive monitors fulfill area-wide requirements. The Austin North Interstate 35, San Antonio Interstate 35, and San Antonio Interstate 10 West NO_x monitors fulfill near-road requirements. The remaining area NO_x monitors provide data to evaluate O_3 precursor trends and upwind background concentrations. Based on these scores, no further changes to the Central Texas area NO_x network are recommended at this time.

Table 36: Central Texas Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Austin North Hills Drive (previously Austin Northwest)	4	1	1	3	2	11	critical
Austin North Interstate 35	4	1	2	2	3	12	critical
Calaveras Lake	1	1	2	4	2	10	medium
Camp Bullis	1	1	2	2	2	8	low
Floresville Hospital Boulevard	1	1	2	3	2	9	medium
Karnes County	1	1	3	2	2	9	medium
Killeen Skylark Field	1	1	2	2	2	8	low
San Antonio Interstate 10 West (new in 2025)	4	NA	NA	1	3	8	critical
San Antonio Interstate 35	4	1	1	2	3	11	critical
San Antonio Northwest	4	1	2	3	2	12	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards
NA – not applicable

Sulfur Dioxide

The SO_2 network in the Central Texas area fulfills PWEI and 2015 DRR requirements. Figure 47 shows area SO_2 monitors with red squares and the 2022 point sources with blue circles. SO_2 monitoring is not required or performed in the Killeen area and is not discussed further in this section. FYA Appendix A lists active and recently decommissioned SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

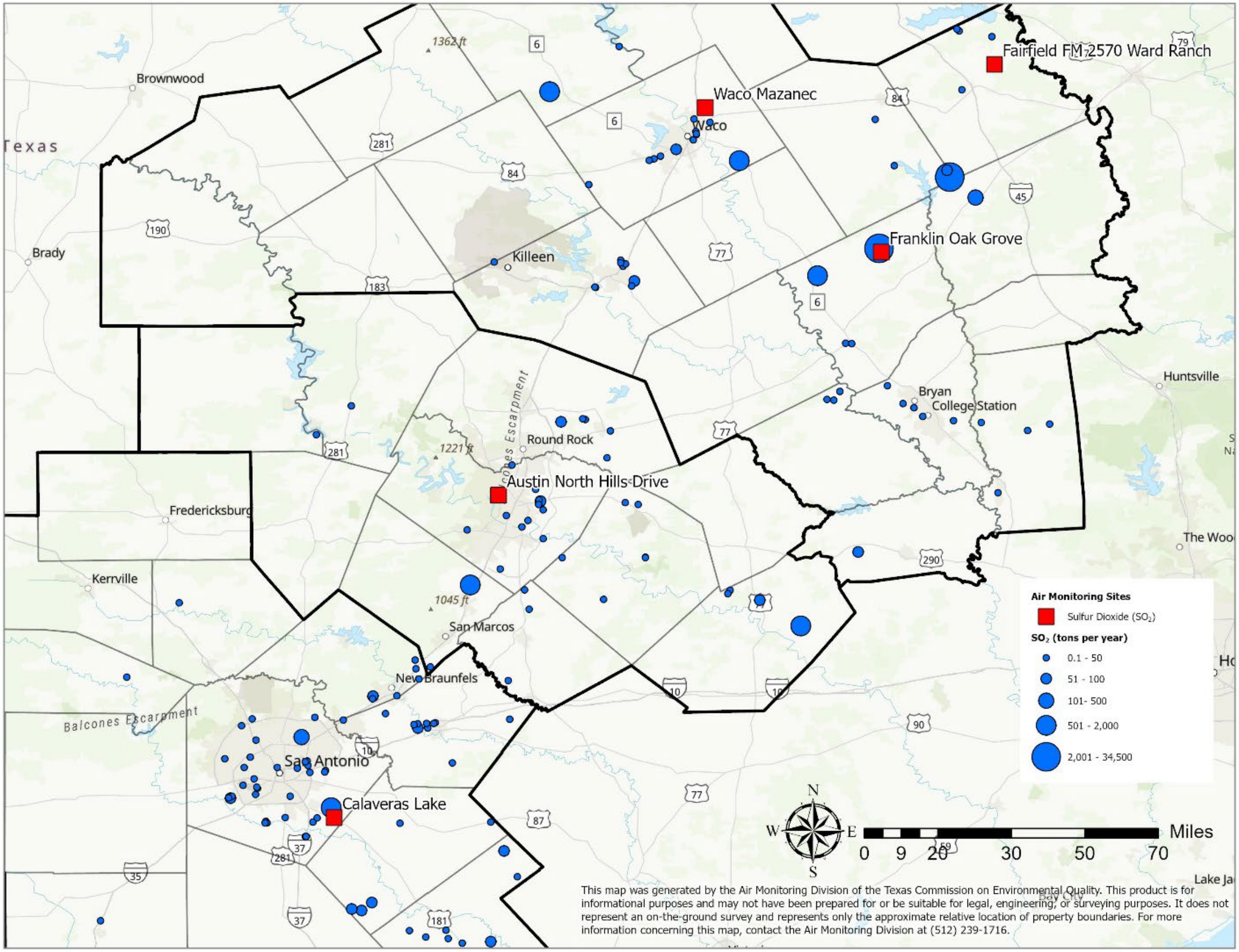


Figure 47: Central Texas Area Active Sulfur Dioxide Monitors and 2022 Point Sources

Central Texas Area

Network History and Current Status

Central Texas area SO_2 monitoring began in 2007 with the deployment of the Waco Mazanec monitor, located in a rural area northeast of Waco, established to measure background concentrations coming into the area. In late 2012, the Central Texas area monitoring network expanded with the deployment of SO_2 monitors at the Calaveras Lake site, to fulfill PWEI requirements, and the Austin Northwest site, to measure SO_2 concentrations in a highly populated area.

Title 40 CFR § 51.1202 (the DRR) required air agencies to characterize air quality around applicable sources that emitted 2,000 tpy or more of SO_2 in the latest emissions inventory year of 2014. TCEQ identified three sources in the Central Texas area that were selected for air quality characterization by ambient air monitoring. Three source-oriented SO_2 monitoring sites were added in late 2016: Rockdale John D. Harper Road (Milam County), San Antonio Gardner Road (Bexar County), and Franklin Oak Grove (Robertson County). In late 2017, a source-oriented SO_2 monitor was deployed at the Fairfield Farm to Market (FM) 2570 Ward Ranch (Freestone County) site to characterize air quality in the portion of Freestone County designated nonattainment.

Since the last FYA, several Central Texas area SO_2 network changes occurred. The Austin Northwest air monitoring site and SO_2 monitor were temporarily deactivated for relocation in February 2020 due to the property owner revoking the site usage agreement for building expansion. The Austin Northwest air monitoring site was relocated within one mile to the Austin North Hills Drive site in October 2020 with no change to AQS identification number. Data loss experienced during the relocation in 2020 affected the Austin North Hills Drive SO_2 design value for 2020-2022.

The Rockdale John D. Harper and San Antonio Gardner Road SO_2 source-oriented monitors were approved for deactivation based on design values less than 50% of the 2010 one-hour SO_2 NAAQS, as provided by 40 CFR § 51.1203(c)(3). TCEQ's Rockdale John D. Harper site and SO_2 monitor were deactivated in 2020 due to the property owner revoking the site usage agreement for the sale/lease of the property. The source near the Rockdale John D. Harper site that required DRR SO_2 air quality characterization permanently ceased operations in 2017. The San Antonio Gardner Road site and SO_2 monitor were deactivated in March 2023. The source near the San Antonio Gardner Road SO_2 site that required DRR SO_2 air quality characterization permanently ceased operations in late 2018.

Portions of Freestone and Anderson Counties were designated nonattainment for the 2010 one-hour SO_2 NAAQS due to emissions from the Big Brown Steam Electric Station, the primary SO_2 emission source in that area. That facility permanently ceased operations in early 2018. The Fairfield FM 2570 Ward Ranch SO_2 monitor must remain active until the EPA responds to the TCEQ's Redesignation Request and Maintenance Plan SIP Revision for the Freestone-Anderson and Titus 2010 SO2 NAAQS Nonattainment Areas submitted on February 23, 2022. The Fairfield FM 2570 Ward Ranch SO_2 design value has been less than 11% of the 2010 one-hour SO_2 NAAQS since 2021.

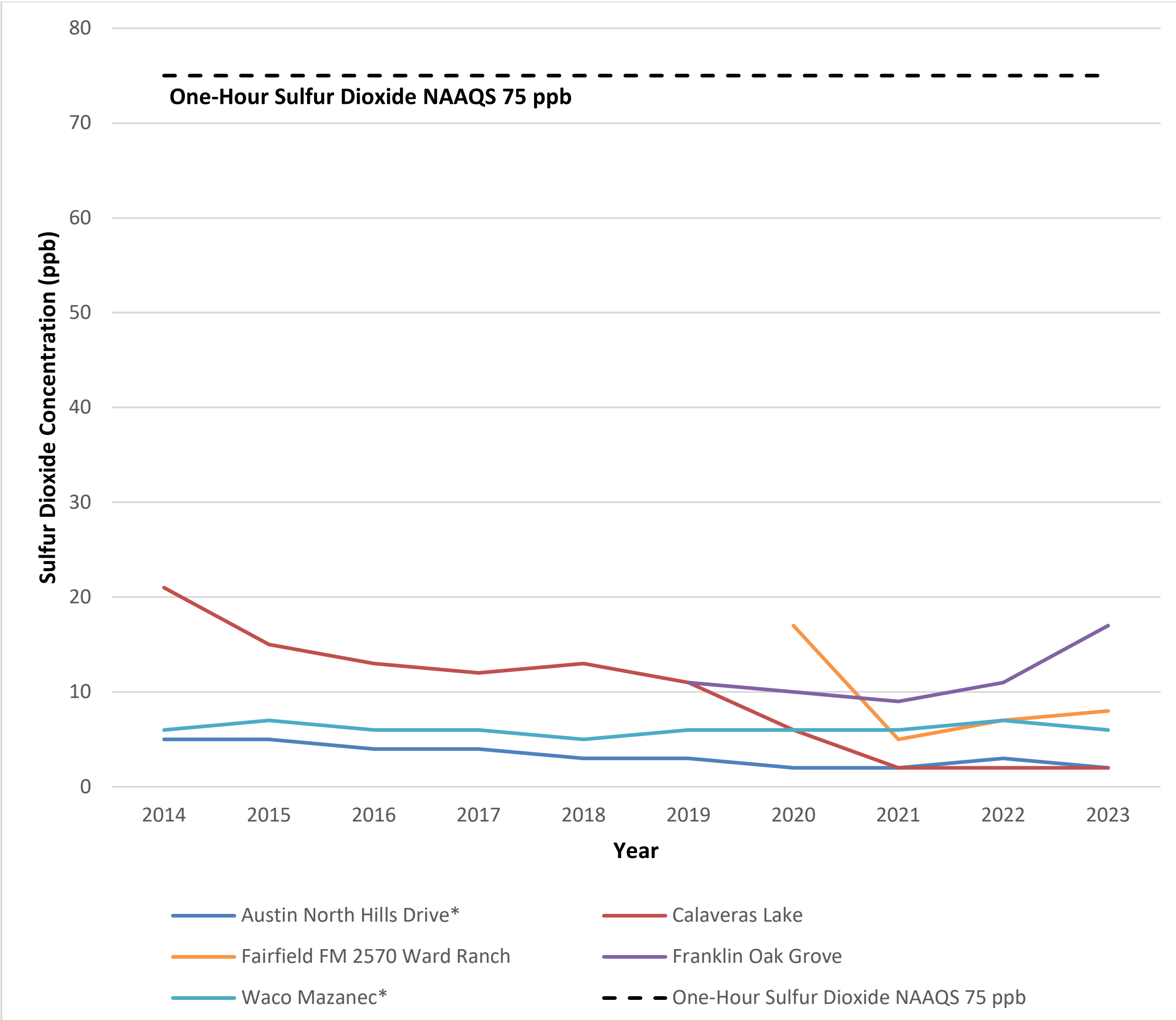
As of January 1, 2025, federal standards require a minimum of two area SO_2 monitors related to DRR and PWEI requirements. The TCEQ exceeds requirements with five federal SO_2 monitors.

Design Values and Trends

Central Texas area SO_2 design values are stable and remain less than 25% of the 2010 one-hour SO_2 NAAQS of 75 ppb. Figure 47 shows the SO_2 design value trends in the Central Texas area from 2014 through 2023. The Austin North Hills Drive SO_2 monitor design values were invalid for 2020 to 2022 due to data loss that occurred during temporary deactivation for relocation and for 2023 due to low quality assurance in one quarter of 2022 and one quarter of 2023. The Waco Mazanec SO_2 monitor design values were invalid for 2017 to 2020 due to low quality assurance. Figure 48 shows the SO_2 design value trends in the Central Texas area from 2014 through 2023. Invalid design values are included for trends comparison.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. The valid data, surrounding the data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Austin North Hills Drive design value not valid for 2020 to 2023; Waco Mazanec design value not valid for 2017 to 2020
FM – farm to market
ppb – parts per billion
NAAQS – National Ambient Air Quality Standard

Figure 48: Central Texas Area One-Hour Sulfur Dioxide Design Value Trends, 2014-2023

Network Evaluation

Table 37 shows how each SO_2 monitor in the Central Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Calaveras Lake SO_2 monitor satisfies the PWEI area requirement and is considered of critical value. The DRR source-oriented monitor at Franklin Oak Grove supports SO_2 DRR requirements. The SO_2 monitor at Fairfield FM 2570 Ward Ranch supports air characterization in a nonattainment area (until the area is redesignated by EPA). The Austin North Hills Drive SO_2 monitor may be needed to fulfill future PWEI population-based requirements, and the Waco Mazanec monitor provides background data. No changes to the Central Texas area SO_2 network are recommended at this time.

Table 37: Central Texas Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Austin North Hills Drive	1	NA	1	3	2	7	medium
Calaveras Lake	4	1	1	3	2	11	critical
Fairfield FM 2570 Ward Ranch	1	1	1	2	1	6	low
Franklin Oak Grove	4	1	3	2	4	14	critical
Waco Mazanec	1	1	2	4	2	10	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
FM – farm to market
NAAQS – National Ambient Air Quality Standard
NA – not applicable

Particulate Matter of 2.5 Micrometers or Less in Diameter

The $PM_{2.5}$ network in the Central Texas area fulfills SLAMS and near-road requirements using a combination of continuous FEM and non-NAAQS comparable monitors. Non-NAAQS comparable data were not evaluated for trends against NAAQS criteria. Figure 49 shows the active Central Texas area $PM_{2.5}$ monitors with a blue square and the point sources with yellow circles. Appendix A lists active and recently deactivated $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

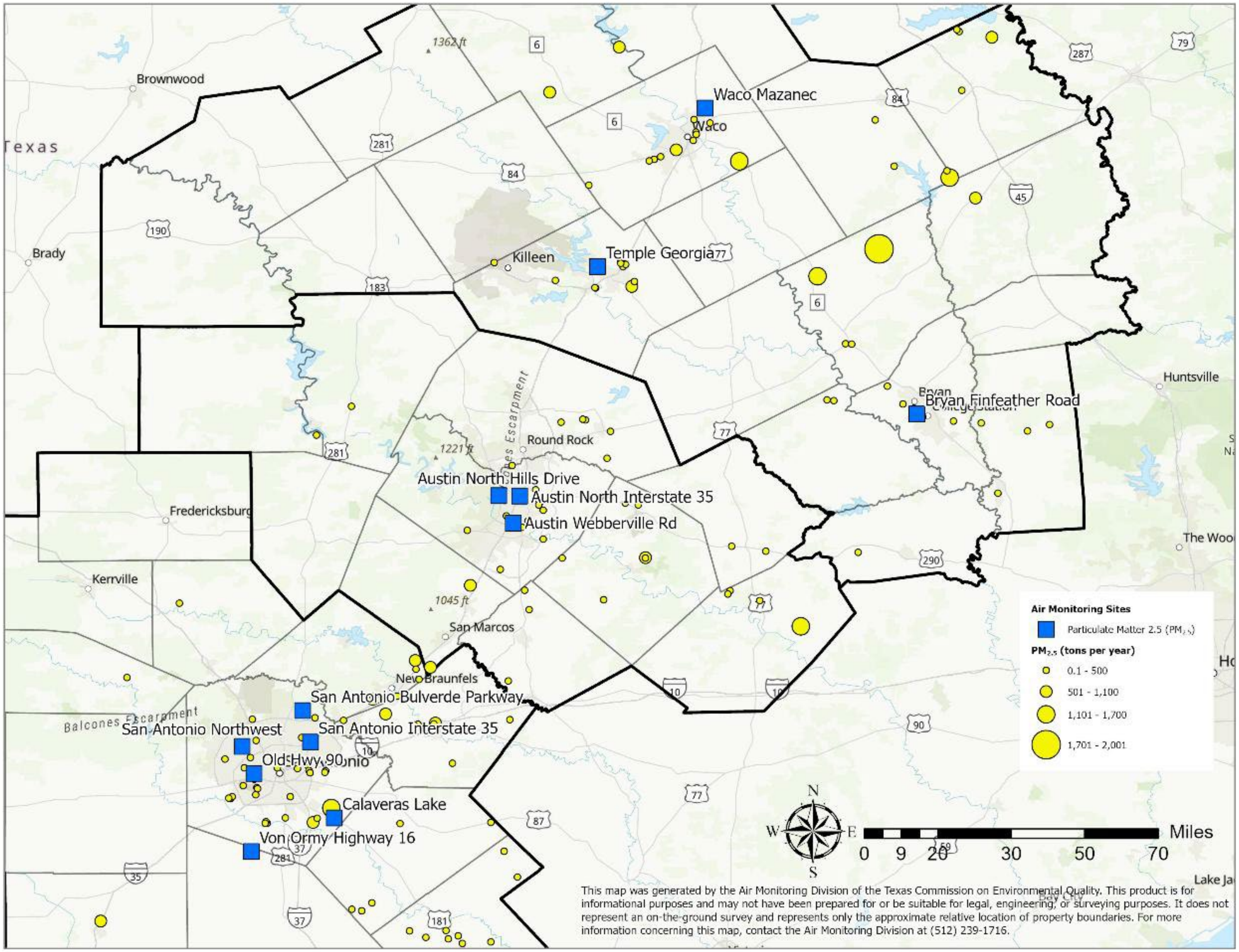


Figure 49: Central Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter Monitors and 2022 Point Sources

Central Texas Area

Network History and Current Status

Central Texas area $PM_{2.5}$ monitoring began in the early 2000s with the deployment of $PM_{2.5}$ non-NAAQS comparable monitors to Austin Northwest, Austin Audubon Society, San Antonio Northwest, Palo Alto, and Old Highway 90. Through the late 2000s, the $PM_{2.5}$ network expanded with a variety of $PM_{2.5}$ equipment including $PM_{2.5}$ FRM and speciation monitors, predominantly located in the Austin and San Antonio urban areas to evaluate ambient $PM_{2.5}$ concentrations in populated areas. The Waco Mazanec non-NAAQS comparable $PM_{2.5}$ monitor was activated in 2007 supporting regional transport. Additional $PM_{2.5}$ monitors deployed in Fayette County (east of Austin) and Calaveras Lake (south of San Antonio) added spatial coverage downwind of particulate sources. In the 2010's, Central Texas area $PM_{2.5}$ speciation analysis was discontinued ($PM_{2.5}$ FRM monitors remained) due to low design values and the limited use of the data.

In January 2017, the Austin Audubon Society $PM_{2.5}$ FRM monitor was deactivated due to low design values and relocated to the new Austin North Interstate 35 site to fulfill area near-road monitoring requirements. In January 2017, a $PM_{2.5}$ FRM monitor was deployed to the new San Antonio Interstate 35 site to fulfill near-road monitoring requirements. Non-continuous $PM_{2.5}$ FRM monitors were upgraded to FEM continuous monitors in 2018 at Austin Webberville Road, Austin North Interstate 35, San Antonio Northwest, Calaveras Lake, and San Antonio Interstate 35. The Fayette County $PM_{2.5}$ non-NAAQS comparable monitor was deactivated in December 2018 and relocated to the new Bryan Finfeather Road site as a $PM_{2.5}$ FEM monitor in February 2020. A $PM_{2.5}$ FEM monitor was deployed to the Temple Georgia site in March 2019.

Since the 2020 FYA, numerous changes have occurred. The Palo Alto non-NAAQS comparable $PM_{2.5}$ monitor was relocated in June 2020 to the new Von Ormy Highway 16 site in Atascosa County with a $PM_{2.5}$ FEM monitor. The Austin Northwest air monitoring site and non-NAAQS comparable $PM_{2.5}$ monitor were temporarily deactivated for relocation in February 2020 due to the property owner revoking the site usage agreement for building expansion. The Austin Northwest air monitoring site was relocated within one mile to the Austin North Hills Drive site with no change to AQS identification number and a $PM_{2.5}$ FEM monitor was activated in October 2020.

In November 2023, a state-initiative non-NAAQS comparable $PM_{2.5}$ monitor was upgraded at San Antonio Bulverde Parkway to a $PM_{2.5}$ FEM monitor and added to the federal network to improve spatial coverage. In July 2024, the Old Highway 90 non-NAAQS comparable $PM_{2.5}$ monitor was upgraded to a $PM_{2.5}$ FEM monitor. The San Antonio Bulverde Parkway and Old Highway 90 $PM_{2.5}$ monitors have incomplete design values, pending three full years of data, due to their activation dates, and will not be assessed with the *NAAQS Value* metric.

As of January 1, 2025, federal standards require a minimum of nine $PM_{2.5}$ monitors, including two near-road monitors, in the Central Texas area. TCEQ exceeds requirements with 12 $PM_{2.5}$ monitors to measure ambient $PM_{2.5}$ concentration data to determine maximum concentrations, concentrations in areas of high population density, and background and transport concentrations.

Waiver Request

In 2020, the EPA approved TCEQ's request for a waiver under 40 CFR Part 58 Appendix E, Section 10.1.1 for the Austin Webberville air monitoring site. The Austin Webberville monitors are located less than ten meters from the roadway preventing the site from meeting siting criteria; however, air monitoring data are deemed representative of the neighborhood scale area due to the site deployment date, historical data, and low traffic count. The nearest traffic count on Webberville Road recorded an average daily traffic count of 3,989 vehicles based on the most recent 2020 Texas Department of Transportation five-year counts. Based on the low Austin Webberville traffic counts, TCEQ requests that the waiver be renewed as the waiver is necessary unless the site is relocated. Retaining the Austin Webberville Road site and $PM_{2.5}$ monitor at its current location ensures continuity of data for design value calculations and historical trends analysis.

$PM_{2.5}$ Micro-scale Near-Road Monitors

TCEQ established near-road monitoring sites in accordance with 40 CFR Part 58, Appendices D and E and the *Near-Road NO_2 Technical Assistance Document* guidelines. The traffic counts at the near-road monitoring sites are not representative across a CBSA as the counts on the roadway being monitored are generally 10 to 30 times greater than the surrounding area roadways. The $PM_{2.5}$ concentrations measured at the near-road sites are impacted by particulate matter from the nearby localized traffic and are not representative of area-wide air quality. $PM_{2.5}$ measurement data from all eligible monitors that are representative of area-wide air quality are comparable to the annual and 24-hour $PM_{2.5}$ NAAQS. However, according to 40 CFR § 58.30, $PM_{2.5}$ measurement data from monitors that are not representative of area-wide air quality but rather of relatively unique micro-scale, localized hot spots, or unique middle-scale impact sites, are not eligible for comparison to the annual $PM_{2.5}$ NAAQS but would remain eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS.

$PM_{2.5}$ monitors deployed to meet near-road monitoring requirements provide measurements of localized microenvironments near highly trafficked roadways that are not representative of a broader airshed. EPA noted in their response letter to the TCEQ's 2024 AMNP that information on monitors that are not suitable for comparison against the annual $PM_{2.5}$ NAAQS, as described in 40 CFR § 58.30, should be identified in the 2025 AMNP. TCEQ requested approval in the 2025 AMNP to designate the micro-scale near-road site $PM_{2.5}$ monitor data as not suitable for comparison with the annual $PM_{2.5}$ NAAQS. The Central Texas micro-scale near-road $PM_{2.5}$ monitoring sites are adjacent to a unique dominating local $PM_{2.5}$ source. Accordingly, the micro-scale $PM_{2.5}$ measurement data from the Central Texas area monitors listed below should only be eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS.

- San Antonio CBSA: San Antonio Interstate 35
- Austin CBSA: Austin North Interstate 35

A state-initiative $PM_{2.5}$ FEM monitor was activated at Austin Audubon Society on January 7, 2025. TCEQ recommended adding this monitor to the TCEQ federal air monitoring network in the 2025 AMNP if EPA Region 6 approves the reclassification of $PM_{2.5}$ microscale near-road monitors as non-NAAQS comparable to the annual $PM_{2.5}$ NAAQS.

Design Values and Trends

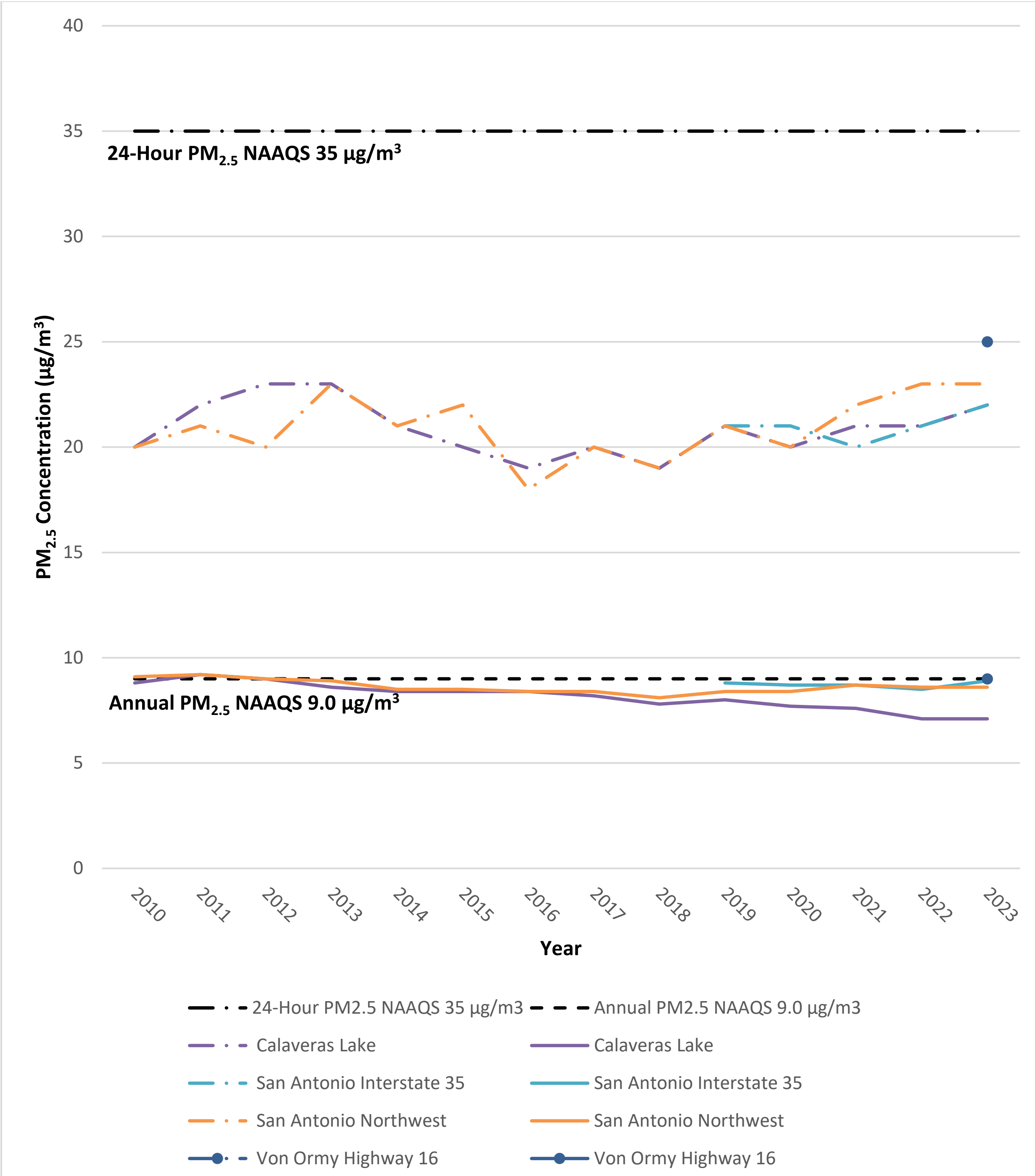
The Central Texas area $PM_{2.5}$ 24-hour and annual $PM_{2.5}$ design values have consistently remained below the 24-hour and annual $PM_{2.5}$ NAAQS with the exception of Austin Webberville Road 2022-2023 design values and Austin North Interstate 35 2023 design values that exceeded the 2024 annual $PM_{2.5}$ NAAQS.

The Austin Webberville Road $PM_{2.5}$ monitor measured 2022 and 2023 concentrations that exceeded the annual 2024 $PM_{2.5}$ NAAQS and were impacted by exceptional events. Exceptional events are unusual or naturally occurring events that affect air quality and are not reasonably controllable or preventable. States can request the EPA not consider air quality data affected by an exceptional event when determining if an area met an air quality health standard. TCEQ submitted an exceptional event demonstration to the EPA Region 6, after a 30-day public comment period, in February 2025. The exceptional event demonstration details information on the Austin Webberville Road $PM_{2.5}$ regulatory significant event days in 2022 and 2023. EPA has not acted on this proposal. Exceptional event regulations and guidance are provided on EPA's Treatment of Air Quality Data Influenced by Exceptional Events website.

$PM_{2.5}$ monitors activated since 2023 have not obtained the three years of data required to calculate a design value. Sites with incomplete $PM_{2.5}$ monitor design values include San Antonio Bulverde Parkway and Old Highway 90. These monitor data are not evaluated in the trends assessment below and will be assessed in the next FYA. The Waco Mazanec monitor is non-NAAQS comparable; therefore, it will not be assessed with the *NAAQS Value* and *Data Trend* metrics.

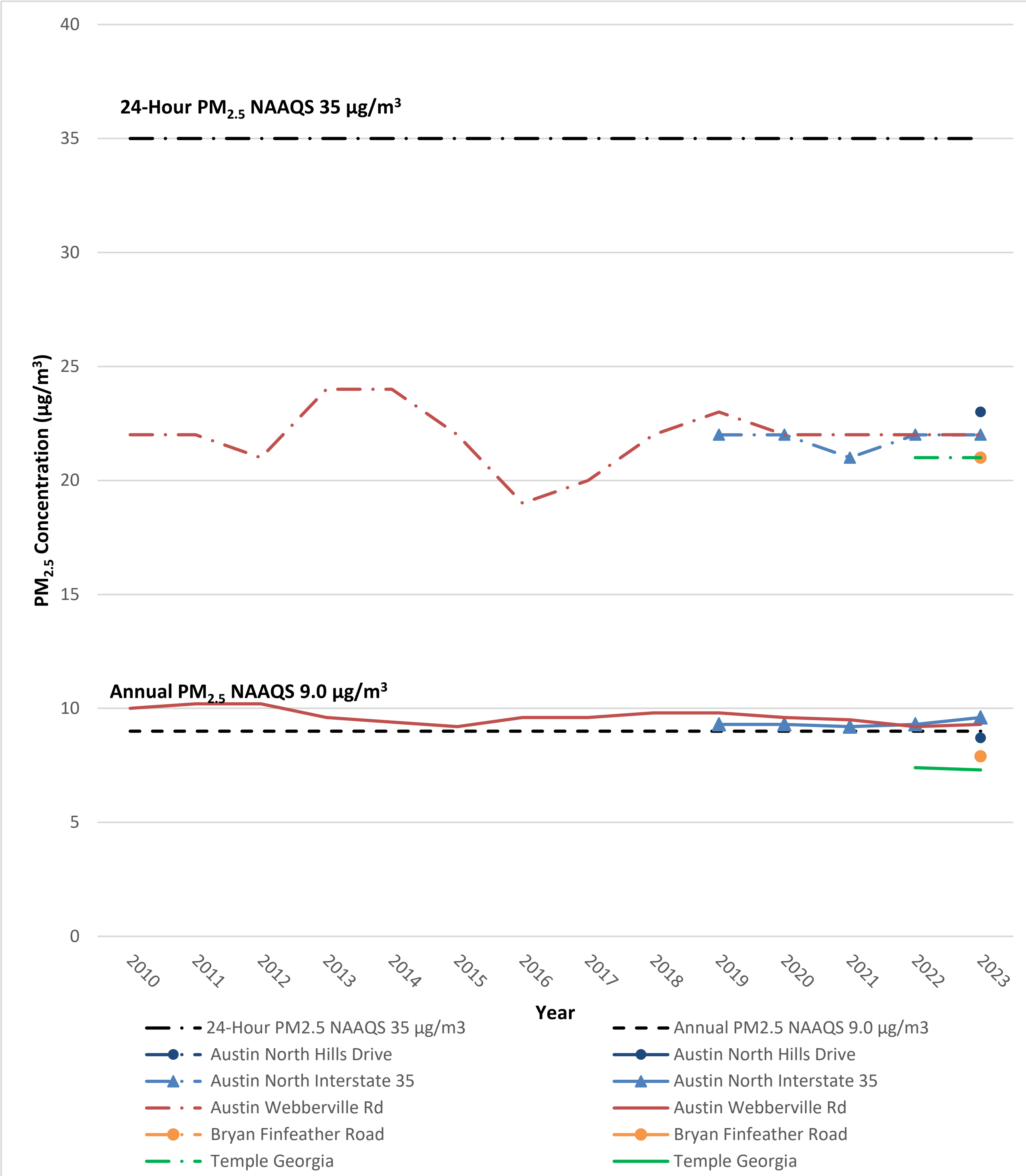
The Temple Georgia $PM_{2.5}$ monitor, activated in 2019, obtained a three-year design value in 2022. The Bryan Finfeather Road and the Von Ormy Highway 16 $PM_{2.5}$ monitors, activated in 2020, obtained three-year design values in 2023.

The valid 24-hour and annual $PM_{2.5}$ design value trends in the Central Texas area are shown for the years of active $PM_{2.5}$ FEM or FRM monitoring in Figure 50 for the San Antonio area and in Figure 51 for the Austin, College Station, Killeen, and Waco areas. Austin Webberville Road exceptional event data are included in the $PM_{2.5}$ graph in Figure 51 as these data are pending EPA review and concurrence.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Figure 50: San Antonio Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2010-2023



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
Rd - road

Figure 51: Austin, College Station, and Killeen Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2010-2023

Network Evaluation

Table 38 shows how each $PM_{2.5}$ monitor in the Central Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Austin North Hills Drive, Austin Webberville Road, Calaveras Lake, San Antonio Northwest, Von Ormy Highway 16, and Temple Georgia $PM_{2.5}$ FEM monitors satisfy $PM_{2.5}$ SLAMS requirements. The Austin North Interstate 35 and San Antonio Interstate 35 monitors satisfy $PM_{2.5}$ near-road requirements. The remaining area $PM_{2.5}$ monitors provide unique information regarding spatial coverage, population exposure, and regional transport particulate concentrations. No changes to the Central Texas area $PM_{2.5}$ network are recommended in addition to the 2025 AMNP proposals.

Table 38: Central Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Austin North Hills Drive	$PM_{2.5}$ FEM	4	4	2	1	2	13	critical
Austin North Interstate 35	$PM_{2.5}$ FEM	4	4	2	2	3	15	critical
Austin Webberville Road	$PM_{2.5}$ FEM	4	4	2	1	2	13	critical
Bryan Finfeather Road	$PM_{2.5}$ FEM	1	4	2	1	2	10	critical
Calaveras Lake	$PM_{2.5}$ FEM	4	3	2	2	2	13	critical
Old Highway 90	$PM_{2.5}$ FEM	1	NA	NA	4	2	7	medium
San Antonio Bulverde Parkway	$PM_{2.5}$ FEM	1	NA	NA	1	3	5	medium
San Antonio Interstate 35	$PM_{2.5}$ FEM	4	4	2	2	3	15	critical
San Antonio Northwest	$PM_{2.5}$ FEM	4	4	2	2	2	14	critical
Temple Georgia	$PM_{2.5}$ FEM	4	4	2	1	2	13	critical
Von Ormy Highway 16	$PM_{2.5}$ FEM	4	4	2	1	2	13	critical
Waco Mazanec	$PM_{2.5}$ (TEOM)	1	NA	NA	4	2	7	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards
NA – not applicable
FEM – federal equivalent method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
TEOM – tapered element oscillating microbalance, non-NAAQS comparable

Particulate Matter of 10 Micrometers or Less in Diameter

The PM_{10} network in the Central Texas area fulfills SLAMS requirements based on CBSA populations and area concentrations. PM_{10} monitoring is not required or performed in the College Station or Waco areas; therefore, these areas are not discussed further in this section. Figure 52 shows the active Central Texas area PM_{10} monitors with a purple square and the point sources with blue circles. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

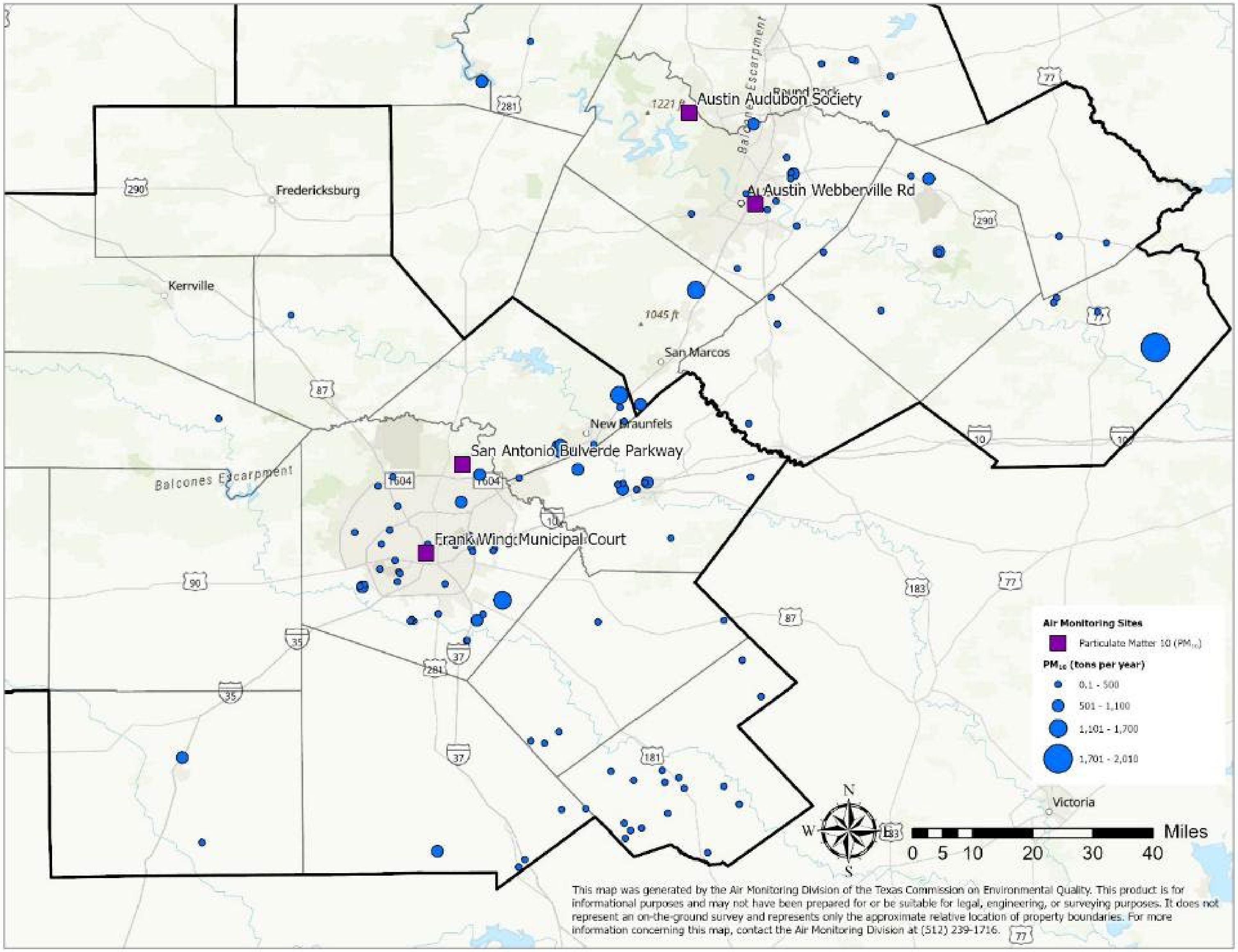


Figure 52: Central Texas Area Particulate Matter of 10 Micrometers or Less in Diameter Monitors and 2022 Point Sources

Central Texas Area

Network History and Current Status

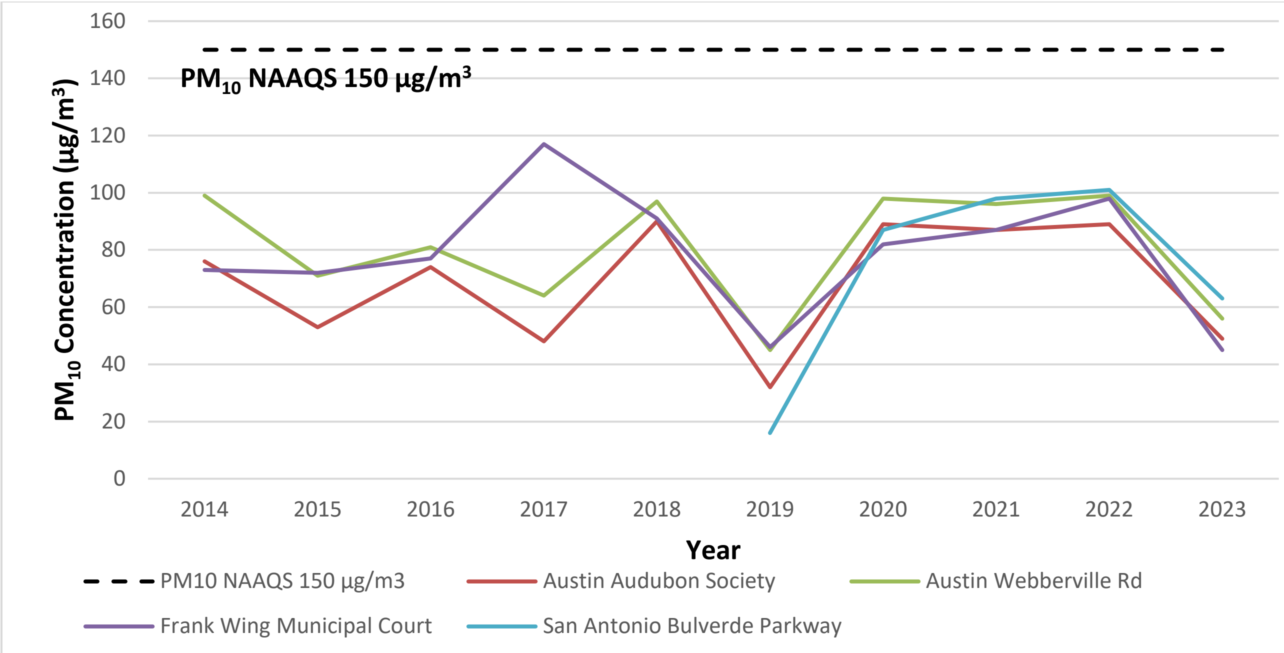
PM_{10} monitoring in the Central Texas area began in 1999 with the deployment of the Austin Webberville Road site. In 2000, a PM_{10} monitor was deployed at Frank Wing Municipal Court site in San Antonio. In 2008, PM_{10} monitors were deployed to the Austin Audubon Society and Selma sites to provide data upwind and downwind of the urban core in populated areas. The Selma site and PM_{10} monitor were relocated to San Antonio Bulverde Parkway with a new AQS number in November 2019 to improve spatial coverage due to nearby industrial sources and population growth.

Since the 2020 FYA, several Central Texas area PM_{10} network changes occurred. The Austin Webberville and San Antonio Bulverde Parkway PM_{10} FRM filter-based monitors were upgraded to continuous PM_{10} FEM monitors in 2023. In the 2025 AMNP, TCEQ recommended relocating the Frank Wing Municipal Court PM_{10} FRM filter-based monitor approximately 4.5 miles west to the Old Highway 90 site, due to safety concerns, and upgrading to a continuous PM_{10} FEM monitor by December 31, 2025. The Frank Wing Municipal Court air monitoring site is located on a building roof and relocation to the Old Highway 90 site would improve staff accessibility and safety. Also in the 2025 AMNP, TCEQ recommended activating a PM_{10} FEM continuous monitor at Temple Georgia in the Killeen-Temple MSA to meet federal monitoring requirements for MSAs with populations greater than 500,000. TCEQ recommended adding the PM_{10} monitor to an existing site to maximize resources and expand the existing particulate monitoring at that site. These recommendations are pending EPA review and approval.

As of January 1, 2025, federal standards require a minimum of 5 to 12 PM_{10} monitors in the Central Texas area. Currently, PM_{10} is monitored at four sites. The Central Texas area will meet monitoring requirements with the deployment of the Temple Georgia PM_{10} monitor, resulting in a total of five sites to measure population exposure and highest concentrations.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 $\mu g/m^3$ standard averaged over three years. No exceedances at any Central Texas area site have been recorded since the last FYA. Figure 53 provides maximum daily PM_{10} concentration trends from 2014 to 2023.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less in diameter
Rd - Road

Figure 53: Central Texas Area Particulate Matter of 10 Micrometers or Less in Diameter Maximum Daily Concentration Trends, 2014-2023

Network Evaluation

Table 39 shows how each PM_{10} monitor in the Central Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Austin and San Antonio area PM_{10} monitors satisfy SLAMS requirements. No Central Texas area PM_{10} changes, other than the pending 2025 AMNP recommendations, are recommended at this time.

Table 39: Central Texas Area Particulate Matter of 10 Micrometers or Less in Diameter Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Austin Audubon Society	4	1	1	4	2	12	critical
Austin Webberville Road	4	1	1	1	2	9	critical
Frank Wing Municipal Court	4	1	1	4	2	12	critical
San Antonio Bulverde Parkway	4	1	3	1	2	11	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Far West Texas Area Evaluation

(El Paso Area and surrounding counties)

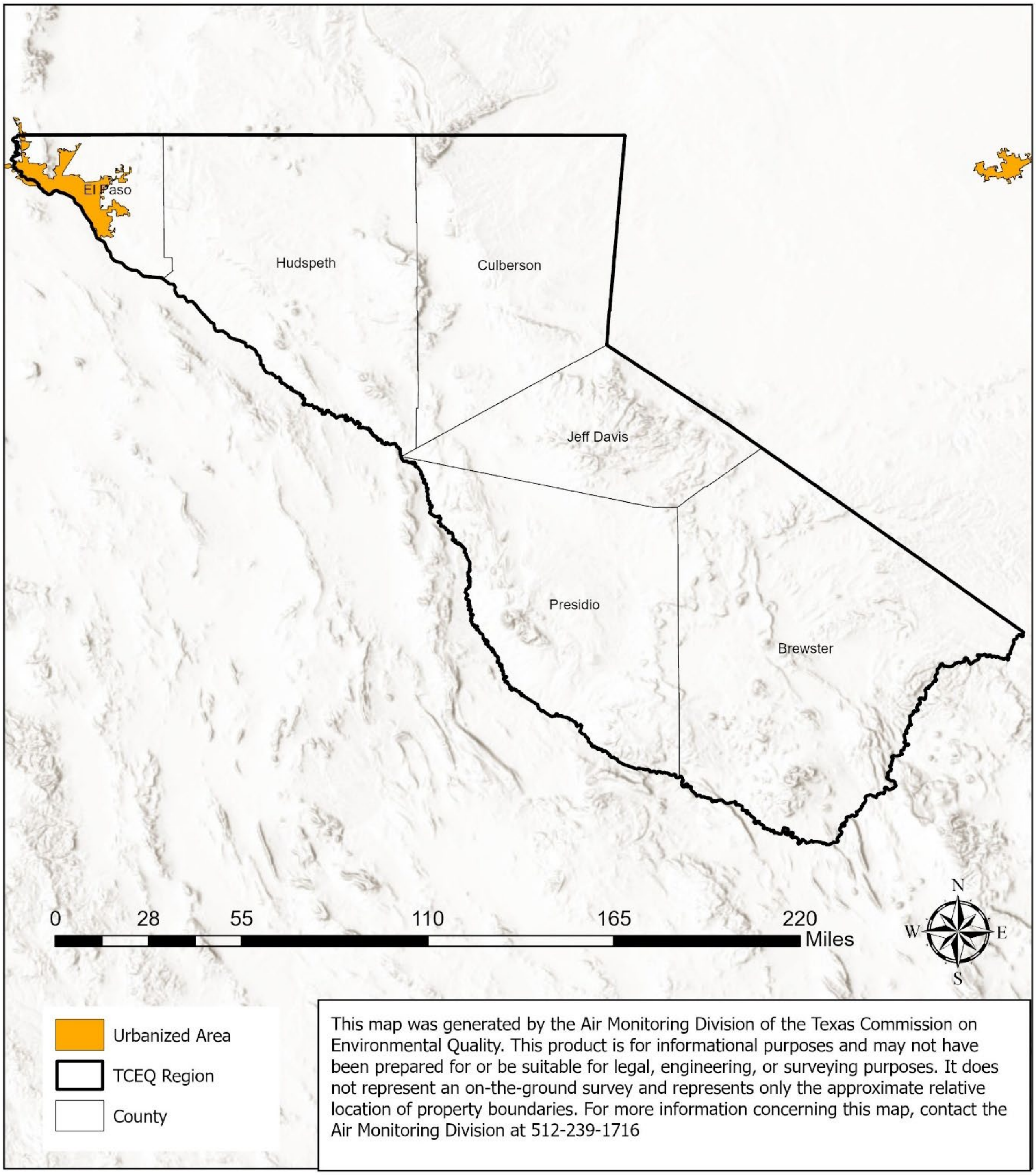


Figure 54: Far West Texas Area Counties and Urban Areas

Far West Texas Area Characteristics and Background

Population and Monitoring Requirements

The Far West Texas area contains one TCEQ Regional Area: Region 6 El Paso. The TCEQ Region has one major CBSA that includes two counties, El Paso and Hudspeth. Monitoring is conducted in Brewster County which is not included in a metropolitan or micropolitan statistical area. Details regarding each Far West Texas county, CBSA, and micropolitan statistical area are detailed in FYA Appendix B.

The Texas Demographics Center projects the population of the El Paso CBSA will exceed 896,000 persons in 2025. The 2030 projection estimates a 3% population increase from 2025 in the El Paso area. Table 40 shows the Far West Texas CBSA population projections. Figure 55 and Figure 56 illustrate the population densities across the Far West Texas area with active sites and monitors and wind roses. Population density is illustrated by square mile for each area zip code. Population densities were obtained from TDC Population Density in Texas, 2022 data using the 2018-2022 five-year population estimates (latest available data at the time the FYA was drafted).

Table 40: Far West Texas Area Population Projections

Core Based Statistical Area (CBSA)	2020 Census Count	2025	2030	Change (2020 - 2025)	Change (2025-2030)
El Paso	868,859	896,051	920,450	3%	3%

Minimum monitoring network design requirements under 40 CFR Part 58, Appendix D are evaluated annually in TCEQ's AMNP based on the latest available census population estimates.

The El Paso CBSA is required to have the following:

- three O_3 monitors,
- one CO monitor,
- one NO_2 monitor,
- one NO/NO_y monitor,
- one SO_2 monitor,
- five $PM_{2.5}$ monitors, and
- between four and eight PM_{10} monitors.

Brewster County has no requirements.

The TCEQ evaluated population projection data illustrated in Table 2 and Table 40 against El Paso area minimum monitoring design requirements partially based on CBSA population. El Paso CBSA monitoring requirements are not expected to increase based on the projected population assessment. The TCEQ meets and exceeds monitoring requirements with the monitors shown in Figure 55 and Figure 56.

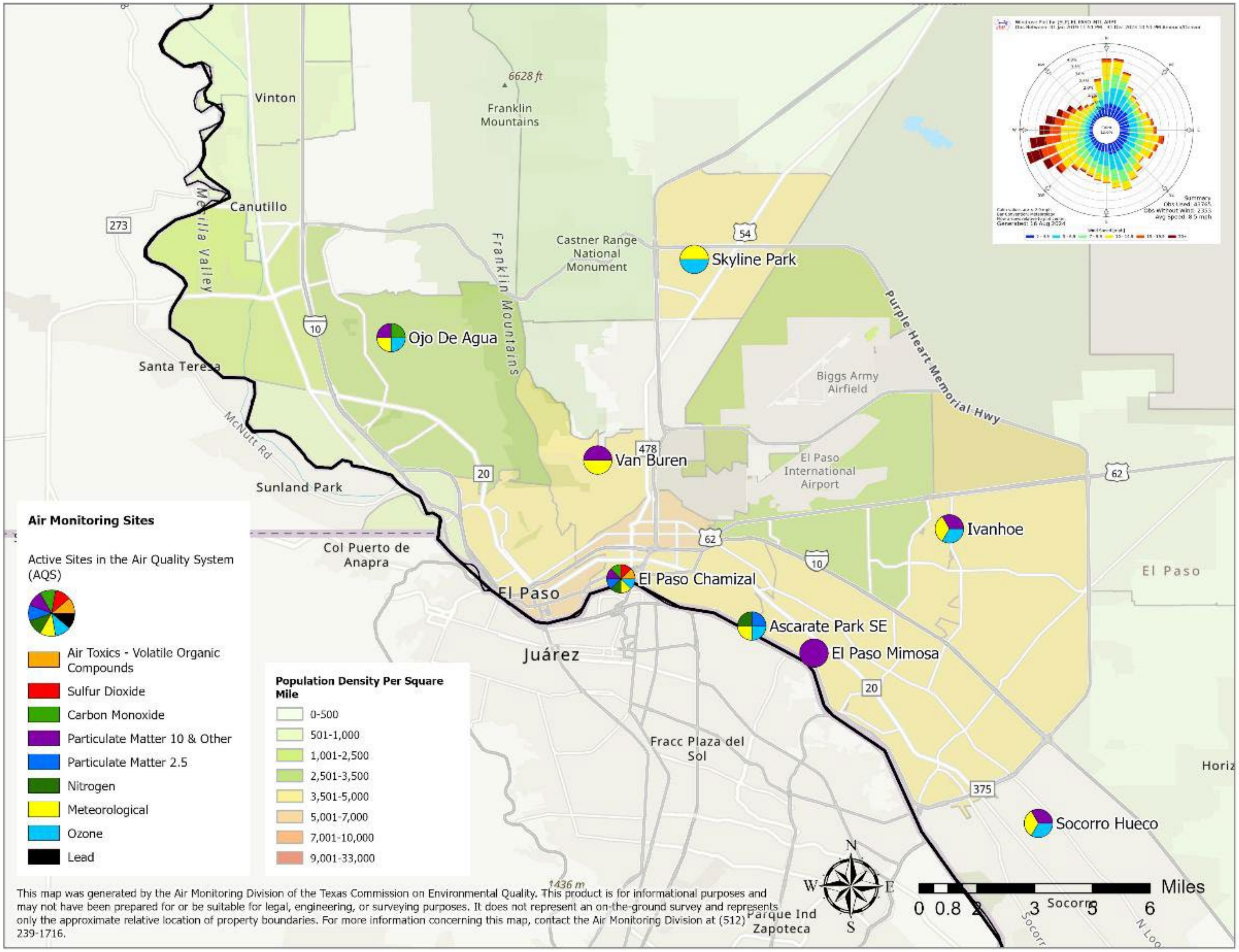


Figure 55: El Paso Area Active Sites and Monitors, Population Density, and Wind Rose

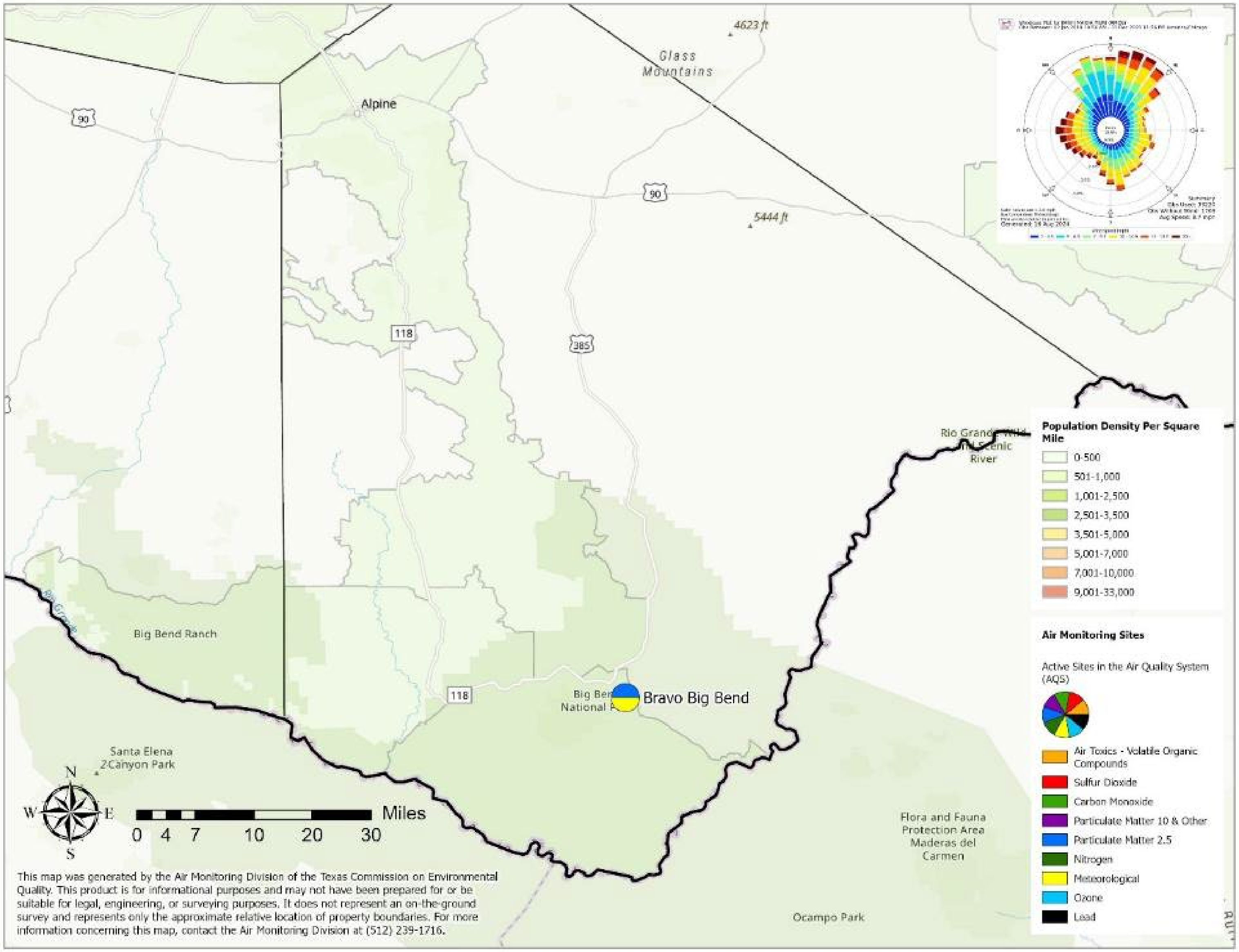


Figure 56: Brewster County Active Sites and Monitors, Population Density, and Wind Rose

Wind Patterns

Figure 55 illustrates the counties included in the Far West Texas area evaluation. Figure 55 and Figure 56 illustrate typical West Texas area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2019 to 2023. Figure 55 wind rose was derived from El Paso International Airport. Wind data indicate that wind direction in this area is variable with a predominate west to east flow due to channeling in the pass between the Franklin Mountains to the north and Juarez Mountains to the south; the funneling effects of the Franklin Mountains can cause high winds. Areas closest to the international border are also impacted by the Rio Grande River basin. Seasonally, wind flow can also vary from the north and south-east. Figure 56 shows wind data in Brewster County from the Alpine-Casparis Municipal Airport, which indicates a north-northeast to south-southwest wind pattern.

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Far West Texas area EI source totals by pollutant, by Region, are listed in Table 41. Data from EI source categories show the following for the Far West Texas area:

- The majority of CO is emitted from on-road mobile sources.
- NO_x emissions are predominately from on-road mobile and area sources.
- Area sources account for the majority of VOC, $PM_{2.5}$, and PM_{10} emissions.
- Point sources account for the majority of SO_2 emissions.
- Non-road mobile sources contribute the majority of total Pb emissions.

This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 41: 2020 Far West Texas Area Emissions Inventory in Tons Per Year

Area*	Source	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R6 El Paso	Point	1,088	3,611	1,845	327	240	533	0.06
R6 El Paso	Area	53,443	5,722	6,095	31,711	3,945	167	0.01
R6 El Paso	On-Road Mobile	1,953	7,283	32,115	533	198	21	0.00
R6 El Paso	Non-Road Mobile	1,141	3,236	20,237	153	146	33	0.18

*Appendix C details the counties included for each area.
CO – carbon monoxide
NO_x – oxides of nitrogen
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
PM_{10} – particulate matter of 10 micrometers or less in diameter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

Blowing dust generated by regional high wind events outside of the Far West Texas area has historically had a heavy impact on area particulate matter levels, including $PM_{2.5}$ and PM_{10}. The overall dust storm frequency and intensity is highly dependent on weather conditions and soil moisture content, but daily average concentrations can measure values such as 70 µg/m^3 for $PM_{2.5}$ and 300 µg/m^3 or higher for PM_{10}. These dust storms are most commonly caused by regional high winds associated with large low-pressure systems.

Less frequently, regional blowing dust can be transported into the Far West Texas area from the White Sands area in New Mexico, eastern New Mexico, and the Texas Panhandle behind strong cold fronts. These large regional-scale dust storms occur mainly in the spring but can occur from late October through the winter and spring into early June. Locally, high winds from nearby thunderstorms can generate dust that is transported into the El Paso area. These localized thunderstorm-related high wind dust events are most common in June and July.

Long-range transport from other types of events also impact particulate matter measurements in the Far West Texas area, including smoke from forest fires in the Rocky Mountains and haze and smoke accumulated from man-made emissions from North and Central America (also known as continental haze). These other smoke and haze transport events affect $PM_{2.5}$ levels more than PM_{10} levels because of the inherent particle sizes but are less frequent overall.

Regional Air Quality and Attainment Status

Current and historical regional air quality data were evaluated to determine monitoring needs, including the continued need for monitoring during maintenance periods after an area has met all air quality standards. As of January 1, 2025, the Far West Texas geographical area is designated attainment/unclassifiable for all current NAAQS, except the City of El Paso, which is designated as moderate nonattainment for the 24-hour PM_{10} NAAQS of 150 µg/m^3. Details on the Far West Texas area's current and historical air quality designations for the six criteria pollutants are detailed on TCEQ's SIP webpage.

Far West Texas Monitoring Network Evaluation

Ozone

The O_3 network in the Far West Texas area fulfills SLAMS requirements, based on population, O_3 design values, and NCore requirements. Figure 55 above shows the El Paso area active O_3 monitors at sites with a light blue section. Appendix A lists active and recently decommissioned O_3 monitors, locations, monitoring objectives, and associated spatial scales.

El Paso Area

Network History and Current Status

El Paso area O_3 monitoring began in the late 1970s to early 1980s with deployment of the El Paso East [now Ascarate Park Southeast (SE)] and El Paso University of Texas at El

Paso (UTEP) monitors in central El Paso along the international border to evaluate ambient concentrations in populated areas likely impacted by maximum O_3 precursor concentrations. The El Paso Chamizal, Ivanhoe, and El Paso Socorro O_3 monitors were added in the 1990s to provide data on background concentrations in populated areas further removed from the city. In the early 2000s, the O_3 monitoring network expanded to Skyline Park to improve spatial coverage in the populated areas to the north and east of the city core. In 2012, the El Paso Socorro site was relocated to Socorro Hueco, maintaining the same AQS identification number.

Since the 2020 FYA, two El Paso area O_3 network changes have occurred. An O_3 special purpose monitor was activated at the Ojo de Agua air monitoring site in March 2021 to improve spatial coverage in the El Paso area due to the diverse mountainous terrain and to support modeling and exceptional event analyses. The El Paso UTEP air monitoring site and O_3 monitor were temporarily deactivated for relocation in November 2021 due to the property owner revoking the site usage agreement for building expansion. TCEQ has worked with multiple public entities, including UTEP, City of El Paso, EPA, Texas Department of Transportation, and the U.S. International Boundary and Water Commission; in the effort to identify a suitable location within one to two miles of the previous site and has not been successful. TCEQ continues to evaluate potential locations for the El Paso UTEP site.

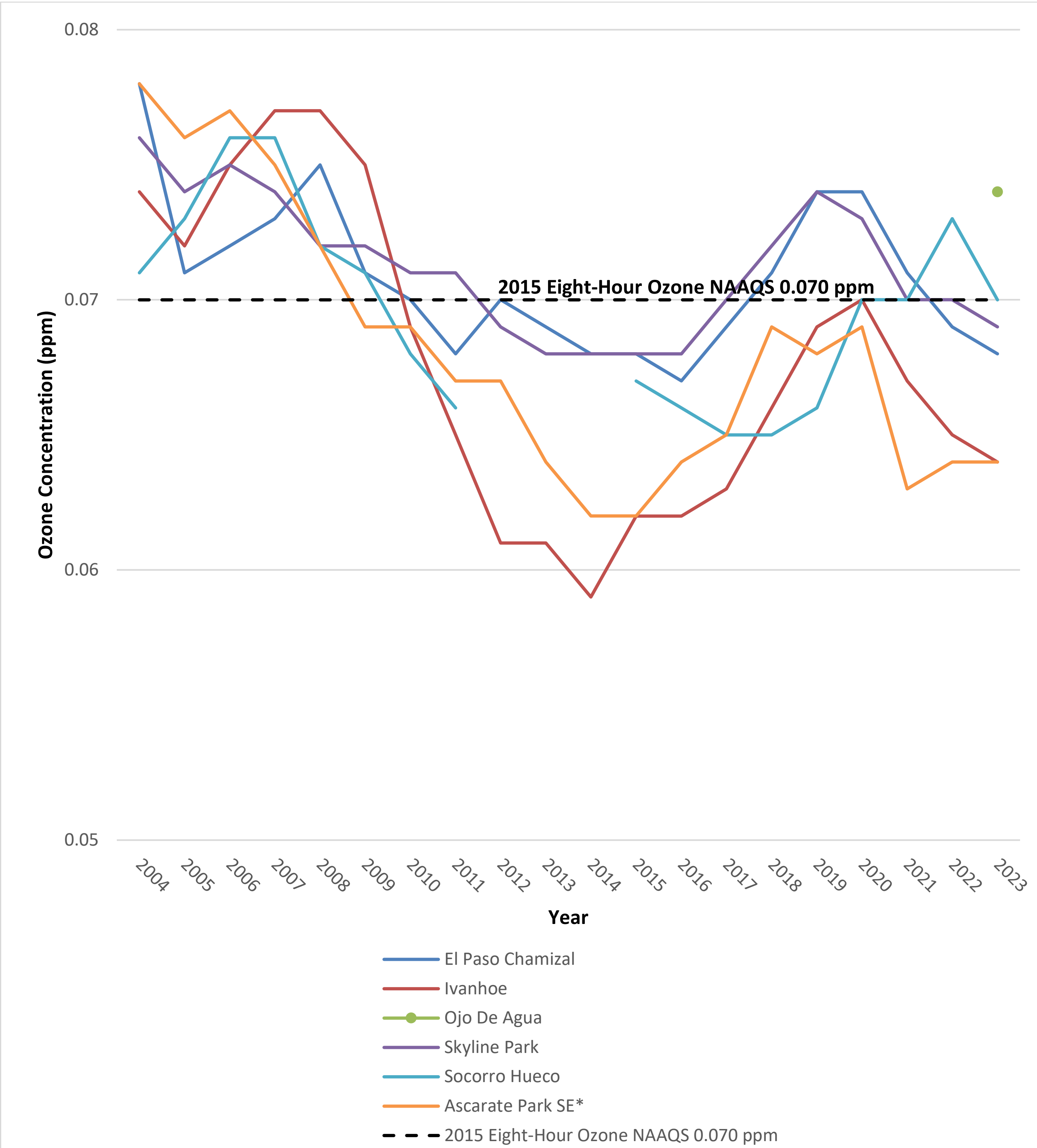
As of January 1, 2025, federal standards require a minimum of three El Paso MSA O_3 monitors. TCEQ exceeds requirements with six active O_3 monitors. While the number of O_3 monitors exceeds area federal requirements, additional O_3 monitoring supports enhanced O_3 monitoring efforts due to El Paso's complex geographical terrain and O_3 formation and challenges affected by emissions emanating from outside the U.S. The quantity of monitors and spatial distribution of the El Paso area O_3 network provides valuable data for evaluating the area's regional air quality concerns, trends assessment, forecasting daily air quality conditions, and informing regulatory decisions.

Design Values and Trends

El Paso area eight-hour O_3 design values show an overall decline; however, some monitors show some recent increases, likely affected by emissions emanating from outside the U.S. In 2012, the Socorro Hueco O_3 monitor reported data for only 17% of the year due to temporary deactivation during the relocation; therefore, the design values were invalid for 2012 to 2014 and not included in the trends graph below. Ascarate Park SE O_3 design values were invalid for 2021 to 2023 due to low quality assurance in 2021 and are included for trends analysis below. The new Ojo de Agua O_3 monitor, activated in March 2021, obtained a three-year O_3 design value in 2023. Figure 57 shows the El Paso area O_3 design value trends from 2004 through 2023 compared with the 2015 eight-hour O_3 NAAQS of 0.070 ppm.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. The valid data, surrounding data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Ascarate Park Southeast (SE) design value not valid for 2021 to 2023
NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 57: Eight-Hour Ozone Design Value Trends in the El Paso Area, 2004-2023

Network Evaluation

Table 42 shows how each O_3 monitor in the El Paso area was evaluated using the scoring system described in the *Evaluation Methods* section. The El Paso Chamizal monitor satisfies the NCore O_3 monitoring requirement, while Socorro Hueco and Skyline Park support minimum SLAMS monitoring requirements. Ascarate Park SE, Ivanhoe, and Ojo De Agua O_3 monitors support area enhanced O_3 monitoring. These monitors continue to provide valuable data for evaluating the area's regional air quality concerns, assessing trends, forecasting daily air quality conditions, and informing regulatory decisions. Based on these scores and the current spatial coverage, no changes to the El Paso area O_3 network are recommended at this time.

Table 42: El Paso Area Ozone Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Ascarate Park Southeast (SE)	1	NA	2	4	1	8	medium
El Paso Chamizal	4	4	2	4	1	15	critical
Ivanhoe	1	4	2	4	1	12	critical
Ojo De Agua	1	4	2	1	1	9	critical
Skyline Park	4	4	2	4	1	15	critical
Socorro Hueco	4	4	2	3	1	14	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Carbon Monoxide

The CO network in the Far West Texas area fulfills NCore requirements and includes CO and high-sensitivity CO monitors. The PAMS CO monitoring requirement was removed in 2015. Figure 58 shows the area active CO monitors with green squares and the 2022 CO point sources with blue circles. Appendix A lists active and recently decommissioned CO monitors, locations, monitoring objectives, and associated spatial scales.

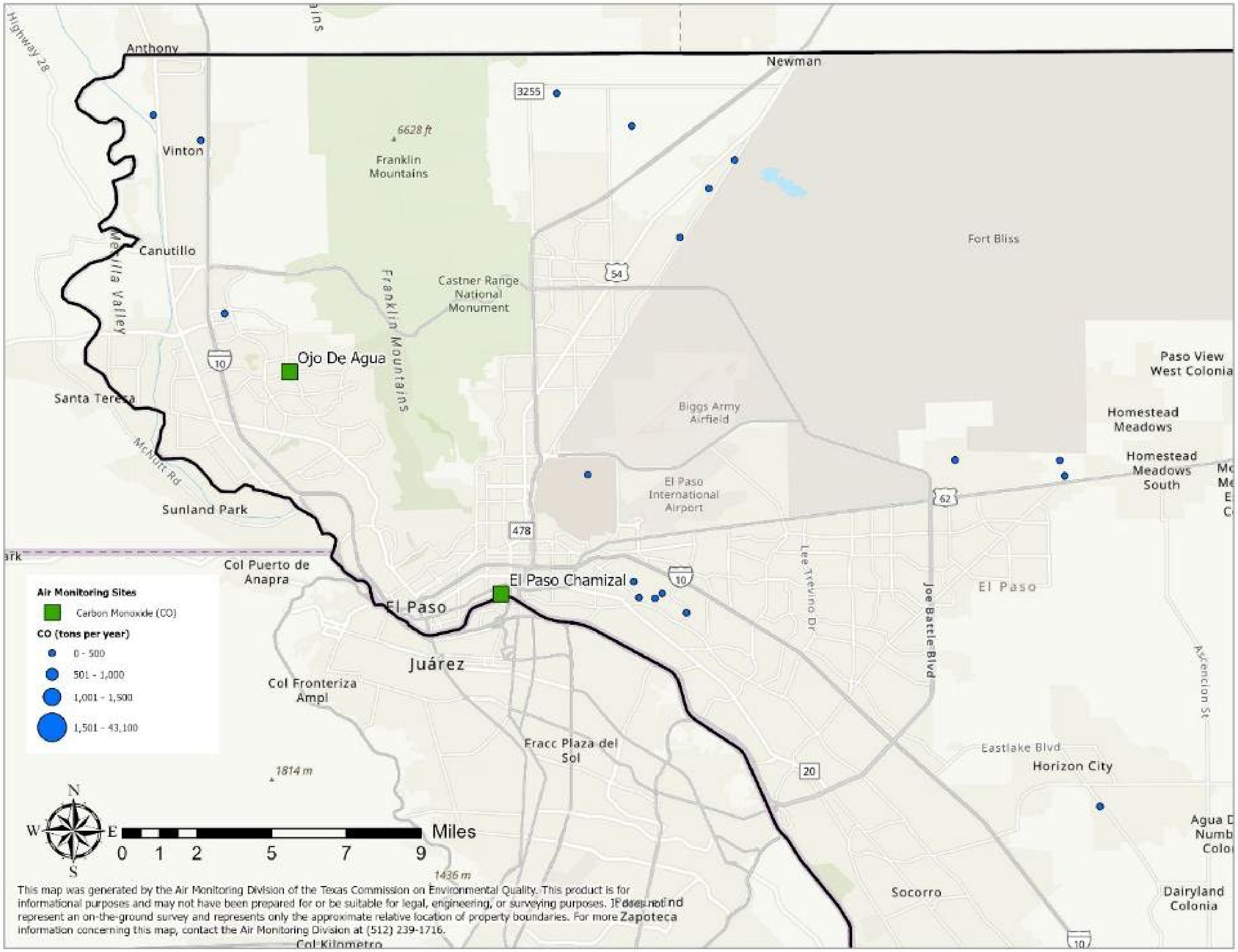


Figure 58: Far West Texas Area Carbon Monoxide Monitors and 2022 Point Sources

El Paso Area

Network History

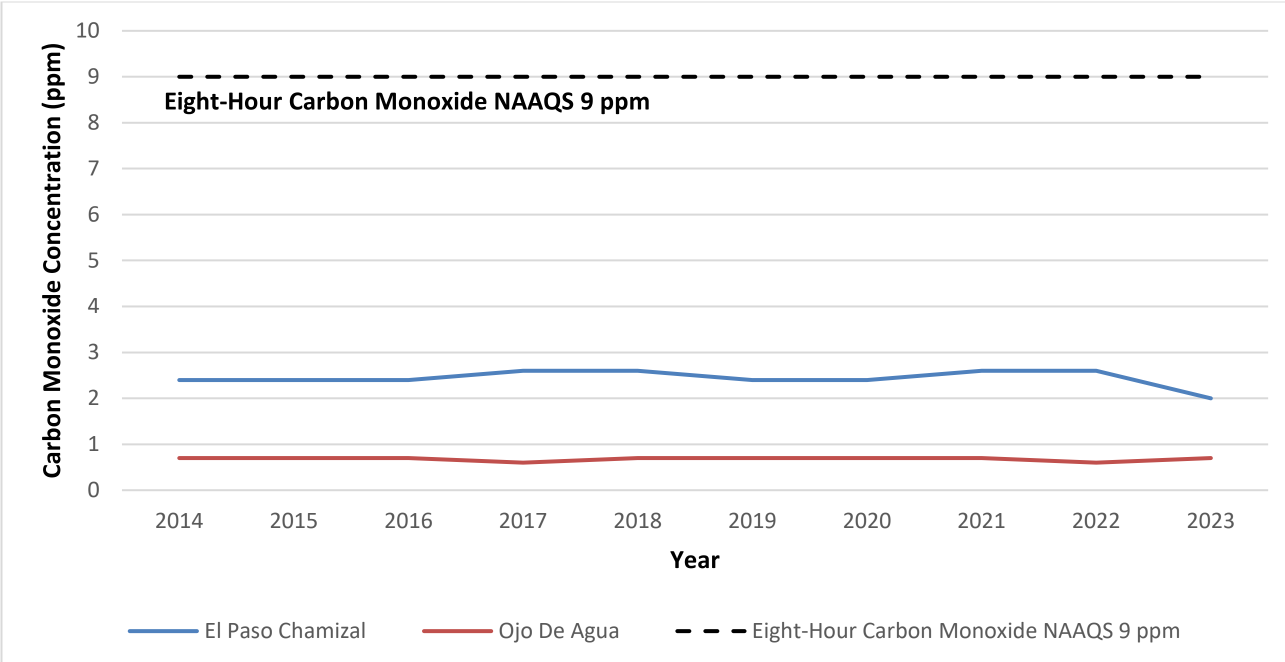
El Paso area CO monitoring began in the late 1990s and early 2000s with the deployment of CO monitors at Ascarate Park SE, El Paso UTEP, El Paso Chamizal, El Paso Sun Metro, Ivanhoe, El Paso Socorro, Skyline Park, and Tillman supporting the El Paso area's previous CO nonattainment designation. The EPA redesignated the El Paso area as attainment for the eight-hour CO NAAQS in 2008. The El Paso area was eligible for redesignation to attainment of the eight-hour CO NAAQS because there had been no monitored violations of the standard since 2001.

In 2010, the El Paso Chamizal CO monitor was upgraded to a high sensitivity CO monitor to support the NCore network. Several CO monitors were decommissioned because of low historical value (design values well below both the one-hour and eight-hour CO NAAQS), including the El Paso Socorro and El Paso Sun Metro CO monitors in 2012, the Ivanhoe CO monitor in 2013, and the Skyline Park and El Paso UTEP CO monitors in 2014. The Tillman CO monitor was relocated to the Ojo De Agua site in 2013 due to the sale of the property. The CO monitor at Ascarate Park SE was decommissioned in December 2017 due to low historical design values. A CO monitor was re-activated at the El Paso UTEP site in January 2018 to aid in evaluating wildfire exceptional events and providing O_3 precursor data.

Since the 2020 FYA, one El Paso area CO network change occurred. The El Paso UTEP air monitoring site and CO monitor were temporarily deactivated for relocation in November 2021 due to the property owner revoking the site usage agreement for building expansion. TCEQ has worked with multiple public entities, including UTEP, City of El Paso, EPA, Texas Department of Transportation, and the U.S. International Boundary and Water Commission, in an effort to identify a suitable location within one to two miles of the previous site and has not been successful. TCEQ continues to evaluate potential locations for the El Paso UTEP site. As of January 1, 2025, federal standards require a minimum of one area CO monitor, and TCEQ exceeds this requirement with CO monitored at two sites.

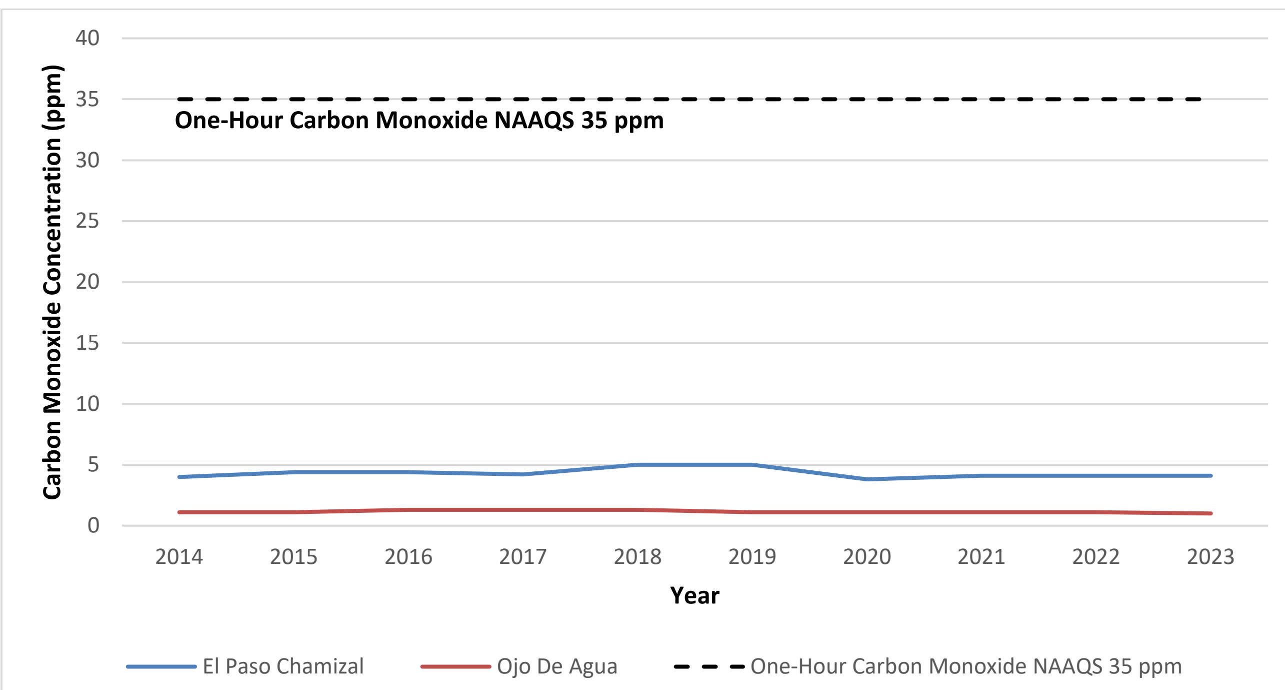
Design Values and Trends

El Paso area CO design values remain below 25% of the eight-hour NAAQS of 9 ppm and below 15% of the one-hour NAAQS of 35 ppm, as shown in Figure 59 and Figure 60.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 59: Eight-Hour Carbon Monoxide Design Value Trends in the El Paso Area, 2014-2023



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 60: One-Hour Carbon Monoxide Design Value Trends in the El Paso Area, 2014-2023

Network Evaluation

Table 43 shows how each CO monitor in the El Paso area was evaluated using the scoring system described in the *Evaluation Methods* section. The El Paso Chamizal monitor satisfies the NCore CO monitoring requirement. The remaining active CO monitor provides data useful in evaluating wildfire impacts on O_3 exceptional events. Based on these scores and the current spatial coverage, no changes to the El Paso area CO network are recommended at this time

Table 43: El Paso Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
El Paso Chamizal**	4	1	2	3	1	11	critical
Ojo De Agua	1	1	2	3	1	8	low

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic high assessment value.
** - high-sensitivity CO monitor
NAAQS – National Ambient Air Quality Standards

Oxides of Nitrogen

The NO_x network in the El Paso area includes NO, NO_x, NO_2, and NO_y monitoring and is designed to fulfill RA-40 and NCore monitoring requirements. Figure 61 shows the area active NO_x and NO_y monitors with green squares and the NO_x 2022 point sources with blue circles. Appendix A lists active and recently decommissioned NO_x and NO_y monitors, locations, monitoring objectives, and associated spatial scales.

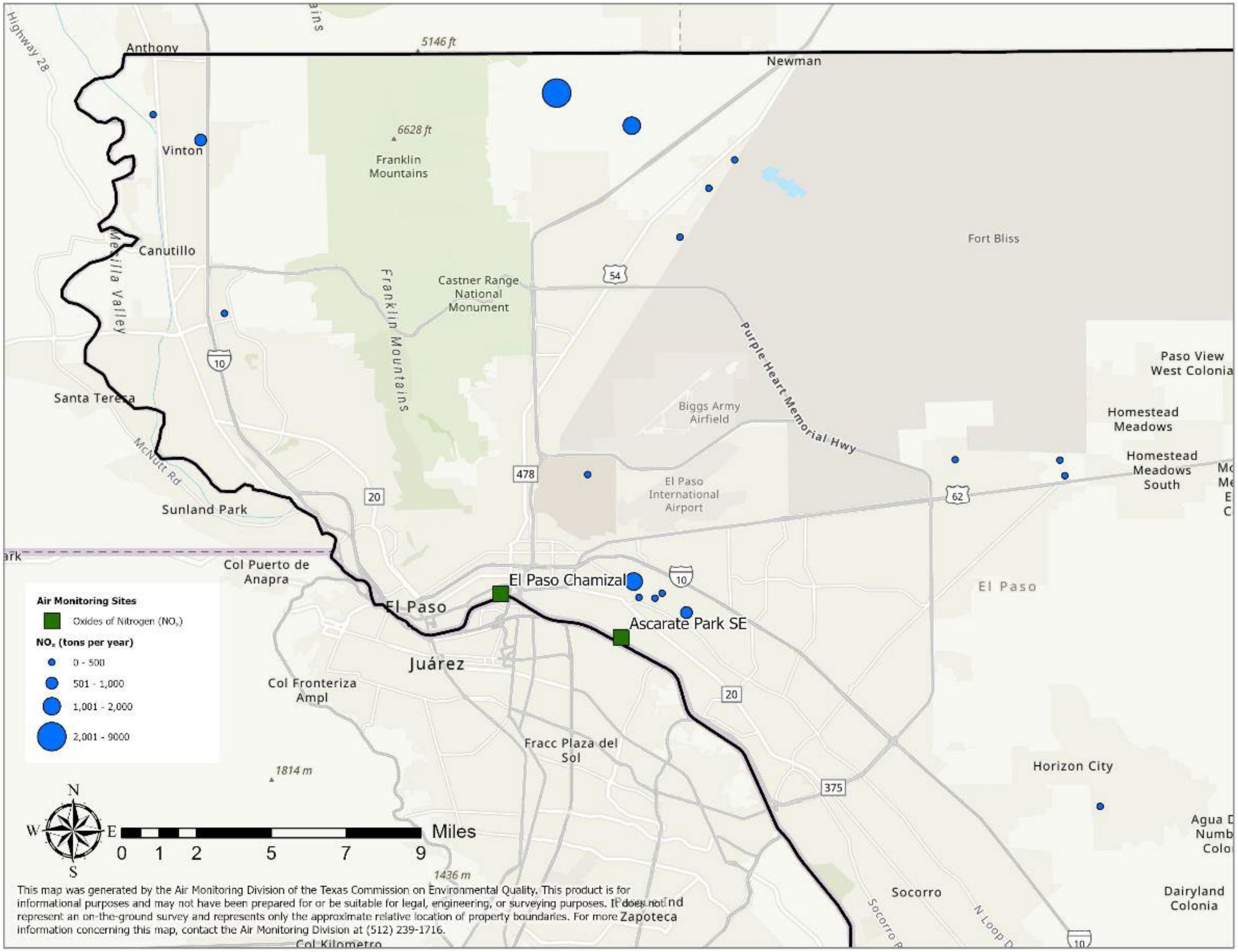


Figure 61: Far West Texas Area Oxides of Nitrogen Monitors and 2022 Point Sources

El Paso Area

Network History and Current Status

El Paso area NO_x monitoring began in the late 1990s with monitor deployments to Ascarate Park SE, El Paso Chamizal, and El Paso UTEP. In 2010, an NO_y monitor was deployed to El Paso Chamizal to meet NCore monitoring requirements. Since the 2020 FYA, one El Paso area NO_x network change occurred. The El Paso UTEP air monitoring site and NO_x monitor were temporarily deactivated for relocation in November 2021 due to the property owner revoking the site usage agreement for building expansion. TCEQ has worked with multiple public entities, including UTEP, City of El Paso, EPA, Texas Department of Transportation, and the U.S. International Boundary and Water Commission, in an effort to identify a suitable location within one to two miles of the previous site and has not been successful. TCEQ continues to evaluate potential locations for the El Paso UTEP site.

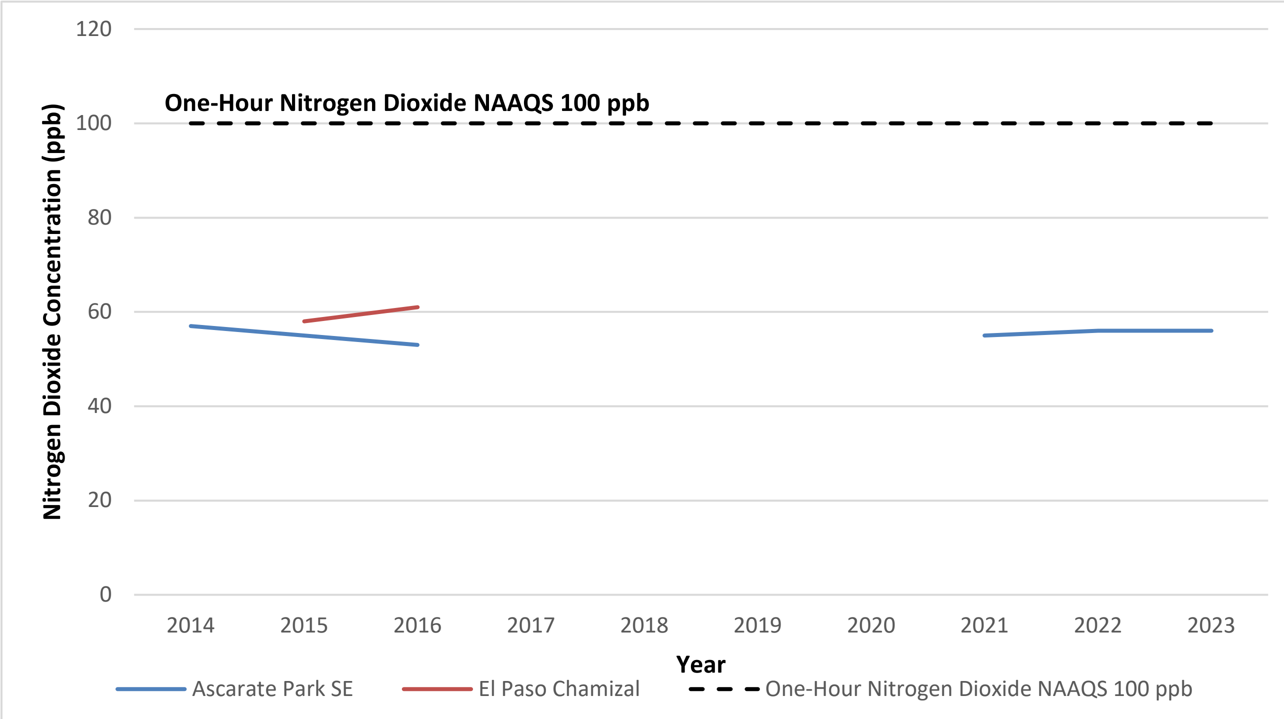
As of January 1, 2020, federal standards require a minimum of one NO_2 and one NO_y monitor to fulfill RA-40 and NCore monitoring requirements. The TCEQ meets the NO_2 requirements with one monitor and meets the NO_y requirement with one monitor. Monitoring objectives related to these federal requirements include collecting ambient data in populated areas and measuring maximum O_3 precursor emissions impacts.

Design Values and Trends

El Paso area one-hour and annual NO_2 design values have been stable over the past ten years. All El Paso monitors remain well below the one-hour and annual NO_2 NAAQS. Figure 62 and Figure 63 show the design value trends in the El Paso area from 2014 to 2023.

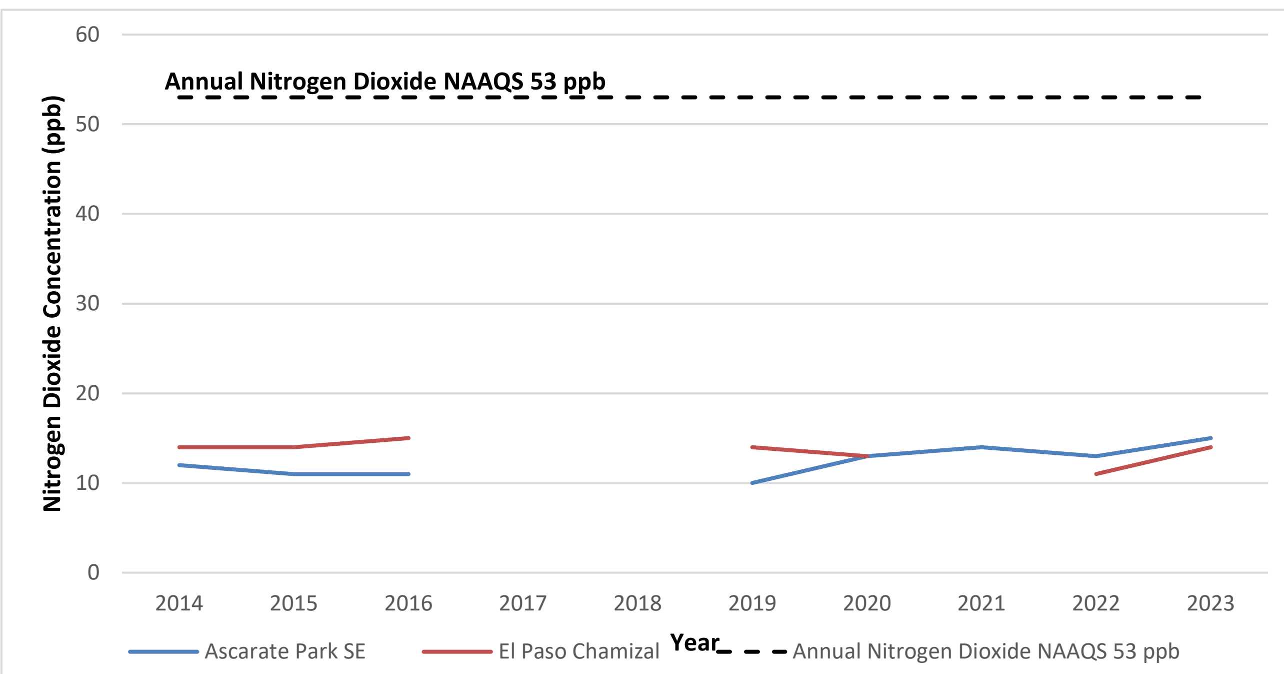
TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. The valid data, surrounding data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards
SE – southeast

Figure 62: El Paso Area One-Hour Nitrogen Dioxide Design Value Trends, 2014–2023



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards
SE - southeast

Figure 63: El Paso Area Annual Nitrogen Dioxide Design Value Trends, 2014–2023

Network Evaluation

Table 44 shows how each NO_x or NO_y monitor in the El Paso area was evaluated using the scoring system described in the *Evaluation Methods* section. The Ascarate Park SE NO_x monitor data satisfies the RA-40 requirements, and the El Paso Chamizal NO_y monitor satisfies the NCore requirements. The remaining El Paso Chamizal NO_x monitor is of value to provide O_3 precursor data. Based on these scores and the data usage, no changes to the El Paso area NO_x network are recommended at this time.

Table 44: El Paso Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Ascarate Park Southeast	4	2	2	4	2	14	critical
El Paso Chamizal	1	2	2	4	2	11	medium
El Paso Chamizal**	4	NA	NA	3	2	9	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**NO_y – total reactive nitrogen compounds
NAAQS Value Percent and Data Trend values assessed based on available data.
NA – Not applicable
NAAQS – National Ambient Air Quality Standards

Sulfur Dioxide

The SO_2 network in the El Paso area fulfills NCore requirements. Figure 64 shows area SO_2 monitors with red squares and the 2022 point sources with blue circles. Appendix A lists active and recently decommissioned SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

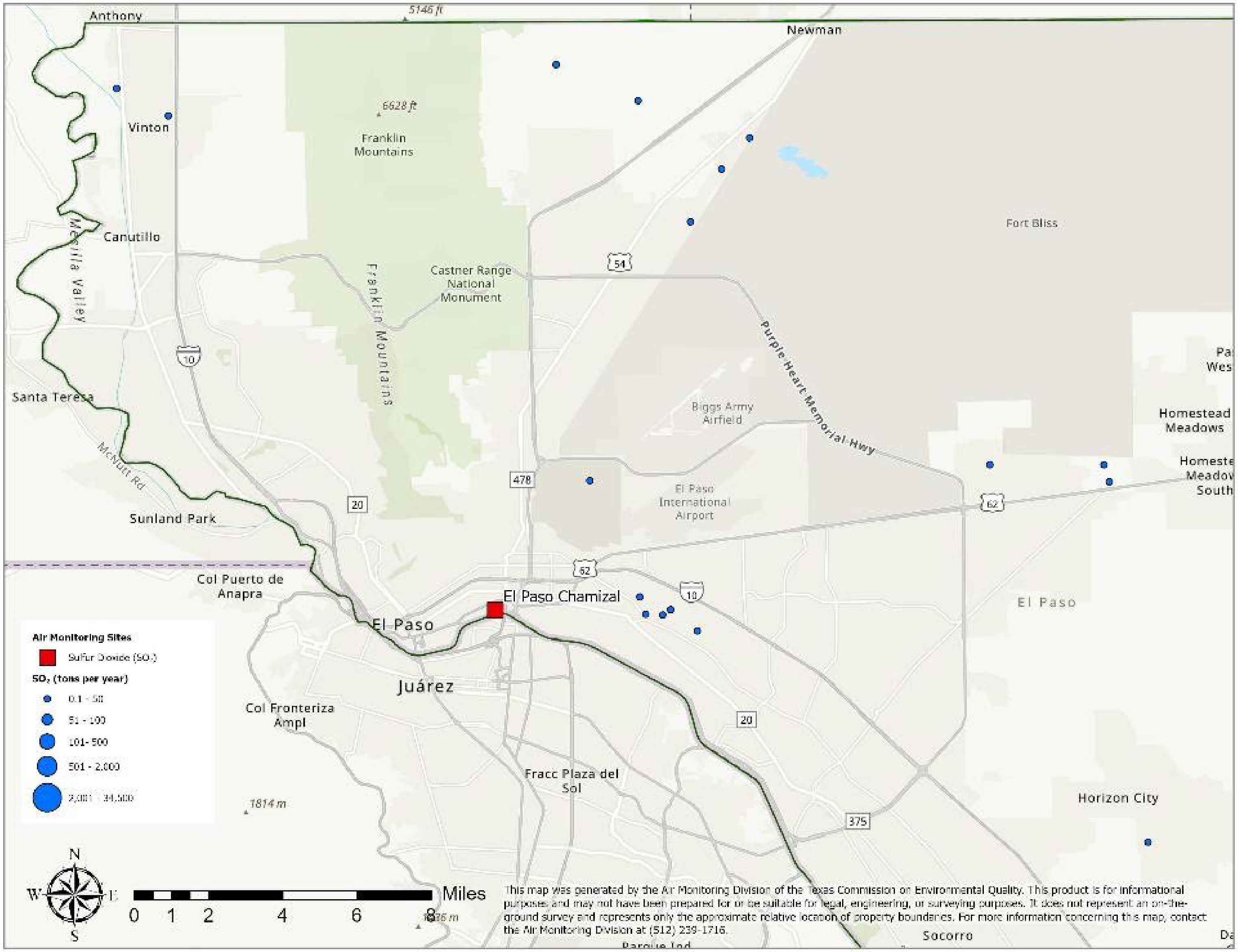


Figure 64: Far West Texas Area Active Sulfur Dioxide Monitor and 2022 Point Sources

El Paso Area

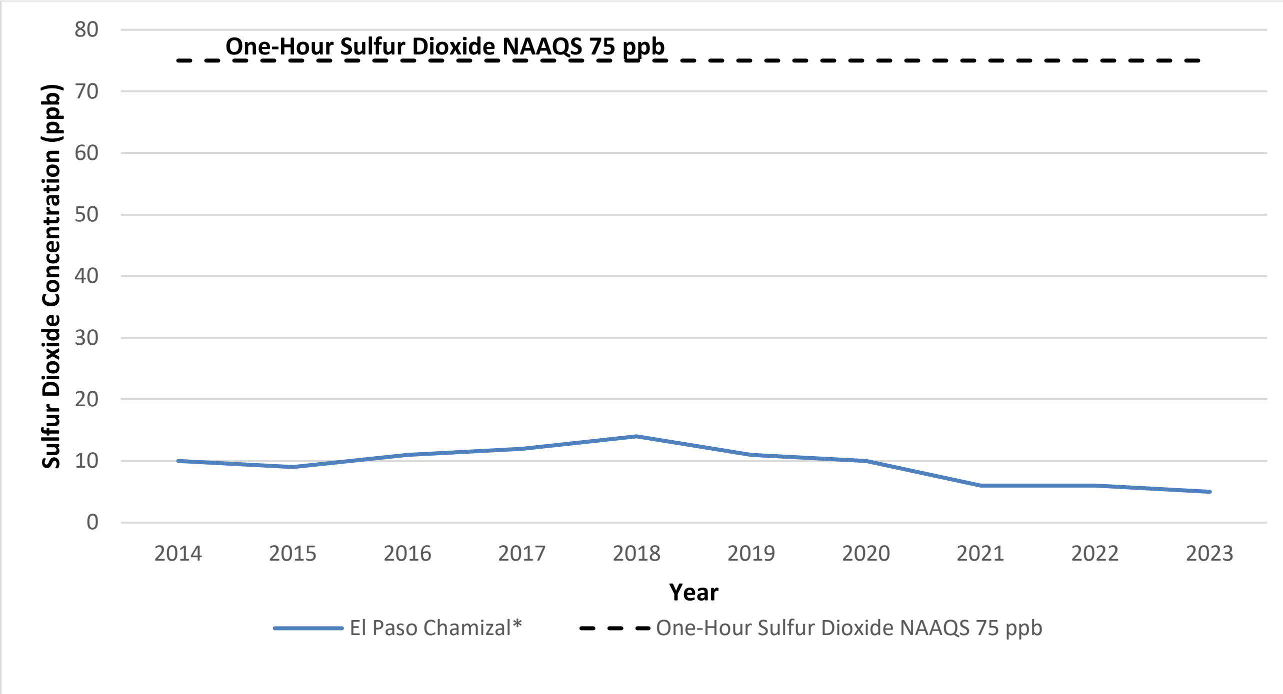
Network History and Current Status

El Paso area SO_2 monitoring began in the late 1990s and early 2000s with the deployment of the El Paso UTEP and Skyline Park monitors. In late 2010, a high sensitivity SO_2 monitor was deployed at the El Paso Chamizal site to fulfill NCore SO_2 monitoring requirements. The El Paso UTEP and Skyline Park SO_2 monitors were decommissioned in December 2017. These monitors were not federally required and maintained historic design values trending downward from 12% to 3% of the 2010 one-hour SO_2 NAAQS. As of January 1, 2025, one El Paso area SO_2 monitor is required to fulfill NCore requirements. The TCEQ meets requirements with one high-sensitivity SO_2 monitor.

Design Values and Trends

El Paso area SO_2 design values have continued a slight decline, and the El Paso Chamizal SO_2 data remain less than 10% of the 2010 one-hour SO_2 NAAQS of 75 ppb. Figure 65 shows the SO_2 design value trends in the El Paso area from 2014 through 2023. El Paso Chamizal design values were invalid for 2016-2021 due to low quality assurance. Invalid design values are included for trends assessment.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Longer term data loss can affect design values. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations. Design value determinations are summarized in the FYA *Pollutants* section. The valid data, surrounding data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*El Paso Chamizal design values not valid for 2016 to 2021
ppb – parts per billion
NAAQS – National Ambient Air Quality Standard

Figure 65: El Paso Area One-Hour Sulfur Dioxide Design Value Trends, 2014-2023

Network Evaluation

Table 45 shows how the El Paso area SO_2 monitor was evaluated using the scoring system described in the *Evaluation Methods* section. The El Paso Chamizal high-sensitivity SO_2 monitor satisfies NCore requirements.

Table 45: El Paso Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
El Paso Chamizal**	4	1	1	3	1	10	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**SO_2 high sensitivity monitor
NAAQS – National Ambient Air Quality Standard

Particulate Matter of 2.5 Micrometers or Less in Diameter

The $PM_{2.5}$ network in the Far West Texas area fulfills SLAMS and NCore requirements using a combination of non-continuous FRM, continuous FEM, and non-NAAQS comparable monitors. Non-NAAQS comparable data were not evaluated for trends against NAAQS criteria. Figure 66 shows Far West Texas area $PM_{2.5}$ monitors with a blue square and the 2022 point sources with yellow circles. Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

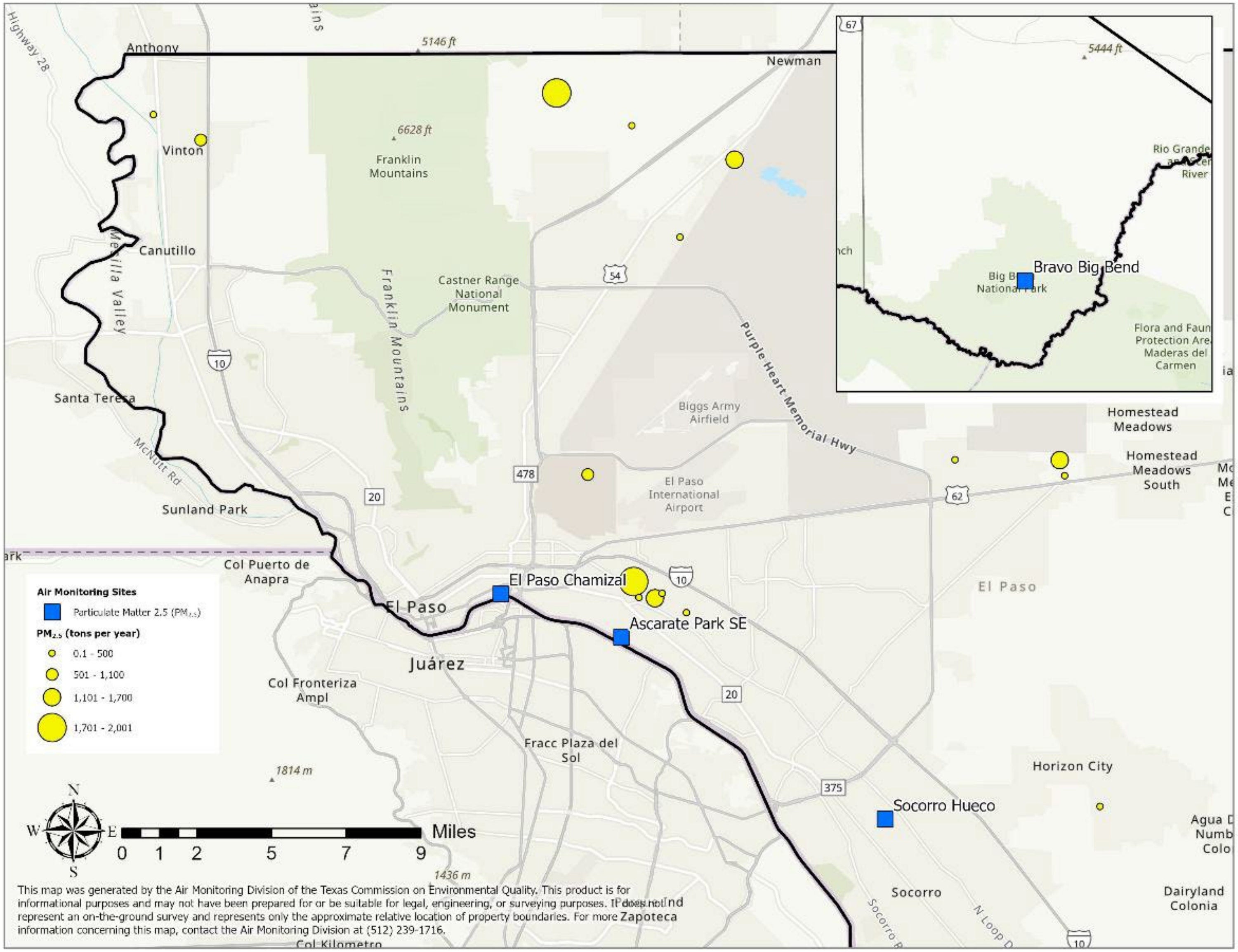


Figure 66: Far West Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter Monitors and 2022 Point Sources

Far West Texas Area

Network History and Current Status

El Paso area $PM_{2.5}$ monitoring began in the late 1990s and early 2000s with the deployment of El Paso Chamizal and El Paso UTEP monitors. Through the 2000s the $PM_{2.5}$ network expanded with $PM_{2.5}$ speciation at El Paso Chamizal. In 2010 and 2012, non-NAAQS comparable continuous $PM_{2.5}$ monitors were added to Ascarate Park SE and Socorro Hueco to monitor concentrations in the populated areas to the southeast and south-southeast of El Paso. $PM_{2.5}$ monitoring began in Big Bend National Park, located in Brewster County, at Bravo Big Bend in 2008 with a non-NAAQS comparable $PM_{2.5}$ monitor that was upgraded to a FEM continuous monitor in May 2017. Since the 2020 FYA several changes have occurred.

The El Paso UTEP air monitoring site and $PM_{2.5}$ monitor were temporarily deactivated for relocation in November 2021 due to the property owner revoking the site usage agreement for building expansion. TCEQ has worked with multiple public entities, including UTEP, City of El Paso, EPA, Texas Department of Transportation, and the U.S. International Boundary and Water Commission, in an effort to identify a suitable location within one to two miles of the previous site and has not been successful. TCEQ continues to evaluate potential locations for the El Paso UTEP site.

The non-NAAQS comparable continuous $PM_{2.5}$ monitors at Ascarate Park SE and Socorro Hueco were upgraded to FEM continuous monitors in May 2024. The Ascarate Park SE and Socorro Hueco $PM_{2.5}$ FEM monitors are pending three full years of data, due to their activation dates, and will not be assessed with the *NAAQS Value* metric. A $PM_{2.5}$ FEM continuous monitor is planned for activation at the existing Skyline Park air monitoring site in late 2025 to improve spatial coverage.

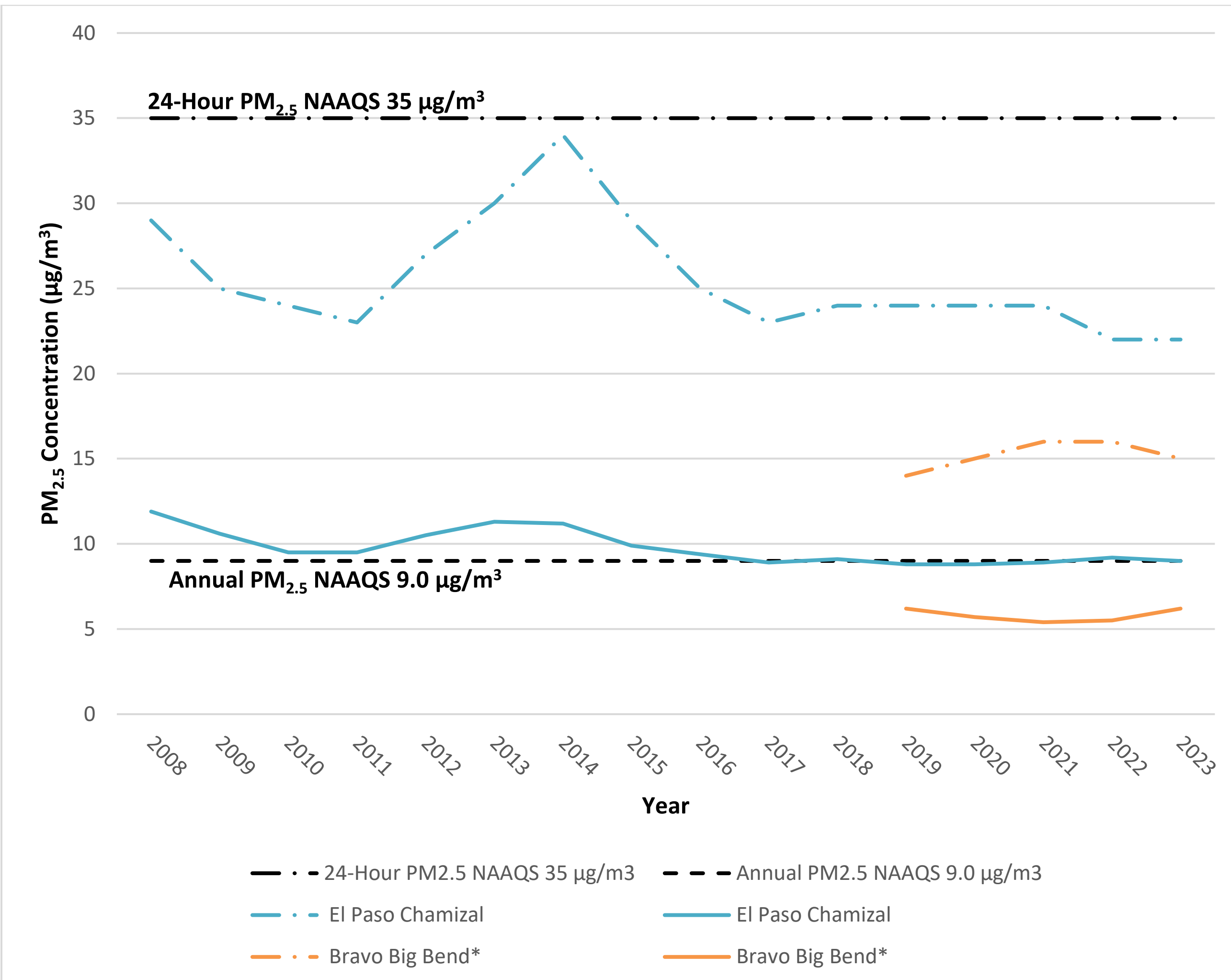
As of January 1, 2025, federal standards require a minimum of six El Paso MSA $PM_{2.5}$ monitors. TCEQ meets El Paso area requirements with six $PM_{2.5}$ monitors at three sites providing $PM_{2.5}$ gravimetric, speciation, and continuous measurements to determine maximum concentrations and concentrations in areas of high population density. El Paso area monitoring along the international border evaluates regional transport, $PM_{2.5}$ background levels, and ambient $PM_{2.5}$ concentrations in populated areas. $PM_{2.5}$ monitoring in Big Bend National Park (Brewster County) is not federally required and provides background data and data along the United States and international border.

Design Values and Trends

The El Paso area $PM_{2.5}$ annual and 24-hour $PM_{2.5}$ design values show some variability due to occasional dust events. Figure 67 shows the annual and 24-hour $PM_{2.5}$ design value trends in the El Paso area from 2008 through 2023. Design values have remained below the 24-hour $PM_{2.5}$ NAAQS of 35 $\mu g/m^3$. In addition, annual $PM_{2.5}$ design values have exhibited a slight decrease and remain at or below the 9.0 $\mu g/m^3$ annual NAAQS. Data quality concerns, due to quality assurance check failures during one calendar quarter in 2023, affected the Bravo Big Bend 2023 design values. Incomplete design value data are included in Figure 67 for trends assessment. The Ascarate Park SE and Socorro Hueco $PM_{2.5}$ monitor data are not evaluated in the trends assessment below due to the May 2024 activation date and will be assessed in the next FYA.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. The valid data, surrounding the data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Bravo Big Bend design value not valid for 2023
NAAQS - National Ambient Air Quality Standard
µg/m^3 - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Figure 67: Far West Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2008-2023

Network Evaluation

Table 46 shows how each $PM_{2.5}$ monitor in the Far West Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The El Paso Chamizal $PM_{2.5}$ monitors satisfy NCore $PM_{2.5}$ requirements. The Ascarate Park SE and Socorro Hueco $PM_{2.5}$ FEM monitors satisfy SLAMS requirements. The remaining area $PM_{2.5}$ monitor is of value due to spatial coverage and the unique information provided regarding particulate concentrations along the international border. Based on these scores, no changes to the Far West Texas area $PM_{2.5}$ network are recommended at this time.

Table 46: Far West Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Ascarate Park SE	$PM_{2.5}$ FEM	4	NA	NA	1	2	7	critical
Bravo Big Bend	$PM_{2.5}$ FEM	1	NA	2	2	2	7	medium
El Paso Chamizal	$PM_{2.5}$ FEM	4	4	1	1	2	12	critical
El Paso Chamizal	$PM_{2.5}$ FRM	4	4	1	1	2	12	critical
El Paso Chamizal	$PM_{10-2.5}$	4	NA	NA	3	2	9	critical
El Paso Chamizal	$PM_{2.5}$ Speciation	4	NA	NA	4	2	8	critical
Socorro Hueco	$PM_{2.5}$ FEM	4	NA	NA	1	2	7	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards
NA – not applicable
FEM – federal equivalent method
FRM – federal reference method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
$PM_{10-2.5}$ – coarse particulate matter

Particulate Matter of 10 Micrometers or Less in Diameter

The PM_{10} network in the El Paso area fulfills SLAMS requirements based on CBSA populations and area concentrations. Figure 68 shows the area PM_{10} monitors with a purple square and the 2022 point sources with blue circles. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

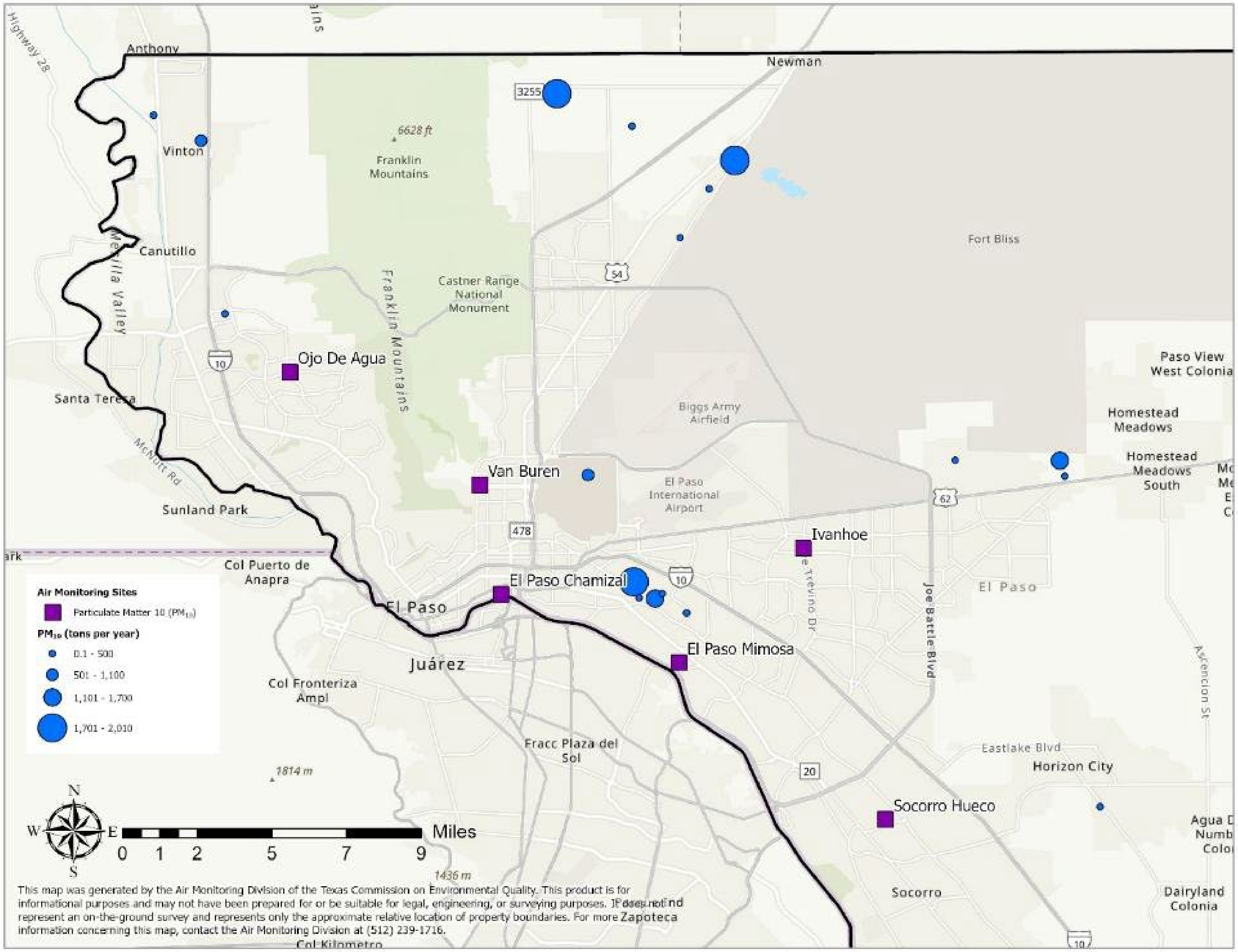


Figure 68: Far West Texas Area Particulate Matter of 10 Micrometers or Less in Diameter Monitors and 2022 Point Sources

El Paso Area

Network History and Current Status

PM_{10} monitoring in the El Paso area began in the late 1980s with the activation of Riverside and Ivanhoe PM_{10} FRM filter-based monitors. Through the early to mid-2000s, the PM_{10} monitoring network expanded in the urban core at Clendenin School, El Paso Socorro, and Tillman to measure concentrations near populated areas and characterize regional air quality. The Clendenin School monitor relocated to the new Van Buren site in 2010. The El Paso Socorro site relocated to Socorro Hueco with the same AQS identification number in 2012. In 2013, the PM_{10} monitor was moved from the Tillman site to the new Ojo De Agua site due to the sale of the Tillman site property. The Riverside PM_{10} monitor was relocated less than one mile, with the same AQS identification number, to the new El Paso Mimosa site in late 2019, to improve site access safety. Since the 2020 FYA, several El Paso area PM_{10} network changes occurred. The EL Paso Chamizal PM_{10} continuous monitor was upgraded from non-NAAQS comparable to FEM in July 2023. The Socorro Hueco PM_{10} FRM filter-based was upgraded to PM_{10} FEM continuous in May 2024. The remaining PM_{10} FRM filter-based monitors are planned to be upgraded to PM_{10} FEM continuous before the next FYA.

As of January 1, 2025, federal standards require between four and eight PM_{10} monitors in the El Paso MSA. Currently, TCEQ meets requirements with PM_{10} monitored at six sites to measure population exposure and highest concentrations.

Design Values and Trends

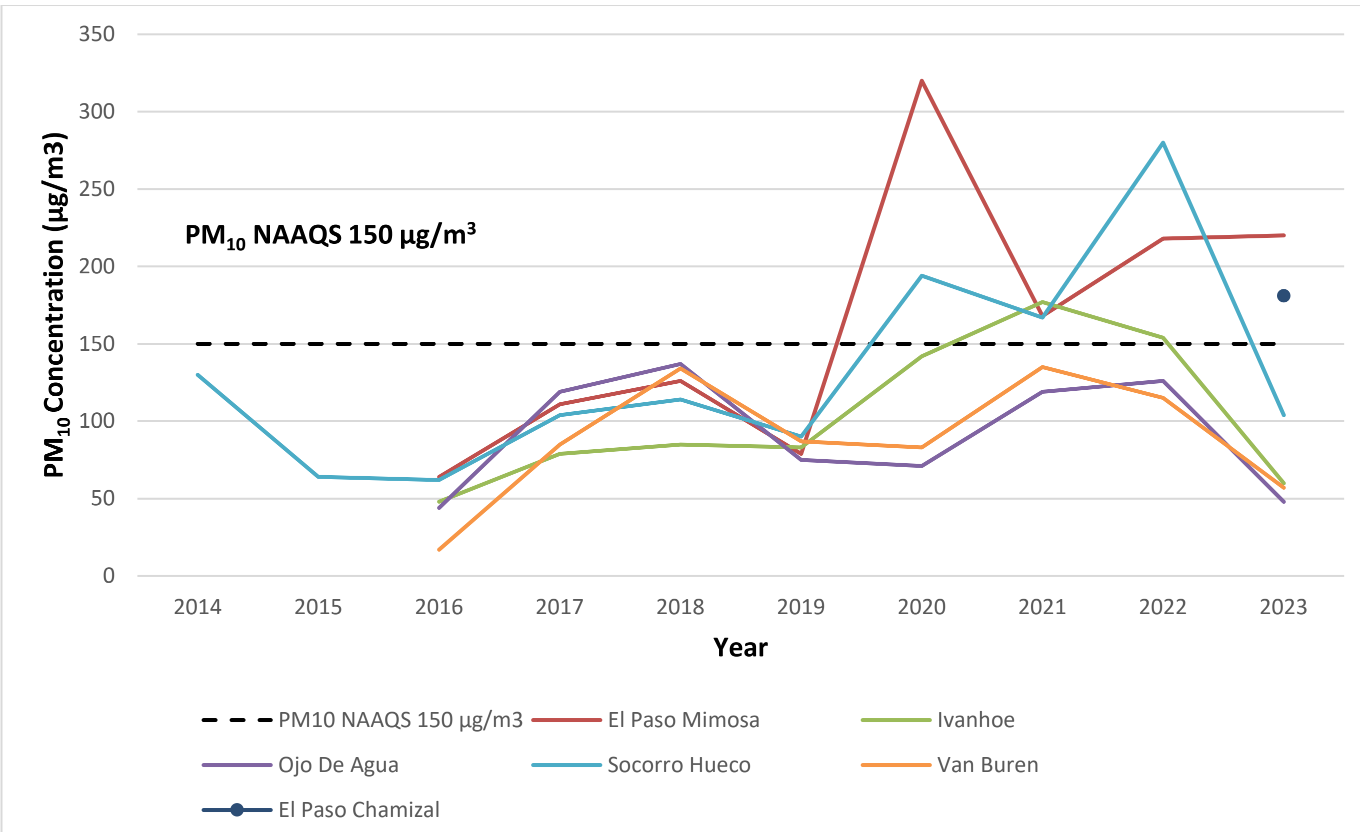
Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 $\mu g/m^3$ standard averaged over three years. The El Paso area has been classified as nonattainment for the 24-hour PM_{10} NAAQS since November 15, 1990. Exceedances, frequently at Socorro Hueco, are variable due to the impact of regional blowing dust and remain heavily impacted by exceptional events. Data from the finalized El Paso PM_{10} Exceptional Events Demonstration for 2017-2018 have been approved by the EPA and excluded from the below trends analysis.

Exceptional events are unusual or naturally occurring events that affect air quality and are not reasonably controllable or preventable. States can request the EPA not consider air quality data affected by an exceptional event when determining if an area met an air quality health standard. On December 23, 2020, high winds caused blowing dust in and around El Paso County. The PM_{10} levels at the Socorro Hueco and El Paso Mimosa monitors were not reasonably controllable or preventable. TCEQ submitted an exceptional event demonstration to EPA Region 6, in January 2023, to exclude these data. High winds also caused blowing dust in and around El Paso County on June 21, 2021, for the Socorro Hueco and El Paso Mimosa monitors; and on December 6, 2021, for the Ivanhoe monitor. Due to these high winds, these PM_{10} levels measured in the El Paso area were not reasonably controllable or preventable. TCEQ submitted an exceptional event demonstration to EPA Region 6, in September 2023, to exclude these data. The EPA has not acted on this exceptional event demonstration.

High winds caused blowing dust again on February 16, 2022, at the Socorro Hueco and El Paso Mimosa PM_{10} monitors in El Paso County. The PM_{10} levels at the Socorro Hueco and El Paso Mimosa monitors were not reasonably controllable or preventable. TCEQ posted an exceptional event demonstration to exclude these data for a 30-day public comment period, and submittal to EPA is pending TCEQ final consideration and review.

Exceptional Event Demonstration data from 2020-2023 discussed above are still under TCEQ's consideration or have not been finalized by the EPA. Detailed information on TCEQ particulate matter exceptional event demonstrations are available on the TCEQ webpage [Exceptional Event Demonstrations for Particulate Matter - TCEQ](). These data are included in the PM_{10} graph below as the data exclusions discussed in this section are pending EPA concurrence.

Figure 69 shows El Paso area PM_{10} annual maximum 24-hour average trends, which are frequently influenced by exceptional dust events. Data flagged as exceptional events for 2017 and 2018 were not included.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less in diameter

Figure 69: El Paso Area Particulate Matter of 10 Micrometers or Less in Diameter Maximum Daily Concentration Trends, 2014-2023

Network Evaluation

Table 47 shows how each PM_{10} monitor in the El Paso area was evaluated using the scoring system described in the *Evaluation Methods* section. The El Paso Chamizal, El Paso Mimosa, Socorro Hueco, and Ivanhoe PM_{10} monitors satisfy SLAMS requirements. The remaining monitors are valuable for spatial coverage and provide area air quality characterization in a nonattainment area. Based on these scores, no further changes to the El Paso area PM_{10} network are recommended at this time.

Table 47: El Paso Area Particulate Matter of 10 Micrometers or Less in Diameter Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
El Paso Chamizal	4	4	2	1	3	14	critical
El Paso Mimosa (previously Riverside)	4	4	3	4	3	18	critical
Ivanhoe	4	1	3	4	3	15	critical
Ojo De Agua	1	1	2	3	3	10	medium
Socorro Hueco	4	2	1	1	3	11	critical
Van Buren	1	1	3	3	3	11	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Lead

TCEQ's Pb network is designed to meet source-oriented SLAMS monitoring requirements to measure maximum Pb concentrations near point sources emitting 0.50 tpy or more of Pb. There is no source-oriented Pb monitoring required in the Far West Texas area, and Pb monitoring ceased in the El Paso area in late 2020. Appendix A lists recently decommissioned Pb monitors, locations, monitoring objectives, and spatial scale.

El Paso Area

Network History and Current Status

El Paso Pb monitoring began in the late 1970s at the Kern site and expanded to Tillman in 2005, located in the populated downtown El Paso area. These monitors were later relocated to the Ojo de Agua and El Paso UTEP sites, in 2012 and 2013, respectively, due to property sale and to improve site access safety. A Pb monitor was deployed at Skyline Park in 2005 and decommissioned in 2014, based on historical measured design values well below the Pb NAAQS. In 2011, a new Pb monitor was deployed at Ascarate Park SE to fulfill NCore requirements. Although the El Paso Chamizal site is the designated NCore site in the area, space limitations at that site precluded deployment of additional monitoring equipment; Ascarate Park SE was selected as an alternative site for meeting this requirement. The NCore Pb monitoring requirement was eliminated in the EPA's final rule in March 2016, *Revisions to the Ambient Monitoring Quality Assurance and Other Requirements; Final Rule*, and as a result, the Ascarate Park SE Pb monitor was decommissioned in December 2016.

The largest historical source of Pb in the Far West Texas area was the ASARCO smelter that discontinued operation in 1999 and was demolished and remediated in 2013 and 2016, respectively. El Paso area Pb monitoring had been conducted in populated areas downwind of the ASARCO facility. Since the 2020 FYA, two El Paso area Pb network changes occurred. The. El Paso UTEP and the Ojo De Agua Pb monitors were scored as low in the 2020 FYA; therefore, these monitors were recommended for deactivation in the 2020 AMNP and deactivated in October 2020. As of January 1, 2025, federal standards require no Pb monitors in the El Paso area.

Photochemical Assessment Monitoring

The VOC network in the Far West Texas area supports PAMS (non-required) and O_3 enhanced monitoring. Figure 70 shows the area VOC monitor with a green square and the 2022 point sources with blue circles. Appendix A lists active VOC monitors, locations, monitoring objectives, and associated spatial scales. Appendix A lists active VOC monitors, locations, monitoring objectives, and associated spatial scales.

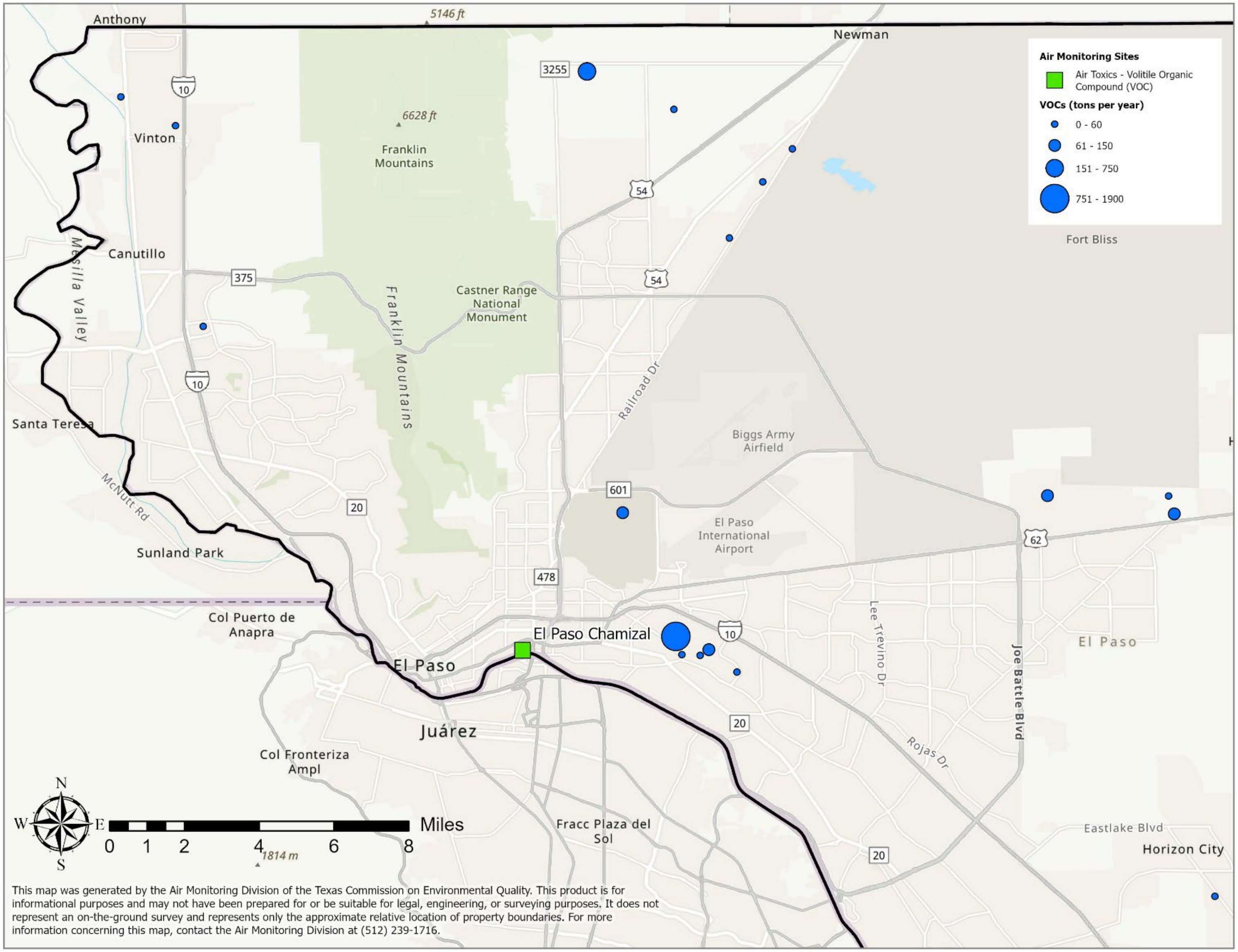


Figure 70: Far West Area Volatile Organic Compounds Monitors and 2022 Point Sources

El Paso Area

Network History and Current Status

El Paso area VOC monitoring began in 1995 at El Paso Chamizal with the deployment of an autoGC to assist in understanding the area's photochemical characteristics. A carbonyl monitor was deployed to Ascarate Park SE in 2010 to further study O_3 precursors not captured in VOC monitoring; however, it was decommissioned in December 2018 after determination that the data was no longer needed for O_3 precursor modeling. As of January 1, 2025, there are no federal PAMS requirements for this area. TCEQ exceeds requirements with one continuous VOC monitor.

Design Values and Trends

Design values and associated trends are not applicable to VOCs and carbonyl monitoring. Monitoring objectives for photochemical assessment monitoring of O_3 precursors include creating a representative VOC ambient air database useful in photochemical grid modeling, developing emission control strategies, and furthering the understanding of pollution transport mechanisms.

Network Evaluation

Table 48 shows how the VOC monitor in the El Paso area was evaluated using the scoring system described in the *Evaluation Methods* section. The El Paso Chamizal autoGC supports enhanced O_3 monitoring. The autoGC is located in an area of dense population and is meeting the original monitoring objectives. Based on these scores, no changes to the El Paso area VOC network are recommended at this time.

Table 48: El Paso Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value	2023 NAAQS Value	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
El Paso Chamizal	Speciated VOC (AutoGC)	1	NA	NA	4	2	7	medium

autoGC – automated gas chromatograph
NAAQS – National Ambient Air Quality Standards
NA – not applicable
VOC – volatile organic compounds

Lower Rio Grande Valley Area Evaluation

(Brownsville-Harlingen, Eagle Pass, Laredo, and McAllen-Edinburg-Mission Areas)

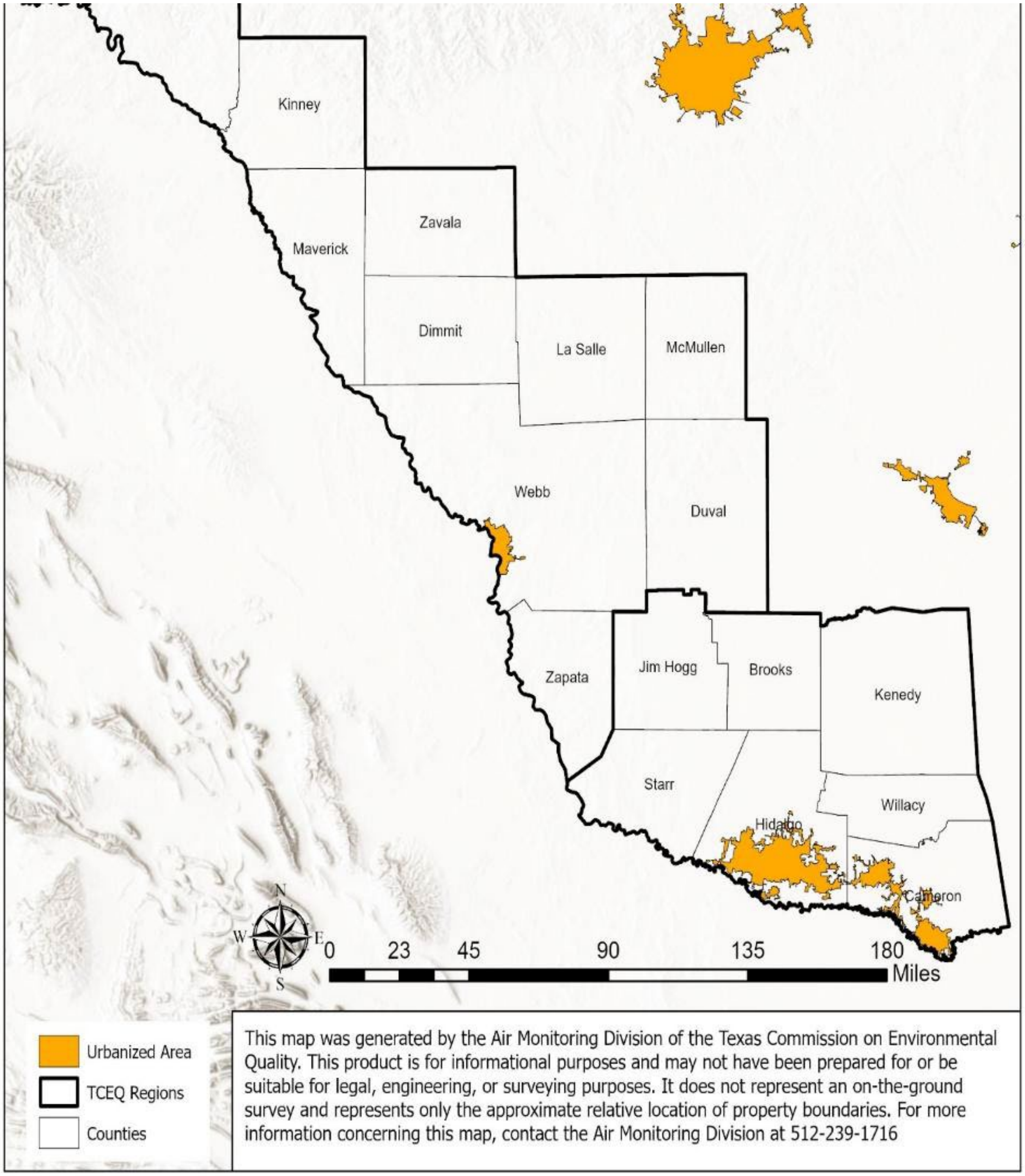


Figure 71: Lower Rio Grande Valley Area Counties and Urban Areas

Lower Rio Grande Valley Area Characteristics and Background

Population and Monitoring Requirements

The Lower Rio Grande Valley area is comprised of two TCEQ Regional Areas: Region 15 Harlingen and Region 16 Laredo. There are four CBSAs in these TCEQ Regions that include multiple counties in addition to counties in the regions that are not in CBSAs or micropolitan statistical areas. Details regarding each Lower Rio Grande Valley county, CBSA, and micropolitan statistical area are detailed in FYA Appendix B. TCEQ Regions, CBSAs, and associated counties are summarized below for areas containing ambient air monitors.

TCEQ Region 15 – Harlingen

- Brownsville-Harlingen (Brownsville) CBSA: Cameron County
- McAllen-Edinburg-Mission (McAllen) CBSA: Hidalgo County

TCEQ Region 16 – Laredo

- Laredo CBSA: Webb County
- Eagle Pass CBSA: Maverick County

The Texas Demographics Center projects the combined population of the four Lower Rio Grande Valley area MSAs will exceed 1.6 million persons in 2025. The 2030 projection estimates a 3% population increase from 2025 in the Lower Rio Grande Valley area, with the largest growth at 4% in the McAllen and Eagle Pass areas. Table 49 shows the Lower Rio Grande Valley CBSA population projections. Figure 72 and Figure 73 illustrate the population densities across the Lower Rio Grande Valley urban areas with active sites and monitors and wind roses. Population density is illustrated by square mile for each area zip code. Population densities were obtained from TDC Population Density in Texas, 2022 data using the 2018-2022 five-year population estimates (latest available data at the time the FYA was drafted). Population density is illustrated by square mile for each area zip code.

Table 49: Lower Rio Grande Valley Area Population Projections

Core Based Statistical Area (CBSA)	2020 Census Count	2025	2030	Change (2020 - 2025)	Change (2025-2030)
Brownsville-Harlingen	421,017	427,288	433,804	1%	2%
Eagle Pass	57,887	60,134	62,424	4%	4%
Laredo	267,114	273,319	279,673	2%	2%
McAllen-Edinburg-Mission	870,781	900,491	932,285	3%	4%
CBSA Totals	1,616,799	1,661,232	1,708,186	3%	3%

Minimum monitoring network design requirements under 40 CFR Part 58, Appendix D are evaluated annually in TCEQ's AMNP based on the latest available census population estimates.

The Brownsville CBSA is required to have the following:

- one O_3 monitor,
- one $PM_{2.5}$ monitor, and
- zero to one PM_{10} monitor.

The Eagle Pass CBSA is required to have the following:

- one $PM_{2.5}$ monitor.

The Laredo CBSA is required to have the following:

- one $PM_{2.5}$ monitor, and
- zero to one PM_{10} monitor.

The McAllen CBSA is required to have the following:

- one O_3 monitor,
- two $PM_{2.5}$ monitors, and
- between one and two PM_{10} monitors.

The TCEQ evaluated population projection data illustrated in Table 2 and Table 49 against Lower Rio Grande Valley area minimum monitoring design requirements. No Lower Rio Grande Valley CBSA monitoring requirements would increase based on the projected population assessment. TCEQ meets and exceeds monitoring requirements with the monitors illustrated in Figure 72 and Figure 73.

Wind Patterns

Figure 71 illustrates the counties included in the Lower Rio Grande Valley area evaluation. Figure 72 and Figure 73 illustrate typical Lower Rio Grande Valley area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2019 to 2022. Figure 72 wind roses were derived from South Padre Island Heliport and Brownsville South Padre Island International Airport. The Figure 73 wind rose was derived from Laredo International Airport. Figure 72 and Figure 73 show the annual wind patterns are predominately from the south-southeast to north-northwest from the Gulf of Mexico.

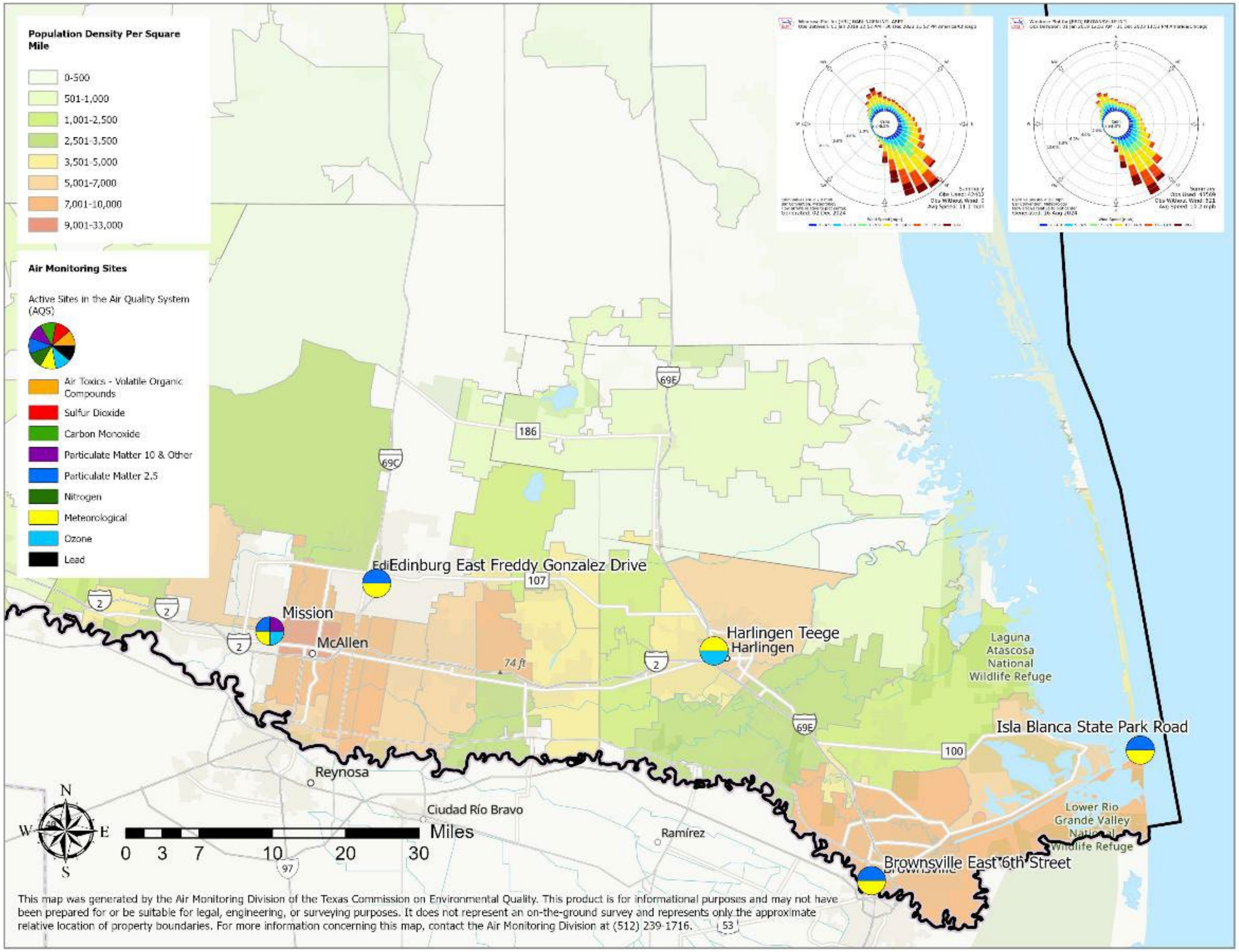


Figure 72: Brownsville-Harlingen and McAllen-Edinburg-Mission Area Active Sites and Monitors, Population Density, and Wind Roses

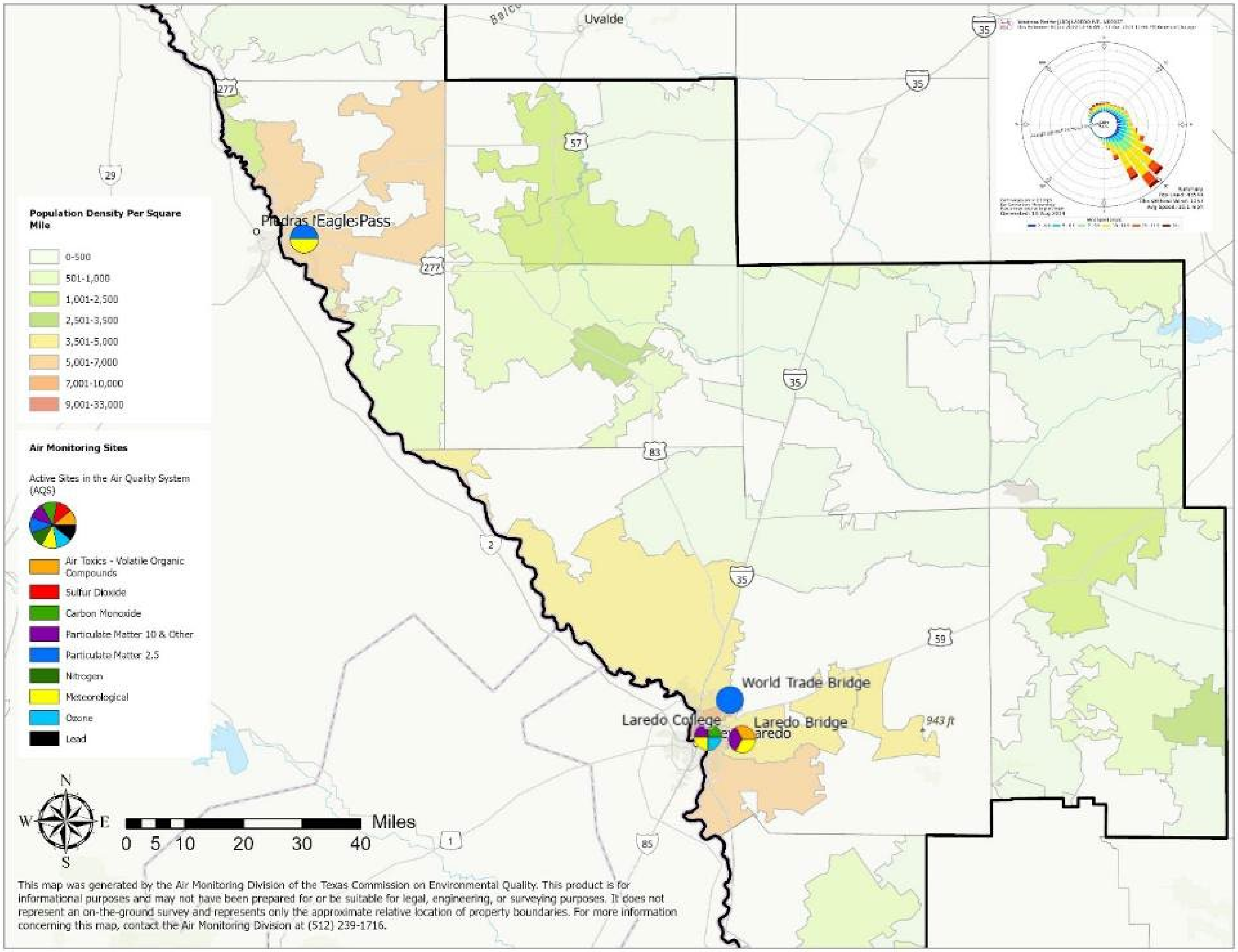


Figure 73: Laredo and Eagle Pass Area Active Sites and Monitors, Population Density, and Wind Roses

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Lower Rio Grande Valley area EI source totals by pollutant, by Region, are listed in Table 50. Data from EI source categories show the following for the Lower Rio Grande Valley area:

- The majority of CO is emitted from on-road and non-road mobile sources in the Harlingen area and from area sources in the Laredo area.
- Area sources account for the majority of VOC, NO_x, PM_{10}, $PM_{2.5}$, and SO_2 emissions in the Harlingen and Laredo areas.
- Non-road mobile sources contribute the majority of total Pb emissions in the Harlingen and Laredo areas.

This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 50: 2020 Lower Rio Grande Valley Area Emissions Inventory in Tons Per Year

Area*	Source	VOC	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R15 Harlingen	Point	488	1,374	1,446	344	292	36	0.00
R15 Harlingen	Area	24,723	6,994	7,121	61,975	7,858	99	0.00
R15 Harlingen	On-Road Mobile	2,510	4,787	46,784	548	161	26	0.00
R15 Harlingen	Non-Road Mobile	3,845	3,715	35,178	235	223	48	0.19
R16 Laredo	Point	1,131	1,069	905	119	81	997	0.00
R16 Laredo	Area	76,930	51,721	32,608	32,612	4,558	1,056	0.00
R16 Laredo	On-Road Mobile	917	3,736	18,213	249	101	12	0.00
R16 Laredo	Non-Road Mobile	1,377	3,533	12,472	138	132	28	0.08

*Appendix C details the counties included for each area.
CO – carbon monoxide
NO_x – oxides of nitrogen
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
PM_{10} – particulate matter of 10 micrometers or less in diameter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

The Lower Rio Grande Valley area has historically been affected by elevated $PM_{2.5}$ concentrations from long-range transport and wind flow patterns, as supported by speciation data, satellite imagery, and back trajectories. Dust from Africa typically impacts the Lower Rio Grande Valley area three to six times each summer. Smoke from agricultural burning in North and Central America affects the Lower Rio Grande Valley area typically from April to early June when the winds bring in air from eastern portions of North and Central America and is generally associated with abnormally high organic carbon concentrations. Controlled burns, haze, and smoke accumulated from wildfires in the United States and Canada (also known as continental haze) are most common from May through October and often include high O_3 background levels. Long-range transport from other events also impact the Lower Rio Grande Valley area, including wildfires and dust from storms in the West Texas-New Mexico-Northern Mexico area. More detailed information about these types of natural events is available at the TCEQ's Exceptional Event Demonstrations for Particulate Matter webpage.

Regional Air Quality

As of January 1, 2020, all Lower Rio Grande Valley geographical areas are designated attainment/unclassifiable for all current NAAQS.

Lower Rio Grande Valley Area Monitoring Network Evaluation

Ozone

The O_3 network in the Lower Rio Grande Valley area fulfills SLAMS requirements based on population and O_3 design values. Monitoring for O_3 is not required or performed in the Eagle Pass area and is not discussed further in this section. Figure 72 and Figure 73 show the area active O_3 monitors at sites with a light blue section. Appendix A lists active and recently decommissioned O_3 monitors, locations, monitoring objectives, and associated spatial scales.

Lower Rio Grande Valley Area

Network History and Current Status

Lower Rio Grande Valley area O_3 monitoring began in the early 1990s with the activation of the Brownsville monitor. In the late 1990s, the O_3 monitoring network expanded in other urban areas to include monitoring in the Laredo and Mission areas to evaluate O_3 concentrations in populated areas. In 2011, the Laredo Border site was shut down due to campus construction and was relocated to Laredo Vidaurri in 2012. In 2012, O_3 monitoring expanded to the Harlingen Teege site. The Brownsville monitor was decommissioned in December 2017 as the data aligned with the Harlingen Teege monitor and was considered redundant. Since the 2020 FYA, two O_3 monitoring site changes occurred.

The Laredo Vidaurri air monitoring site and O_3 monitor were temporarily deactivated for relocation in July 2021 due to the property owner revoking the site usage agreement for property sale. The Laredo Vidaurri air monitoring site was relocated within one mile to the Laredo College site in November 2022 with no change to AQS identification number. Data loss from the temporary deactivation for relocation disrupted the Laredo College O_3 design value for 2021-2023, and a valid design value is expected with 2024 certified data.

Similarly, the Mission air monitoring site and O_3 monitor were temporarily deactivated for relocation in November 2021 due to the property owner revoking the site usage agreement for building expansion. The Mission air monitoring site was relocated within 40 feet in May 2022 with no change to the site name or AQS identification number. Data loss from the temporary deactivation for relocation disrupted the Mission O_3

design value for 2022-2024, and a valid design value is expected with 2025 certified data.

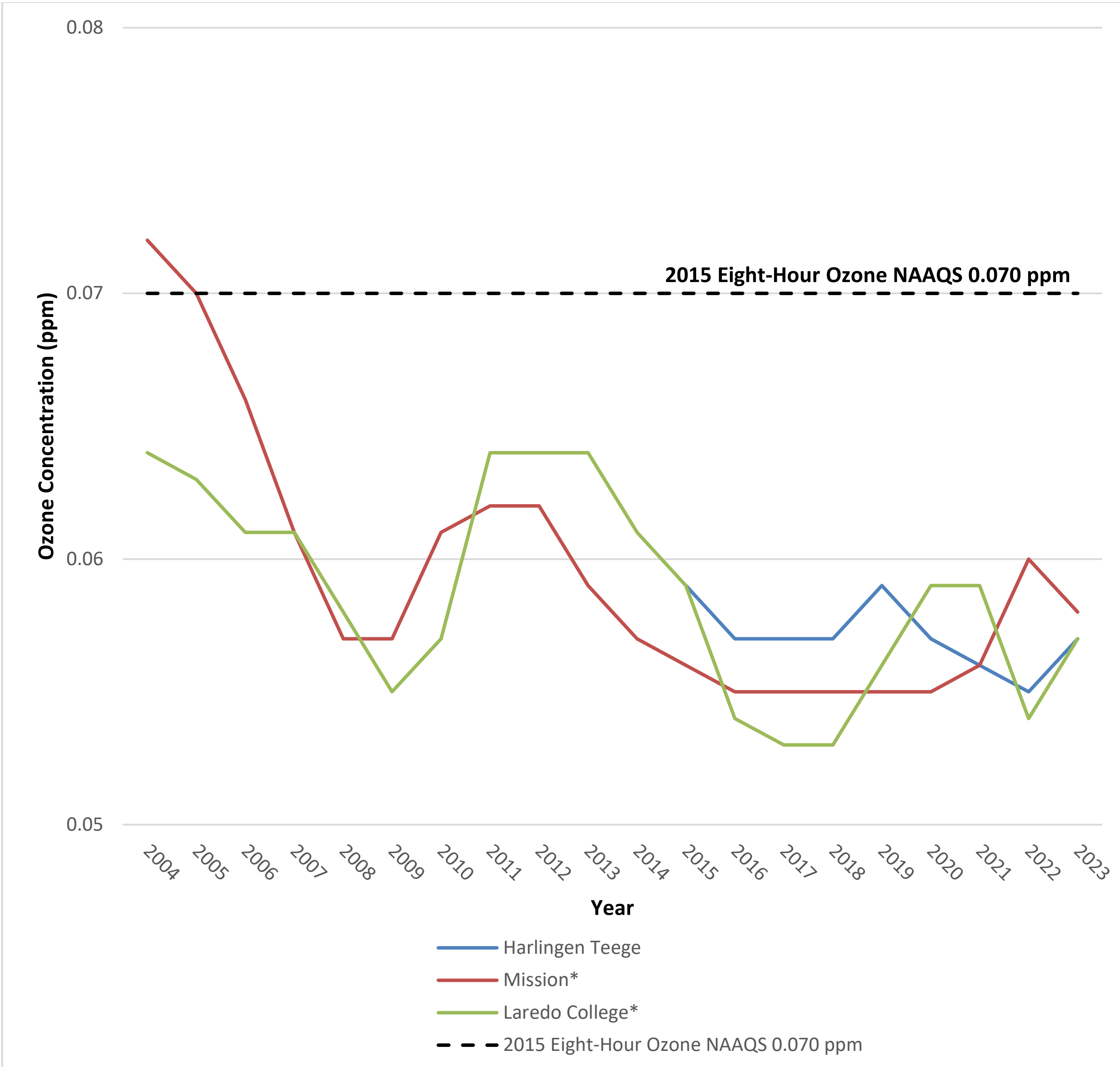
As of January 1, 2025, federal standards require a minimum of one O_3 monitor in each of the Brownsville and McAllen MSAs. TCEQ meets these requirements with an O_3 monitor in each MSA and a third monitor in the Laredo MSA. Minimum monitoring requirements will be reassessed for the Laredo area once the relocated O_3 monitor obtains a valid design value, expected with 2025 certified data. While the number of O_3 monitors exceeds area federal requirements, the spatial distribution of the network provides valuable data for evaluating population exposure and maximum concentrations in the area.

Design Values and Trends

Lower Rio Grande Valley area eight-hour O_3 design values continue to decline. Laredo College O_3 design values were invalid for 2011-2014 and 2021-2023 due to data loss caused by the temporary site deactivation required for the two site relocations (in 2011-2012 and 2021-2022). The Laredo College O_3 monitor experienced data quality issues, due to quality assurance check failures, in two calendar quarters of 2017 and 2018 affecting the three-year design values for 2017-2020. Mission O_3 design values were invalid for 2022 and 2023 due to data loss caused by the temporary deactivation for relocation. Figure 74 shows the Lower Rio Grande Valley area O_3 design value trends from 2004 through 2023 compared with the 2015 eight-hour O_3 NAAQS of 0.070 ppm. Invalid design value data are included in Figure 74 for trends assessments.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. The valid data, surrounding data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Mission design value invalid for 2022 and 2023; Laredo College design value invalid for 2011 to 2014 and 2017 to 2023
NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 74: Eight-Hour Ozone Design Value Trends in the Lower Rio Grande Valley Area, 2004-2023

Network Evaluation

Table 51 shows how each O_3 monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the *Evaluation Methods* section. The Harlingen Teege and Mission monitors satisfy the minimum monitoring requirements for O_3 monitoring. The Laredo College O_3 monitor provides area spatial coverage and population exposure. Based on these scores and the current spatial coverage, no changes to the Lower Rio Grande Valley area O_3 network are recommended at this time.

Table 51: Lower Rio Grande Valley Area Ozone Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value *	Data Trend Value	Historic Value	Source Impact Value*	Total Monitor Value	Assessment Value
Harlingen Teege	4	4	2	3	1	14	critical
Laredo College (previously Laredo Vidaurri)	1	NA	2	2	1	6	medium
Mission	4	NA	2	4	1	11	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Carbon Monoxide

The CO network in the Lower Rio Grande Valley area includes one CO monitor in Laredo. There are no regulatory CO requirements in the Lower Rio Grande Valley area and CO monitoring is not performed in the Eagle Pass or McAllen areas; therefore, these areas are not discussed further in this section. Figure 75 shows the area active CO monitor with a green square and the 2022 point sources with blue circles. Appendix A lists active CO monitors, locations, monitoring objectives, and associated spatial scales.

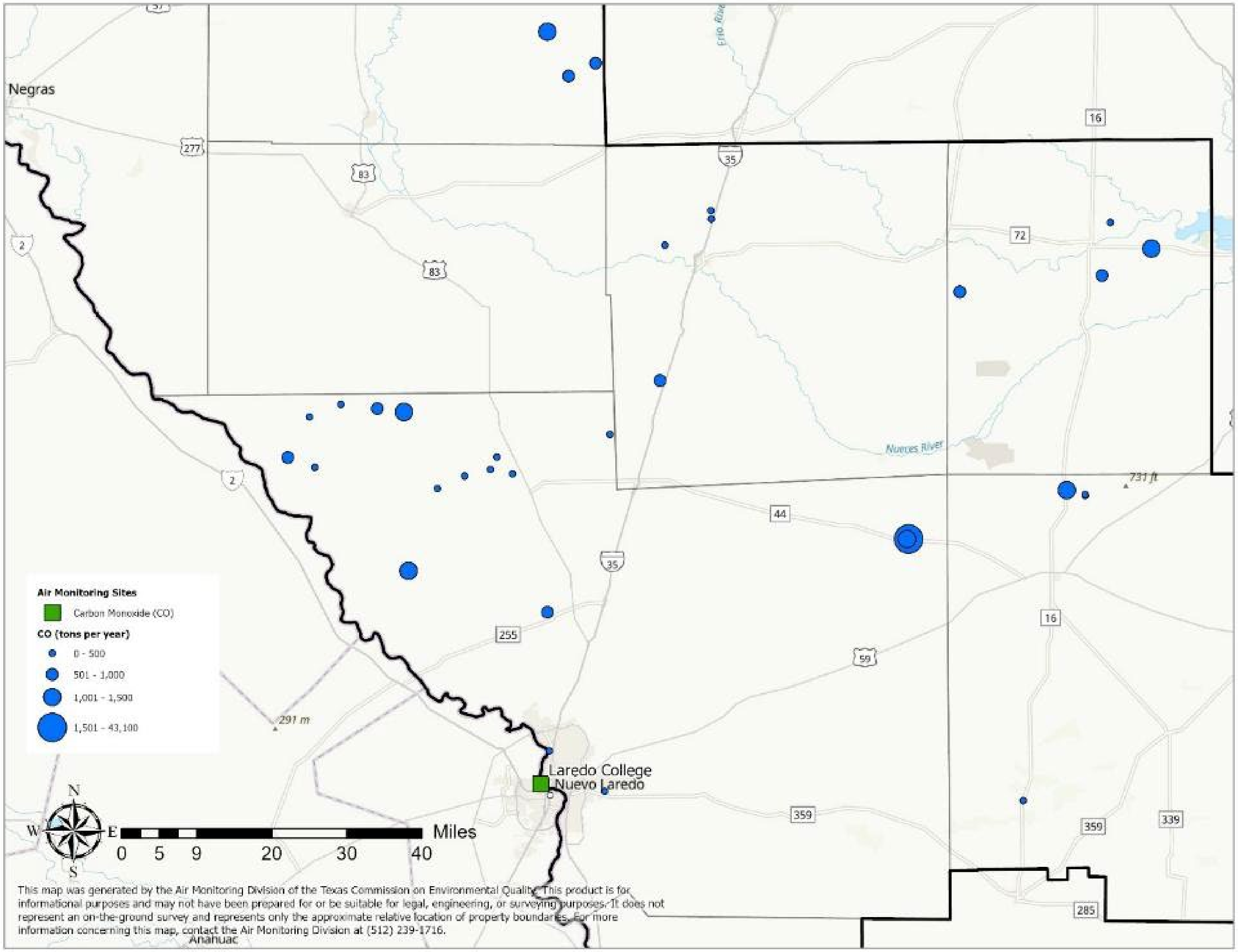


Figure 75: Lower Rio Grande Valley Area Carbon Monoxide Monitors and 2022 Point Sources

Lower Rio Grande Valley Area

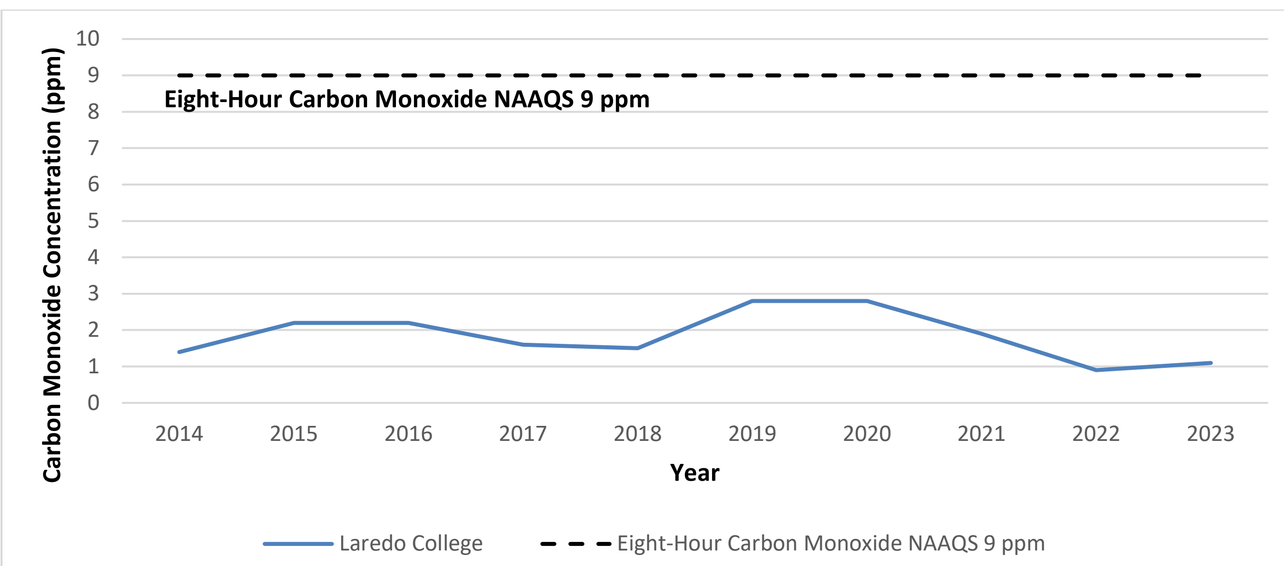
Network History

Lower Rio Grande Valley area CO monitoring began in the 1990's with the deployment of the Brownsville, Laredo Bridge, and Laredo Border sites. The CO monitors supported monitoring in populated areas and near areas of concentrated mobile-source activities. In 2011, the Laredo Border site was shut down due to construction and was relocated in 2012 to Laredo Vidaurri. The Brownsville and Laredo Bridge CO monitors were deactivated in December 2017. The Brownsville and Laredo Bridge CO monitor design values were less than 13% of the CO NAAQS, and there were no CO monitoring requirements in either area.

Since the 2020 FYA, one Lower Rio Grande Valley area CO network change occurred. The Laredo Vidaurri air monitoring site and CO monitor were temporarily deactivated for relocation in July 2021 due to the property owner revoking the site usage agreement for property sale. The Laredo Vidaurri air monitoring site was relocated less than one mile to the Laredo College site in November 2022 with no change to the AQS identification number. As of January 1, 2025, no federal CO monitoring requirements apply in the Lower Rio Grande Valley area, and TCEQ exceeds requirements with CO monitored at one site.

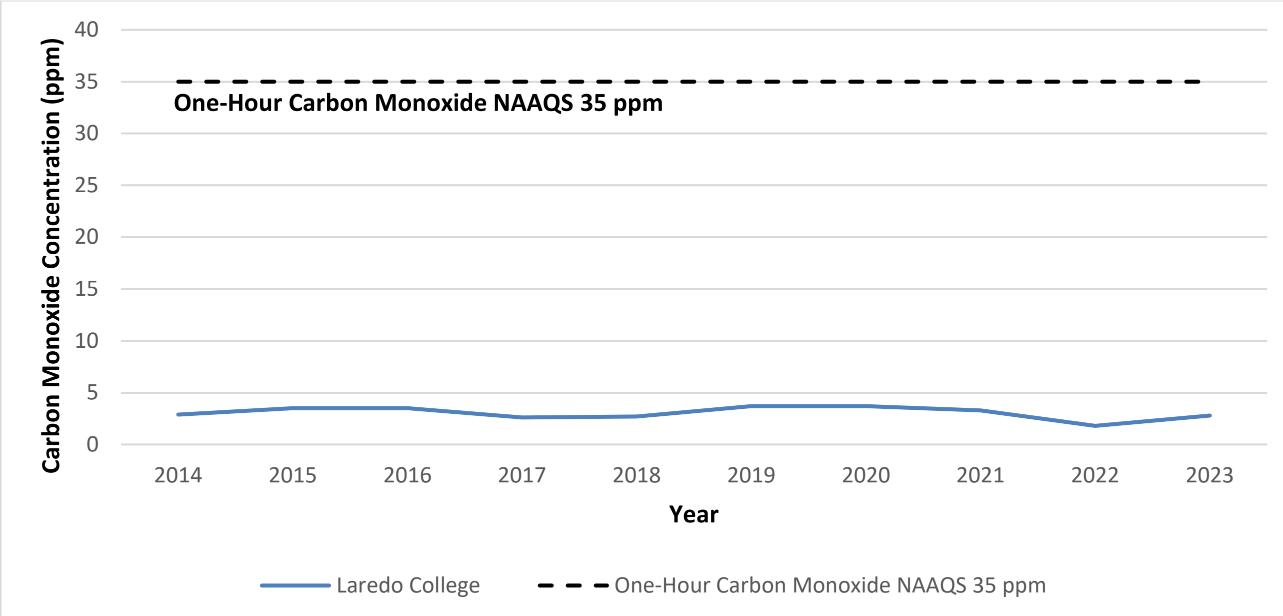
Design Values and Trends

Since 2000, CO design values in the Lower Rio Grande Valley area have remained well below the eight-hour CO NAAQS of 9 ppm and well below the one-hour CO NAAQS of 35 ppm. The Laredo College CO monitor design values were not affected by the relocation since the CO standard is based on exceedances and there were none. Based on 2023 data, CO design values remain below 13% of the eight-hour NAAQS of 9 ppm and 8% of the one-hour NAAQS of 35 ppm, as shown in Figure 76 and Figure 77.



NAAQS – National Ambient Air Quality Stand
ppm – part per million

Figure 76: Eight-Hour Carbon Monoxide Design Value Trends in the Lower Rio Grande Valley Area, 2014-2023



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 77: One-Hour Carbon Monoxide Design Value Trends in the Lower Rio Grande Valley Area, 2014-2023

Network Evaluation

Table 52 shows how the CO monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the *Evaluation Methods* section. The Laredo College CO monitor exceeds monitoring requirements but provides valuable trends and wildfire assessment data. No changes to the Lower Rio Grande Valley area CO network are recommended at this time.

Table 52: Lower Rio Grande Valley Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value	2023 NAAQS Value	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Laredo College (previously Laredo Vidaurri)	1	1	2	4	1	9	medium

NAAQS – National Ambient Air Quality Standards

Particulate Matter of 2.5 Micrometers or Less in Diameter

The $PM_{2.5}$ network in the Lower Rio Grande Valley area fulfills SLAMS requirements using continuous FEM monitors. Figure 78 and Figure 79 show the area $PM_{2.5}$ monitors with a blue square and 2022 point sources with yellow circles. Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

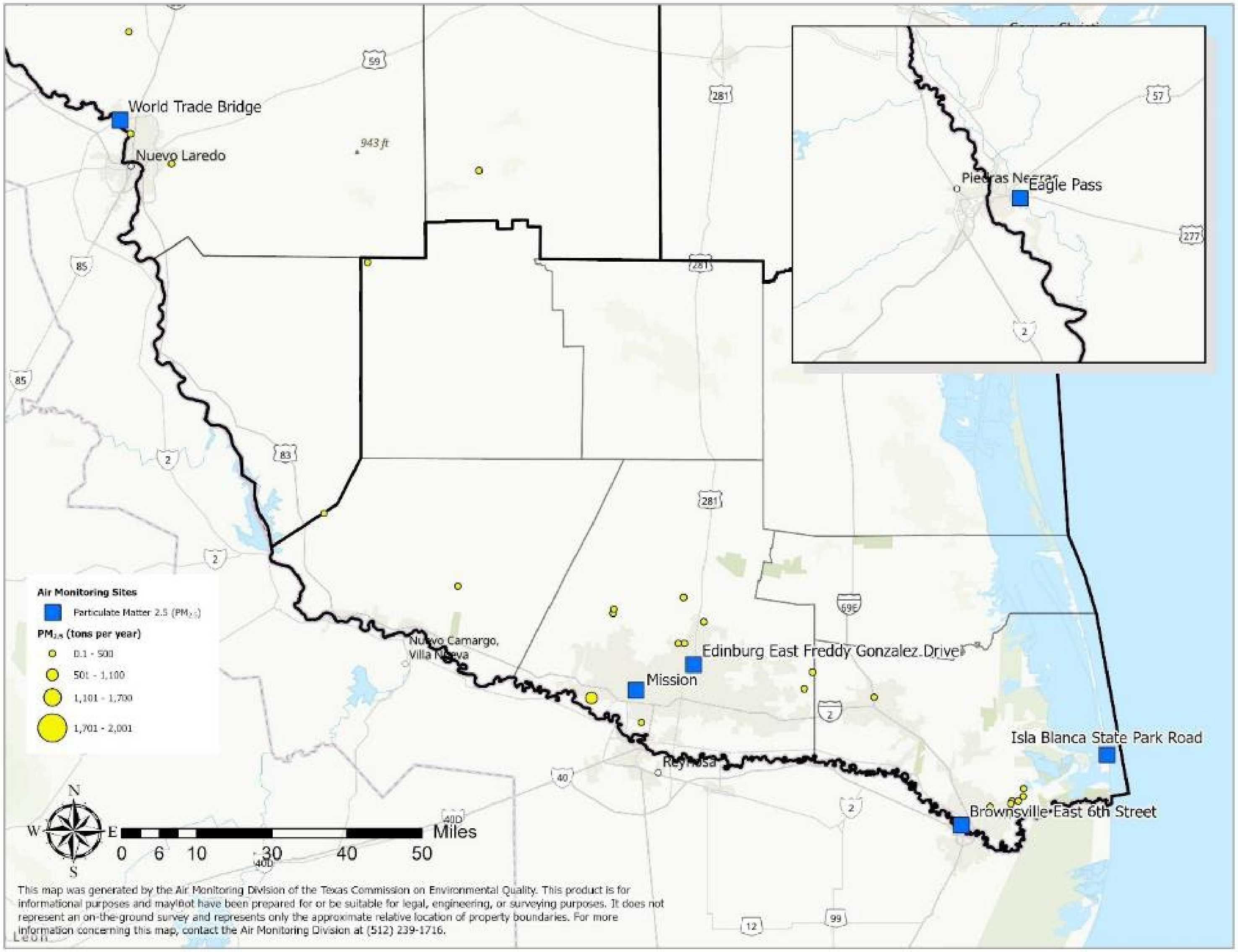


Figure 78: Lower Rio Grande Valley Area Particulate Matter of 2.5 Micrometers or Less in Diameter Monitors and 2022 Point Sources

Lower Rio Grande Valley Area

Network History and Current Status

$PM_{2.5}$ monitoring began in the late 1990s with the deployment of the Mission monitor. In the 2000s, $PM_{2.5}$ monitoring expanded in other urban areas including Brownsville, Laredo, Eagle Pass, and to South Padre Island to evaluate $PM_{2.5}$ background and transport. A $PM_{2.5}$ non-NAAQS comparable continuous monitor replaced the $PM_{2.5}$ gravimetric and speciation monitors at the Isla Blanca site in 2013. A $PM_{2.5}$ FRM monitor was deployed to the Brownsville site and to the new Edinburg East Freddy Gonzalez Drive site in 2015.

Non-continuous $PM_{2.5}$ FRM monitors were upgraded to FEM continuous monitors at the Brownsville and Mission sites in January 2018. Non-NAAQS comparable monitors were upgraded to $PM_{2.5}$ FEM continuous monitors at the Eagle Pass and World Trade Bridge sites in March 2018. The Isla Blanca site was relocated due to construction and renamed Isla Blanca State Park Road with the same AQS identification number, and the non-NAAQS comparable $PM_{2.5}$ monitor was upgraded to a $PM_{2.5}$ FEM continuous monitors in October 2019.

Since the 2020 FYA, several changes occurred. The Brownsville air monitoring site and $PM_{2.5}$ FEM continuous monitor were relocated just over one mile in April 2023, due to the property owner revoking the site usage agreement. The Brownsville East 6th Street site replaced the Brownsville site with a new AQS number (480611098), as required by the EPA, since the new location was over one mile. The Brownsville East 6th Street $PM_{2.5}$ FEM monitor will likely obtain a three-year annual design value in 2026.

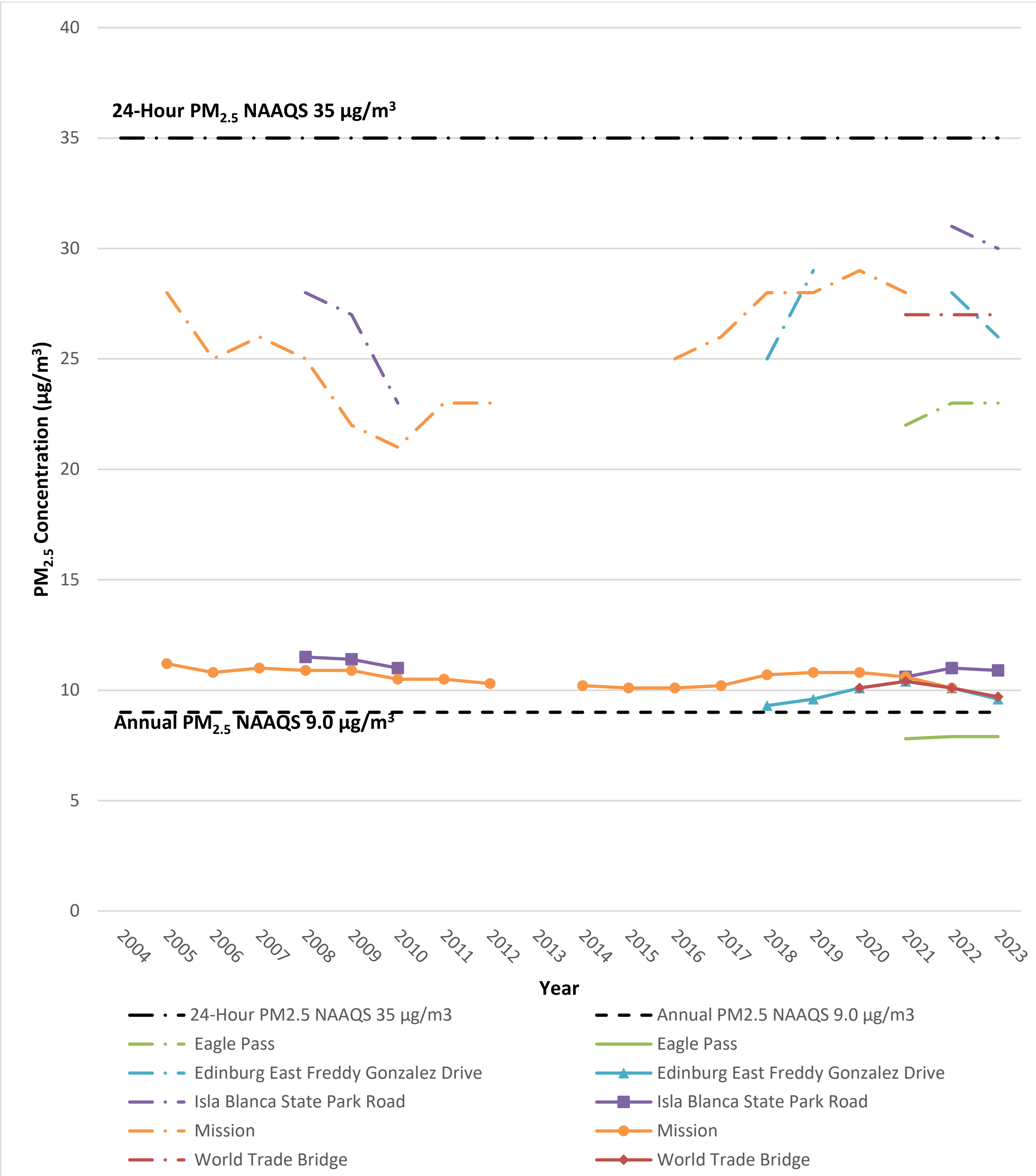
Similarly, the Mission air monitoring site and $PM_{2.5}$ FEM monitor were temporarily deactivated for relocation in November 2021 due to the property owner revoking the site usage agreement for building expansion. The Mission air monitoring site was relocated 40 feet in May 2022 with no change to the site name or AQS identification number. Data loss from the temporary deactivation for relocation disrupted the Mission $PM_{2.5}$ FEM monitor design value for 2022-2024, and a valid design value is expected with 2025 certified data.

As of January 1, 2025, federal standards require a minimum of two $PM_{2.5}$ monitors in the McAllen MSA, and one $PM_{2.5}$ monitor in each of the Brownsville, Eagle Pass, and Laredo MSAs. TCEQ exceeds requirements with six Lower Rio Grande Valley $PM_{2.5}$ monitors that measure ambient $PM_{2.5}$ concentration data to determine maximum concentrations, concentrations in areas of high population density, and provide regional transport concentrations.

Design Values and Trends

The Lower Rio Grande Valley area has consistently remained below the 24-hour $PM_{2.5}$ NAAQS. Several Lower Rio Grande Valley sites have measured concentrations exceeding the new 2024 annual $PM_{2.5}$ NAAQS. The Eagle Pass, Isla Blanca State Park Road, and World Trade Bridge $PM_{2.5}$ monitors, activated in 2018 and 2019, obtained three-year design values in 2021. The Brownsville East 6th Street $PM_{2.5}$ monitor, activated in April 2023 with a new AQS number, is expected to obtain a three-year annual design value in 2026 and will not be assessed with the *NAAQS Value Percent* and *Data Trend* metrics in this FYA. The Mission $PM_{2.5}$ design values were invalid for

2022 and 2023 due to data loss caused by the temporary deactivation for relocation. Figure 79 shows the 24-hour and the annual $PM_{2.5}$ design value trends for the Lower Rio Grande Valley monitors from 2004 through 2023.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Figure 79: Lower Rio Grande Valley Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2004-2023

Network Evaluation

Table 53 shows how each $PM_{2.5}$ monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the *Evaluation Methods* section. The Mission and Edinburg East Freddy Gonzales Drive $PM_{2.5}$ monitors satisfy the $PM_{2.5}$ minimum requirements in the McAllen CBSA. The Brownsville East 6th Street, Eagle Pass, and World Trade Bridge $PM_{2.5}$ monitors satisfy the $PM_{2.5}$ minimum requirements in the Brownsville, Eagle Pass, and Laredo areas. The Isla Blanca State Park Road monitor provides information regarding $PM_{2.5}$ regional transport and background levels. No changes to the Lower Rio Grande Valley area $PM_{2.5}$ network are recommended at this time.

Table 53: Lower Rio Grande Valley Area Particulate Matter of 2.5 Micrometers or Less in Diameter Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Brownsville East 6th Street	$PM_{2.5}$ FEM	4	NA	NA	1	2	7	critical
Eagle Pass	$PM_{2.5}$ FEM	4	4	2	2	1	13	critical
Edinburg East Freddy Gonzalez Drive	$PM_{2.5}$ FEM	4	4	3	1	2	14	critical
Isla Blanca State Park Road	$PM_{2.5}$ FEM	1	4	2	1	1	9	critical
Mission	$PM_{2.5}$ FEM	4	NA	2	1	2	9	critical
World Trade Bridge	$PM_{2.5}$ FEM	4	4	2	2	2	14	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards
NA – not applicable
FEM – federal equivalent method
FRM – federal reference method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Particulate Matter of 10 Micrometers or Less in Diameter

The PM_{10} network in the Lower Rio Grande Valley area fulfills SLAMS requirements based on CBSA populations and area concentrations. There are no PM_{10} monitoring requirements and PM_{10} monitoring is not performed in the Brownsville or Eagle Pass, areas; therefore, these areas are not discussed further in this section. Figure 80 shows area PM_{10} monitors with a purple square and the 2022 point sources with blue circles. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

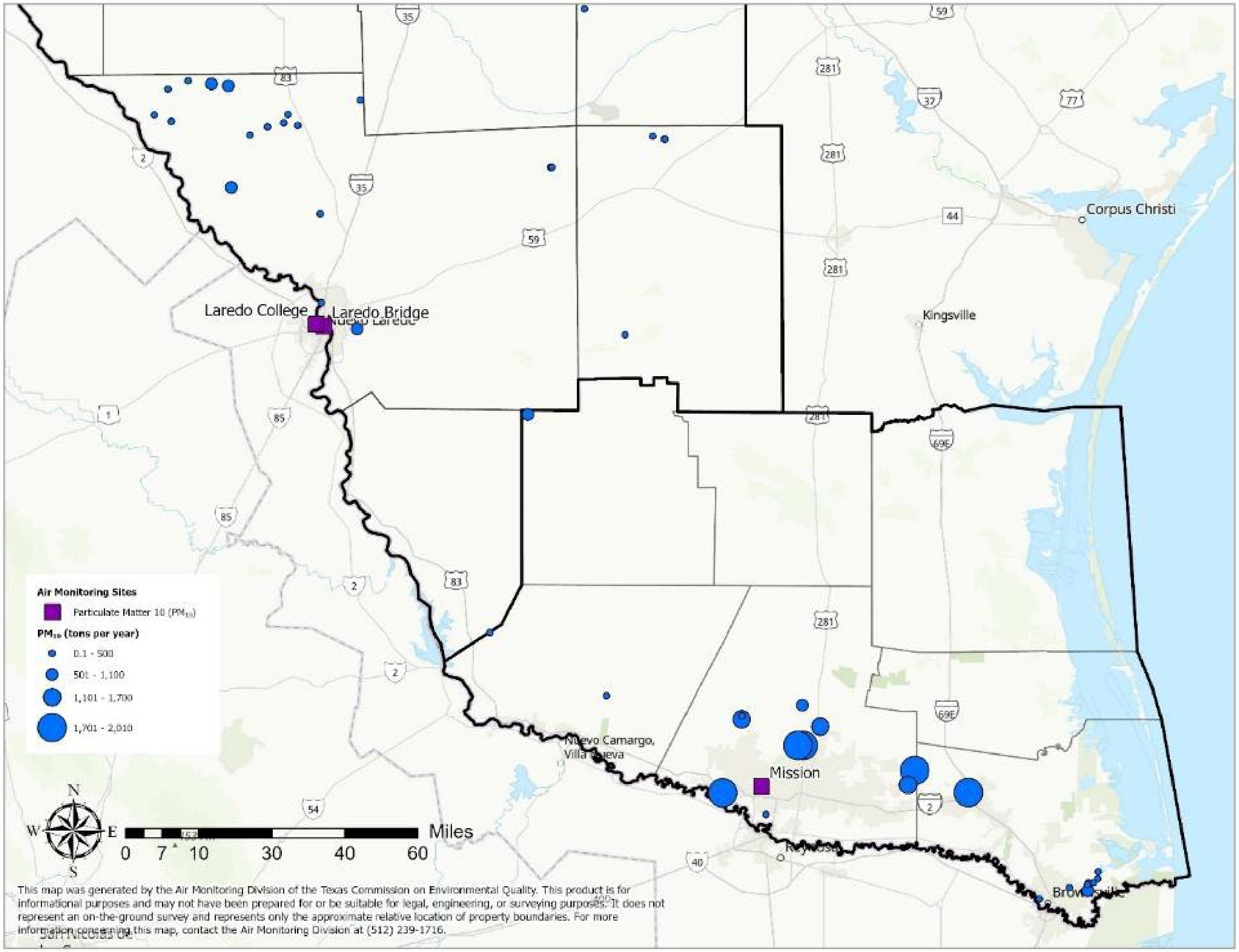


Figure 80: Lower Rio Grande Valley Area Particulate Matter of 10 Micrometers or Less in Diameter Monitors and 2022 Point Sources

Lower Rio Grande Valley Area

Network History and Current Status

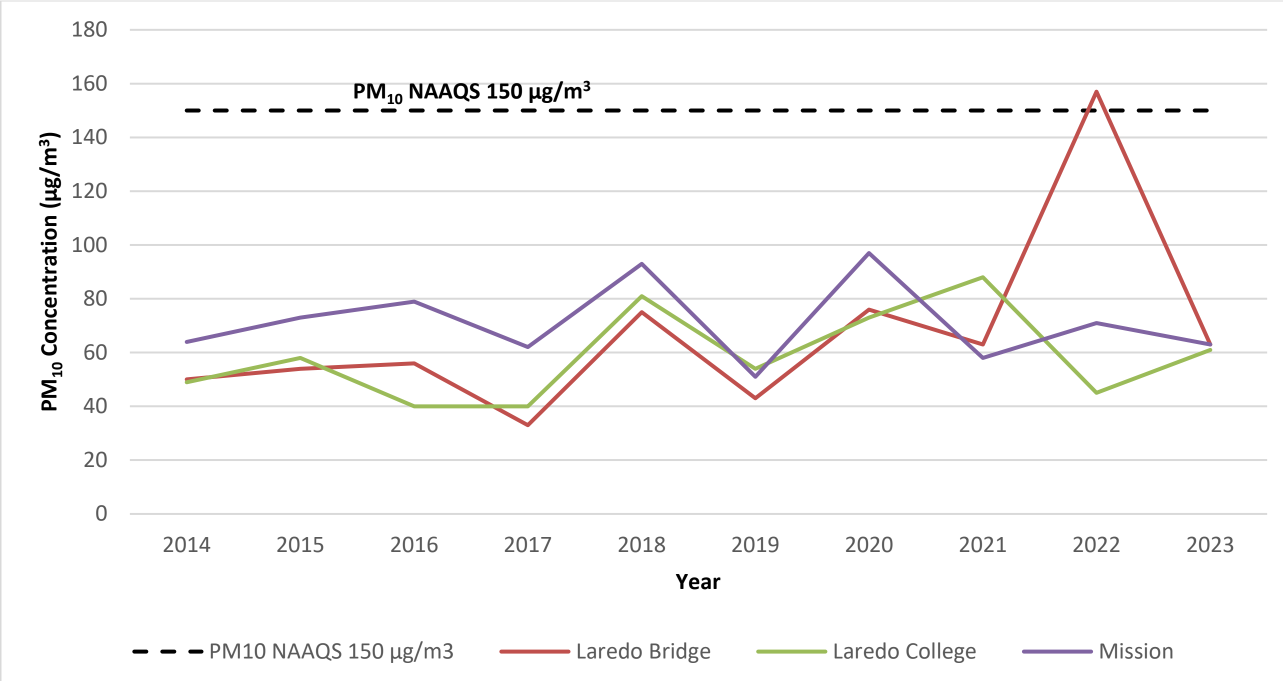
PM_{10} monitoring in the Lower Rio Grande Valley area began in the late 1990s and early 2000s with the deployment of the Laredo Bridge and Mission monitors. Monitoring expanded to include Laredo Vidaurri in 2012 and at Edinburg East Freddy Gonzalez Drive in 2015. The PM_{10} network measures concentrations near populated areas and characterizes regional air quality. The Edinburg East Freddy Gonzalez Drive PM_{10} monitor was deactivated in October 2020. The Edinburg East Freddy Gonzalez Drive PM_{10} monitor was scored low in the 2020 FYA, and the data aligned with the Mission monitor and was thus considered redundant.

Since the 2020 FYA, several Lower Rio Grande Valley area PM_{10} network changes occurred. The Mission air monitoring site and PM_{10} FRM filter-based monitor were temporarily deactivated for relocation in November 2021 due to the property owner revoking the site usage agreement for building expansion. The Mission air monitoring site was relocated 40 feet in May 2022 with no change to the site name or AQS identification number, and the PM_{10} FRM filter-based monitor was upgraded to a FEM continuous monitor in October 2023. As of January 1, 2025, federal standards require a minimum of one to four PM_{10} monitors in the Lower Rio Grande Valley area, and TCEQ meets requirements with PM_{10} monitored at three sites to measure population exposure and highest concentrations.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 $\mu g/m^3$ standard averaged over three years. Since the last FYA, no exceedances at any Lower Rio Grande Valley area sites have been recorded, other than those occurring during an exceptional event on March 18, 2022. Figure 81 provides maximum daily PM_{10} concentration trends from 2014 to 2023, including the exceptional event exceedance data discussed in this section.

Exceptional events are unusual or naturally occurring events that affect air quality and are not reasonably controllable or preventable. States can request the EPA not consider air quality data affected by an exceptional event when determining if an area met an air quality health standard. High winds caused blowing dust on March 18, 2022, at Laredo Bridge in Laredo County. Due to the high winds, the PM_{10} levels within this area were not reasonably controllable or preventable. TCEQ submitted an exceptional event demonstration to EPA on May 9, 2025, to exclude these data from consideration when EPA determines compliance with the particulate matter standards. Detailed information on TCEQ particulate matter exceptional even demonstrations are available on the TCEQ webpage [Exceptional Event Demonstrations for Particulate Matter - TCEQ](). These data are included in the PM_{10} graph below as the data exclusions are pending EPA concurrence.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less in diameter

Figure 81: Lower Rio Grande Valley Area Particulate Matter of 10 Micrometers or Less in Diameter Maximum Daily Concentration Trends, 2014-2023

Network Evaluation

Table 54 shows how each PM_{10} monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the *Evaluation Methods* section. The Mission PM_{10} monitor satisfies SLAMS minimum requirements. Based on these scores and the spatial coverage for population exposure, no further changes to the Lower Rio Grande Valley area PM_{10} network are recommended at this time.

Table 54: Lower Rio Grande Area Particulate Matter of 10 Micrometers or Less in Diameter Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Mission	4	1	2	4	1	12	critical
Laredo College	1	1	3	4	1	10	medium
Laredo Bridge	1	1	3	4	2	11	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Lead

Lower Rio Grande Valley Area

Network History and Current Status

The TCEQ Pb network is designed to meet source-oriented SLAMS monitoring requirements to measure maximum Pb concentrations near point sources emitting 0.50 tpy or more of Pb. There is no source-oriented Pb monitoring required in the Lower Rio Grande Valley area. Pb monitoring in the Lower Rio Grande Valley area began in the mid-1990s at the Brownsville and Laredo Border sites to evaluate ambient Pb concentrations in populated areas downwind of international industrial sources. In 2011, the Laredo Border site and Pb monitor were shut down due to campus construction and relocated to the Laredo Vidaurri site in 2012, retaining the same AQS identification number. The Brownsville Pb monitor design value for 2015 was 0.00 $\mu g/m^3$, and the monitor was deactivated in December 2017. Similarly, the Laredo Vidaurri Pb monitor design value for 2015 was 0.01 $\mu g/m^3$, and the monitor was deactivated in December 2017. The Brownsville and Laredo Vidauri Pb monitors were not federally required, were not necessary for source-oriented monitoring, and eligible for deactivation based on historically low design value trends (below the method detection limit). Appendix A lists the active and recently decommissioned Pb monitors, locations, monitoring objectives, and spatial scale.

Photochemical Assessment Monitoring

The VOC network in the Lower Rio Grande Valley area supports international border federal initiatives. Figure 73 shows the Laredo area VOC monitor at the Laredo Bridge site with an orange section. Federal photochemical assessments for VOCs are not required or performed in the Eagle Pass, Brownsville, or McAllen areas and are not discussed further in this section. Appendix A lists active and recently decommissioned monitors, location, monitoring objective, and associated spatial scale. Figure 82 shows the area VOC monitor with a green square and the 2022 point sources with blue circles.

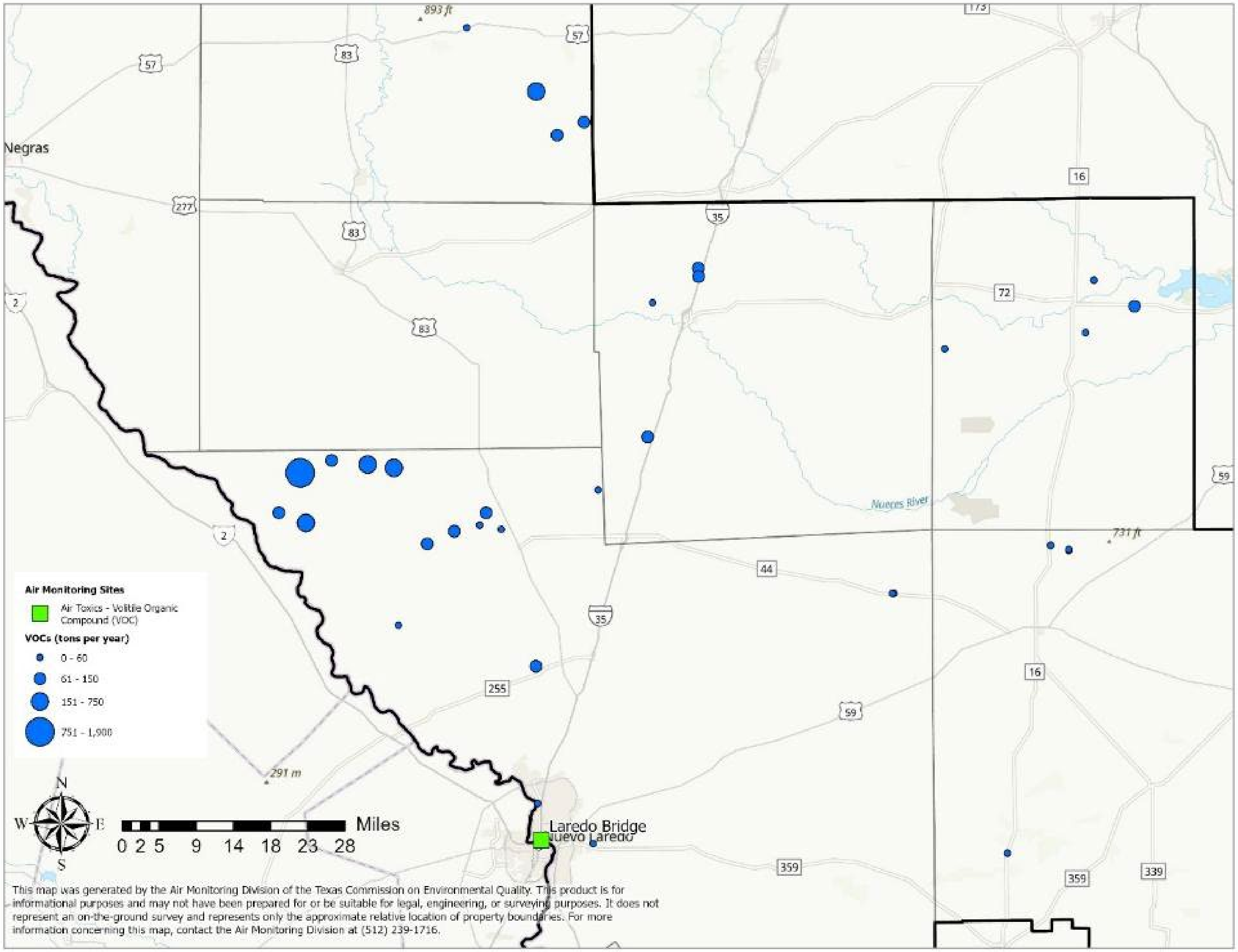


Figure 82: Lower Rio Grande Valley Area Volatile Organic Compounds Monitors and 2022 Point Sources

Lower Rio Grande Valley Area

Network History and Current Status

Lower Rio Grande Valley VOC monitoring began in the Laredo area in the early 2000s at the Laredo Bridge site to evaluate international transport of VOC pollutants into populated areas. Since the 2020 FYA, no Lower Rio Grande Valley area network changes occurred.

As of January 1, 2025, there are no federal PAMS requirements for this area. TCEQ exceeds requirements with one VOC monitor.

Design Values and Trends

Design value trends are not applicable to VOC monitoring. VOC monitoring provides data to further understand the impact of international pollution transport for this area.

Network Evaluation

Table 55 shows how the VOC canister monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the *Evaluation Methods* section. Federal funds support the operation of the Laredo Bridge VOC special purpose monitor placed to evaluate international transport of VOC pollutants into populated areas in the Lower Rio Grande Valley area. Based on this information, no changes to the Lower Rio Grande Valley area network are recommended at this time.

Table 55: Lower Rio Grande Valley Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value	2023 NAAQS Value	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Laredo Bridge	Speciated VOC (Canister)	1	NA	NA	4	2	7	medium

NAAQS – National Ambient Air Quality Standards
NA – not applicable
VOC – volatile organic compound

North and Northeast Texas Area Evaluation

(Dallas-Fort Worth-Arlington, Longview, Sherman-Denison, Texarkana, and Tyler Areas)

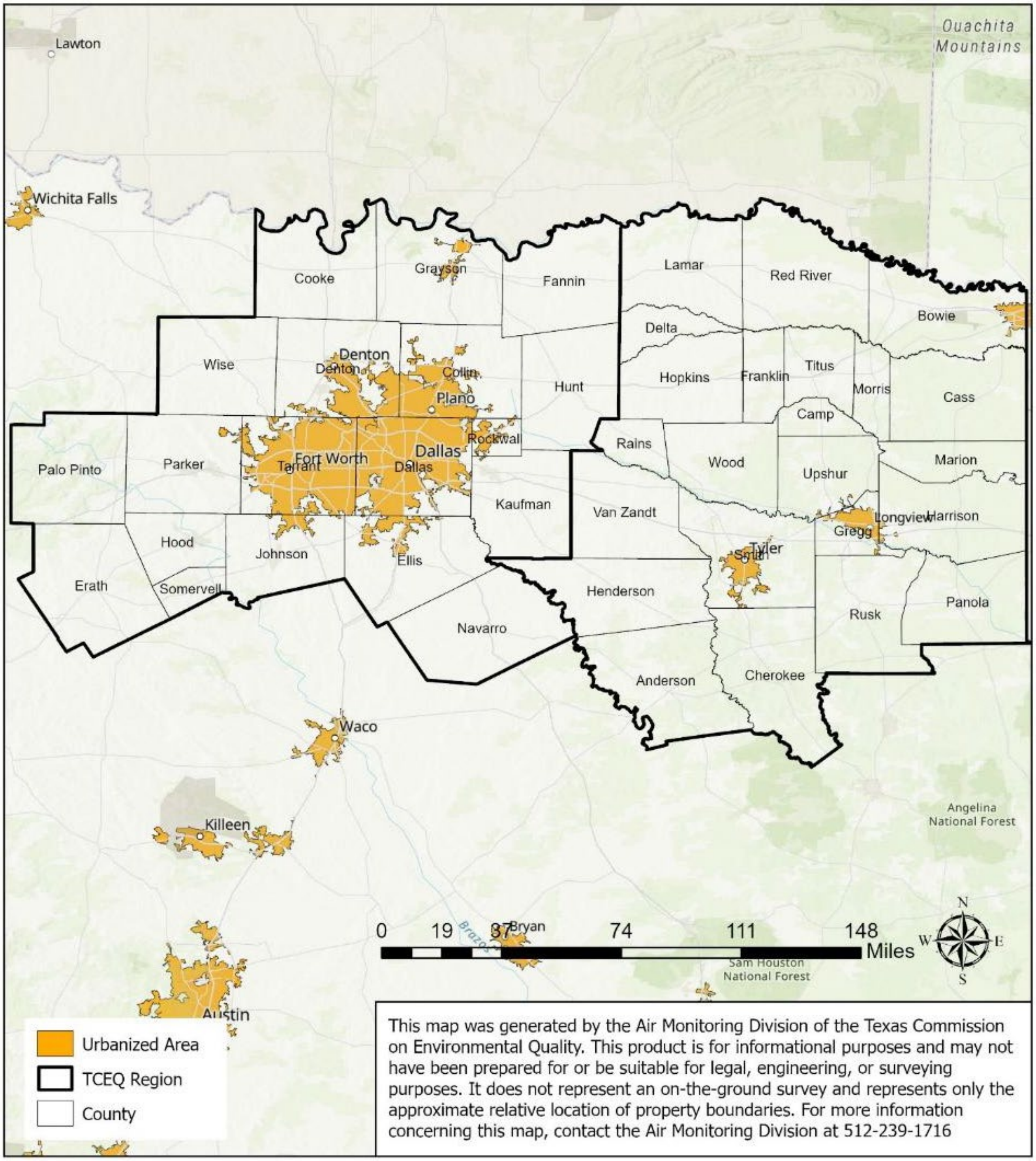


Figure 83: North and Northeast Texas Area Counties and Urban Areas

North and Northeast Texas Area Characteristics and Background

Population and Monitoring Requirements

The North and Northeast Texas area is comprised of two TCEQ Regional Areas: Region 4 Dallas Fort Worth and Region 5 Tyler. There are five major CBSAs in these TCEQ Regions that contain multiple counties in addition to counties in the regions that are not in CBSAs or micropolitan statistical areas. Monitoring is also conducted in three micropolitan statistical areas. TCEQ Regions, CBSAs, and associated counties are summarized below for areas containing ambient air monitors.

Region 4 Dallas Fort Worth

- Dallas-Fort Worth-Arlington (DFW) CBSA includes Collin, Dallas, Denton, Ellis, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties
- Corsicana micropolitan statistical area includes Navarro County
- Granbury micropolitan statistical area includes Hood County

Region 5 Tyler

- Longview CBSA includes Greg, Harrison, Rusk, and Upshur Counties
- Texarkana CBSA includes Bowie County
- Tyler CBSA includes Smith County
- Mount Pleasant micropolitan statistical area includes Titus County

The Texas Demographics Center projects that the combined population of the five major North and Northeast Texas CBSAs will exceed 8.7 million persons in 2025. The North and Northeast Texas area 2030 projection estimates a 4% population increase from 2025 with the largest growth at 5% in the DFW CBSA. Table 56 shows the North and Northeast Texas CBSA population projections. Figure 84 and Figure 85 illustrate the population densities across the North and Northeast Texas urban areas with active sites and monitors and wind roses. Population density is illustrated by square mile for each area zip code. Population densities were obtained from TDC Population Density in Texas, 2022 data using the 2018-2022 five-year population estimates (latest available data at the time the FYA was drafted).

Table 56: North and Northeast Texas Area Population Projections

Core Based Statistical Area (CBSA)	2020 Census Count	2025	2030	Change (2020 - 2025)	Change (2025- 2030)
Dallas-Fort Worth-Arlington	7,637,387	8,009,329	8,377,195	5%	5%
Longview	286,184	287,586	288,598	0%	0%
Sherman-Denison	135,543	139,452	142,859	3%	2%

Core Based Statistical Area (CBSA)	2020 Census Count	2025	2030	Change (2020 - 2025)	Change (2025- 2030)
Texarkana	92,893	93,230	93,182	0%	0%
Tyler	233,479	239,076	244,181	2%	2%
CBSA Totals	8,385,486	8,768,673	9,146,015	5%	4%

Minimum monitoring network design requirements under 40 CFR Part 58, Appendix D are evaluated annually in TCEQ's AMNP based on the latest available census population estimates.

The DFW CBSA is required to have the following:

- four O_3 monitors,
- two CO monitors,
- five NO_2 monitors,
- one NO/NO_y monitor,
- two SO_2 monitors,
- eight $PM_{2.5}$ monitors,
- between four and eight PM_{10} monitors, and
- three Pb monitors.

The Longview CBSA is required to have the following:

- one O_3 monitor,
- one SO_2 monitor,
- one $PM_{2.5}$ monitor, and
- zero to one PM_{10} monitor.

The Texarkana CBSA is required to have one $PM_{2.5}$ monitor.

The Tyler CBSA is required to have one O_3 monitor.

The Corsicana micropolitan statistical area is required to have one SO_2 monitor.

The Granbury micropolitan statistical area has no federal monitoring requirements.

The Mount Pleasant micropolitan statistical area is required to have one SO_2 monitor.

The TCEQ evaluated population projection data illustrated in Table 2 and Table 56 against North and Northeast Texas area minimum monitoring design requirements. North and Northeast Texas CBSA monitoring requirements are not expected to increase based on the projected population assessment. The TCEQ meets and exceeds monitoring requirements with the monitors illustrated in Figure 84 and Figure 85.

Wind Patterns

Figure 83 illustrates the counties included in the North and Northeast Texas area evaluation. Figure 84 and Figure 85 illustrate typical North and Northeast Texas area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2019 to 2022. Figure 84 wind roses were derived from Dallas Executive Airport and Fort Worth Meacham International Airport. Figure 85 wind roses were derived from East Texas Regional Airport and Tyler Pounds Regional Airport. Figure 84 wind data indicate the predominant flow is from the south and south-southeast to the north and north-northwest. Figure 85 wind data indicate the predominant winds are also primarily from the south and south-southeast to the north and north-northwest. Winds can originate from the North American continent or in the Caribbean Sea or Atlantic Ocean.

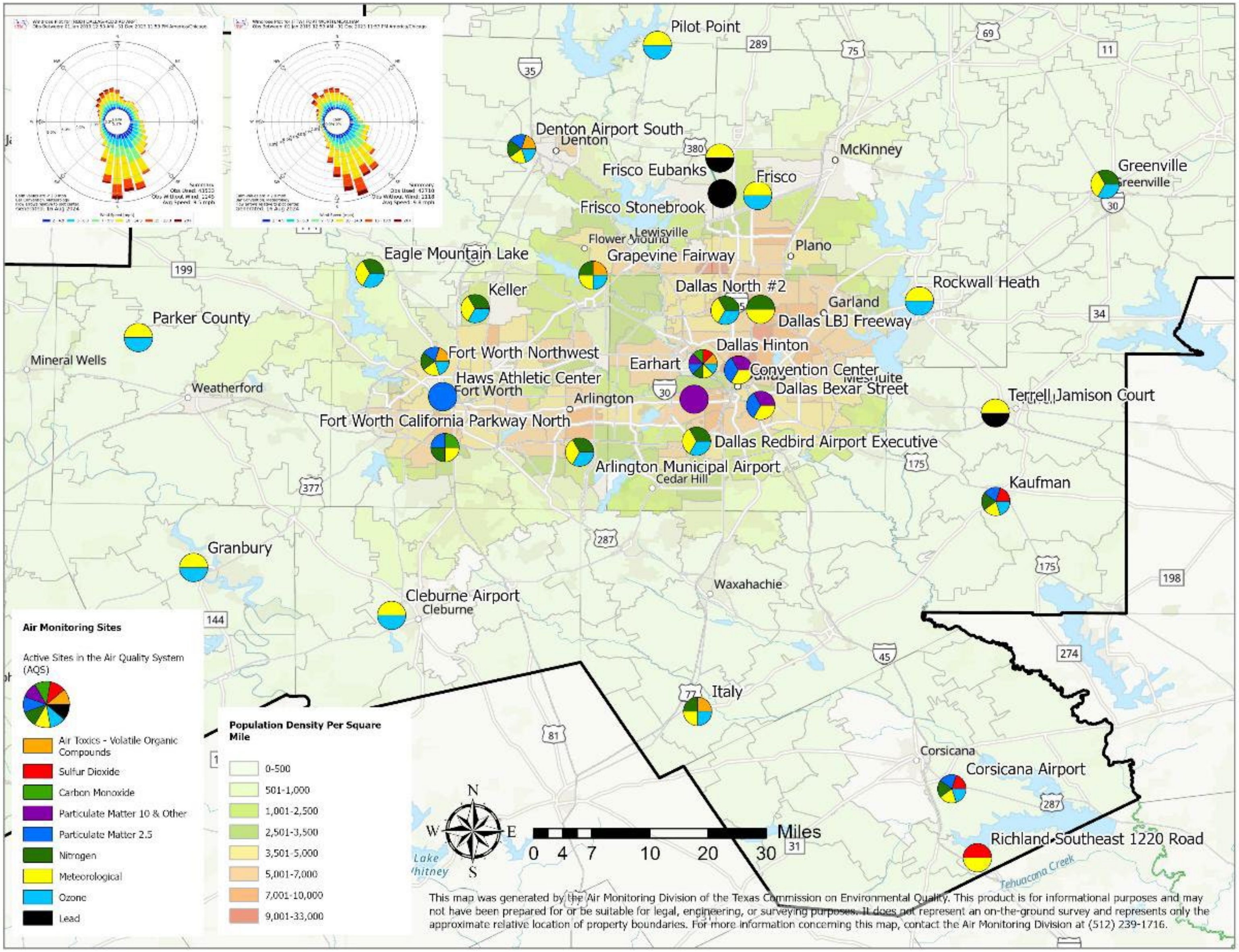


Figure 84: North Texas Area Active Sites and Monitors, Population Density, and Wind Roses

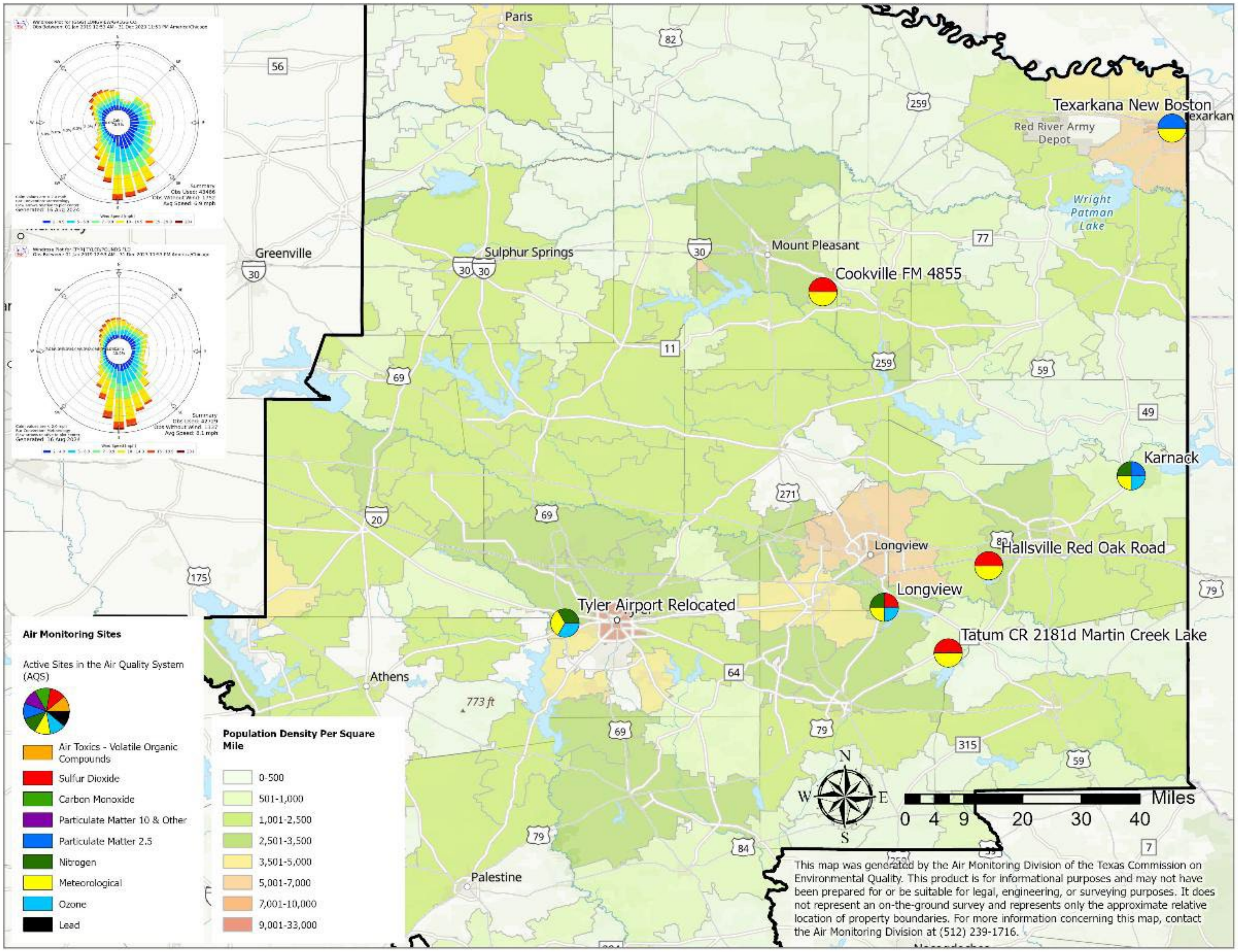


Figure 85: Northeast Texas Area Active Sites and Monitors, Population Density, and Wind Roses

Point Sources and Area-Wide Emissions

Anthropogenic Sources

North and Northeast Texas EI source totals by pollutant by area are listed in Table 57. Data from EI source categories show the following for the North and Northeast Texas area:

- The majority of CO is emitted from non-road and on-road mobile sources for the DFW area and from non-road, on-road mobile, and point sources in the Tyler area.
- NO_x emissions are predominately from area, on-road, and non-road mobile sources for the DFW area and point and area sources for the Tyler area.
- Area sources account for the majority of VOC, PM_{10}, and $PM_{2.5}$ emissions.
- Point sources are the primary contributors of SO_2 emissions.
- Non-road mobile sources contribute to the majority of the total Pb emissions.

This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 57: 2020 North and Northeast Texas Area Emissions Inventory in Tons Per Year

Area*	Source	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R4 DFW	Point	7,754	13,007	13,742	3,436	2,712	7,694	0.81
R4 DFW	Area	127,971	25,409	34,126	148,469	22,628	1,361	0.15
R4 DFW	On-Road Mobile	11,759	30,622	207,686	3,112	1,018	173	0.00
R4 DFW	Non-Road Mobile	13,730	21,224	245,420	1,599	1,517	474	4.13
R5 Tyler	Point	8,340	26,942	56,253	3,877	2,636	54,816	0.88
R5 Tyler	Area	68,096	18,796	29,066	83,112	13,246	386	0.00
R5 Tyler	On-Road Mobile	4,238	14,426	74,197	1,070	423	56	0.00
R5 Tyler	Non-Road Mobile	4,405	7,292	63,644	480	457	38	2.23

*Appendix C details the counties included for each area.
CO – carbon monoxide
DFW – Dallas Fort Worth
NO_x – oxides of nitrogen
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
PM_{10} – particulate matter of 10 micrometers or less in diameter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

The North and Northeast Texas areas are impacted by seasonal pollutant transport that originates outside of Texas. Accumulated smoke and haze from the eastern United States is typically noted from late spring through summer into early fall. Smoke from agricultural burning in North and Central America arrives in April and May. These smoke events can impact $PM_{2.5}$ concentrations, as well as contribute to increased O_3 formation. Other transport events that impact $PM_{2.5}$ concentrations include African dust, which typically arrives between June and August, and dust from dust storms in the western Great Plains and northern Mexico, which mainly occur in the spring. These transport events often cause most of the highest daily averages during the year and therefore dominate the annual averages. Both areas can also be affected by large forest fires in East Texas as well as range fires in North Central and West Texas. However, the frequency and duration of these events are small, and concentrations typically do not significantly affect the annual averages.

Regional Air Quality

Criteria Pollutants

Regional air quality history and current status were evaluated to determine monitoring needs, including the continued need for monitoring during maintenance periods after an area has met all air quality standards. Details on the North and Northeast Texas area's current and historical air quality designations for the six criteria pollutants are detailed on TCEQ's SIP webpage. As of January 1, 2025, Sherman, Tyler, and Texarkana CBSAs are designated as attainment/unclassifiable for all current NAAQS.

2008 and 2015 Ozone

The DFW area counties of Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise are designated as a serious nonattainment area for the 2015 eight-hour O_3 NAAQS of 0.070 ppm. The same DFW area counties, plus Rockwall County, are designated as severe nonattainment for the 2008 eight-hour O_3 NAAQS of 0.075 ppm. See FYA Appendix D for DFW area information on enhanced monitoring that supports O_3 precursor analysis and modeling. The DFW CBSA is designated attainment/unclassifiable for all other current NAAQS.

2010 One-Hour SO_2

In June 2010, the primary SO_2 NAAQS was revised to a one-hour standard of 75 ppb. EPA completed initial designations in July 2013, and no areas in Texas were designated at that time. A March 2015 consent decree between the Sierra Club and EPA set deadlines for EPA to complete designations for the one-hour SO_2 NAAQS. EPA designated portions of Anderson, Rusk, Panola, and Titus Counties as nonattainment for the 2010 one-hour SO_2 NAAQS, effective January 2017. EPA published final clean data determinations for the Freestone-Anderson and Titus nonattainment areas, effective June 2021 (86 FR 26401). EPA made these determinations based on the shutdown of the primary emissions sources in both nonattainment areas. The determinations were supported by monitoring data from within or near those areas along with an evaluation of previous modeling.

TCEQ adopted the Redesignation Request and Maintenance Plan SIP Revision for the Freestone-Anderson and Titus 2010 SO_2 NAAQS Nonattainment Areas on February 23,

2022. The SIP revision included a request that EPA redesignate the Titus and Freestone-Anderson nonattainment areas to attainment for the 2010 SO_2 NAAQS and provided 10-year maintenance plans for both areas consistent with FCAA, §175A requirements.

In March 2021, EPA designated Harrison County as unclassifiable and portions of Navarro County as nonattainment for the 2010 one-hour SO_2 NAAQS (86 FR 16055). All remaining counties in the north and northeast regions, with the exception of the counties discussed in this section, were designated as attainment/unclassifiable for the 2010 primary SO_2 NAAQS in Rounds 2 and 3 of designations. TCEQ adopted the Navarro County Attainment Demonstration SIP Revision for the 2010 One-Hour SO_2 NAAQS on October 5, 2022.

In December 2024, EPA determined that the SO_2 nonattainment area in Titus County attained the 2010 one-hour SO_2 NAAQS by the applicable attainment date of January 12, 2022 (81 FR 89870). This determination was based on primary source shutdowns, available ambient air quality monitoring data from the 2019–2021 monitoring period, relevant modeling analysis, and additional emissions inventory information. This action did not constitute a redesignation of the Titus nonattainment area to attainment of the 2010 one-hour SO_2 NAAQS under section 107(d)(3) of the FCAA. As of the FYA publication, EPA has not acted on TCEQ's 2022 proposal to redesignate the Titus and Freestone-Anderson areas as attainment; therefore, the areas remain designated as nonattainment for the 2010 SO_2 NAAQS until EPA revises the areas' designation.

TCEQ adopted the Rusk-Panola Attainment Designation SIP Revision for the 2010 SO_2 NAAQS and associated Agreed Order on February 9, 2022. In December 2024, EPA determined that the Texas Rusk-Panola nonattainment area failed to attain the 2010 one-hour SO_2 NAAQS by the FCAA applicable attainment date of January 12, 2022 (89 FR 101894). EPA will take final action on the proposed limited approval and limited disapproval of Texas' attainment plan for the Rusk-Panola area in a separate future action.

2008 Lead

On October 15, 2008, the EPA revised the NAAQS for Pb from 1.5 µg/m³ to 0.15 µg/m³. In November 2010, the EPA designated a portion of Collin County surrounding the Exide Technologies Recycling Center in Frisco as nonattainment for the 2008 Pb NAAQS with an attainment date of December 31, 2015. The facility permanently shut down at the end of 2012, and the area demonstrated attainment of the 2008 Pb NAAQS based on 2013 through 2015 monitoring data. On October 19, 2016, TCEQ adopted a SIP revision requesting that EPA redesignate the Collin County Pb nonattainment area to attainment for the 2008 Pb standard, and TCEQ provided a maintenance plan to ensure the area remains in attainment of the standard through 2028. EPA approved the redesignation request and maintenance plan SIP revision (82 FR 29426) and redesignated the Collin County nonattainment area to attainment for the 2008 Pb NAAQS, effective September 17, 2017. TCEQ proposed the Collin County Second 10-Year Maintenance Plan State Implementation Plan Revision for the 2008 Lead National Ambient Air Quality Standard on April 3, 2025. This SIP revision would provide a second 10-year maintenance plan that ensures the Collin County area remains in attainment of the 2008 lead NAAQS through 2037, as required by FCAA §175A(b). For more information, visit the DFW: Pb History webpage.

North and Northeast Texas Monitoring Network Evaluation

Ozone

The O_3 network in the North and Northeast Texas area fulfills SLAMS requirements based on population and O_3 design values, as well as NCore and PAMS requirements. O_3 monitoring is not required or performed in the Sherman and Texarkana areas and these areas are not discussed further in this section. Figure 84 and Figure 85 show the area active O_3 monitors at sites with a light blue section. Appendix A lists active and recently decommissioned O_3 monitors, locations, monitoring objectives, and associated spatial scales.

North Texas Area

Network History and Current Status

O_3 monitoring in the area began in the 1970s within the urban core with the deployment of the Dallas North O_3 monitor and soon expanded to include additional monitors in the urban core and at suburban locations downwind of the urban core. In the early 2000s, the TCEQ expanded O_3 monitoring outward from the city core to provide information on upwind background concentrations entering the DFW area, maximum O_3 concentrations, and O_3 concentrations in populated areas. The Pilot Point and Italy sites were deployed in 2006 and 2007, respectively, to evaluate O_3 concentrations upwind and downwind of the DFW area. In January 2020, the TCEQ changed the designation of the Corsicana Airport O_3 monitor from state-initiative to a federal special purpose monitor (SPM) supporting population exposure and background information. Since the 2020 FYA, several O_3 network changes occurred in the North Texas area.

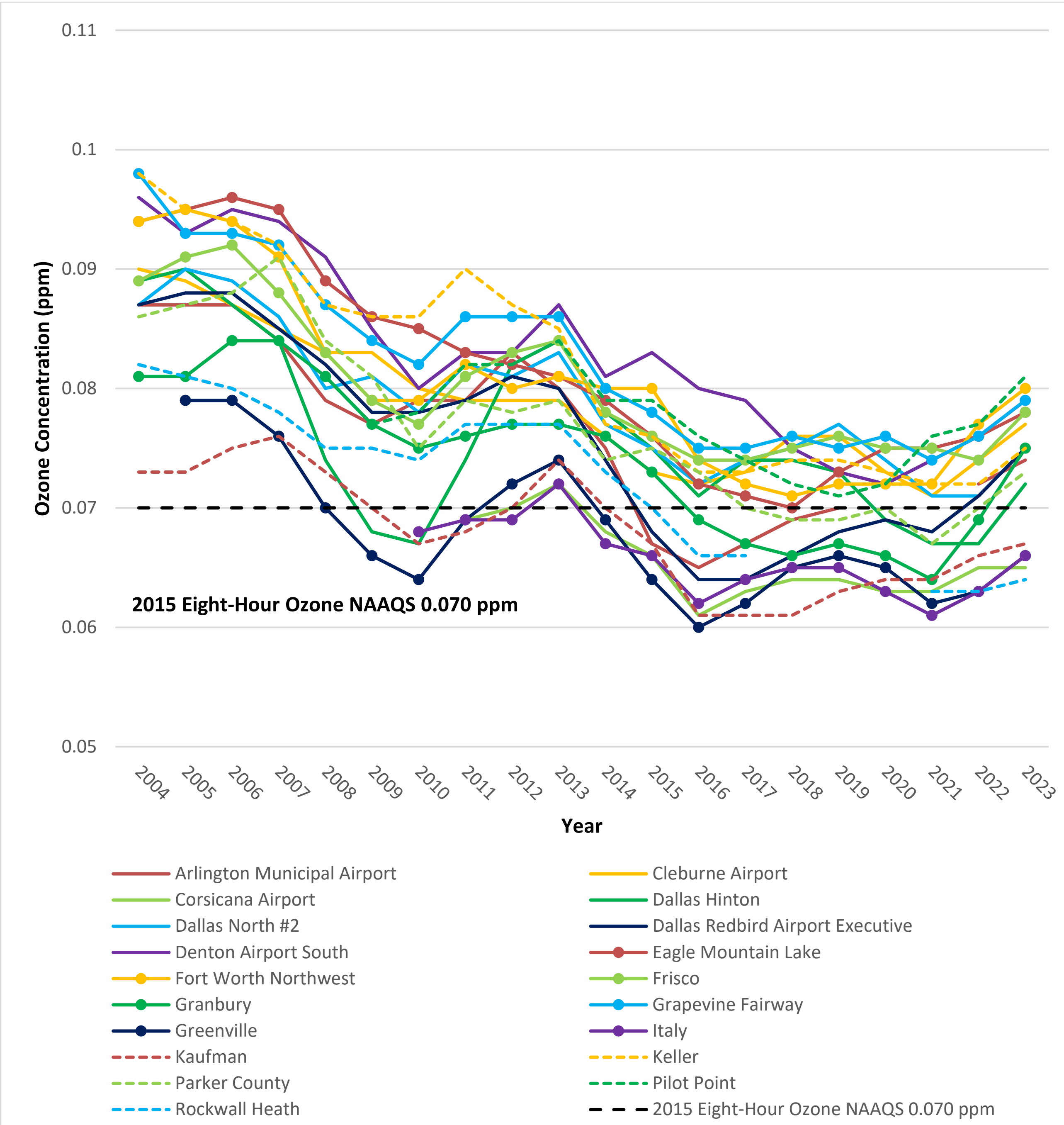
The Midlothian OFW site and O_3 monitor were temporarily deactivated in April 2022 due to the property owner revoking the site usage agreement for road expansion. The Midlothian OFW site is planned for relocation within one mile to the Midlothian North Ward Road site with no change to AQS identification number. The Midlothian North Ward Road site construction permit was denied by the City of Midlothian, and TCEQ continues to negotiate logistical updates to meet city Development Review Committee requirements.

The Dallas Hinton site and O_3 monitor were temporarily deactivated in February 2025 due to the property owner revoking the lease agreement for construction. The Dallas Hinton site is planned for relocation within one mile with no change to AQS identification number and is expected later in 2025.

As of January 1, 2025, federal standards require a minimum of four DFW MSA O_3 monitors. The TCEQ exceeds requirements with 17 active O_3 monitors in the DFW area, one O_3 monitor in the Corsicana micropolitan statistical area, and one O_3 monitor in the Granbury micropolitan statistical area. While the number of O_3 monitors exceeds federal requirements, the quantity of monitors and spatial distribution of the North Texas O_3 network provides valuable data for evaluating the area's regional air quality concerns, trends assessment, forecasting daily air quality conditions, and informing regulatory decisions.

Design Values and Trends

North Texas area eight-hour O_3 design values have decreased since the early 2000's and remain somewhat variable depending on the year. Figure 86 shows the North Texas area O_3 design value trends from 2004 through 2023 compared with the 2015 eight-hour O_3 NAAQS of 0.070 ppm.



NAAQS – National Ambient Air Quality Standard
ppm – part per million
- number

Figure 86: Eight-Hour Ozone Design Value Trends in the North Texas Area, 2004-2023

Network Evaluation

Table 58 shows how each O_3 monitor in the North Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Dallas Hinton monitor fulfills the requirements for O_3 monitoring at a NCore and PAMS site as well as supporting minimum monitoring requirements. The Cleburne Airport, Dallas North #2, and Grapevine Fairway O_3 monitors also support minimum monitoring requirements and PAMS enhanced monitoring. Denton Airport South, Fort Worth Northwest, Grapevine Fairway, Italy, Kaufman, and Keller O_3 monitors further support the PAMS network. The remaining area O_3 monitors are critical due to current design values and the provided spatial coverage. Based on these scores and the current spatial coverage, no changes to the North Texas area O_3 network are recommended at this time.

Table 58: North Texas Area Ozone Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Arlington Municipal Airport	1	4	2	4	1	12	critical
Cleburne Airport	4	4	2	4	1	15	critical
Corsicana Airport	1	4	2	4	1	12	critical
Dallas Hinton (temporarily inactive for relocation)	4	4	2	4	1	15	critical
Dallas North #2	4	4	2	4	1	15	critical
Dallas Redbird Airport Executive	1	4	2	4	1	12	critical
Denton Airport South	1	4	2	4	1	12	critical
Eagle Mountain Lake	1	4	2	4	1	12	critical
Fort Worth Northwest	1	4	2	4	1	12	critical
Frisco	1	4	2	4	1	12	critical
Granbury	1	4	2	4	1	12	critical
Grapevine Fairway	4	4	2	4	1	15	critical
Greenville	1	4	2	4	1	12	critical
Italy	1	4	2	4	1	12	critical

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Kaufman	1	4	2	4	1	12	critical
Keller	1	4	2	4	1	12	critical
Parker County	1	4	2	4	1	12	critical
Pilot Point	1	4	2	4	1	12	critical
Rockwall Heath	1	4	1	4	1	11	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
- number
NAAQS – National Ambient Air Quality Standards

Northeast Texas Area

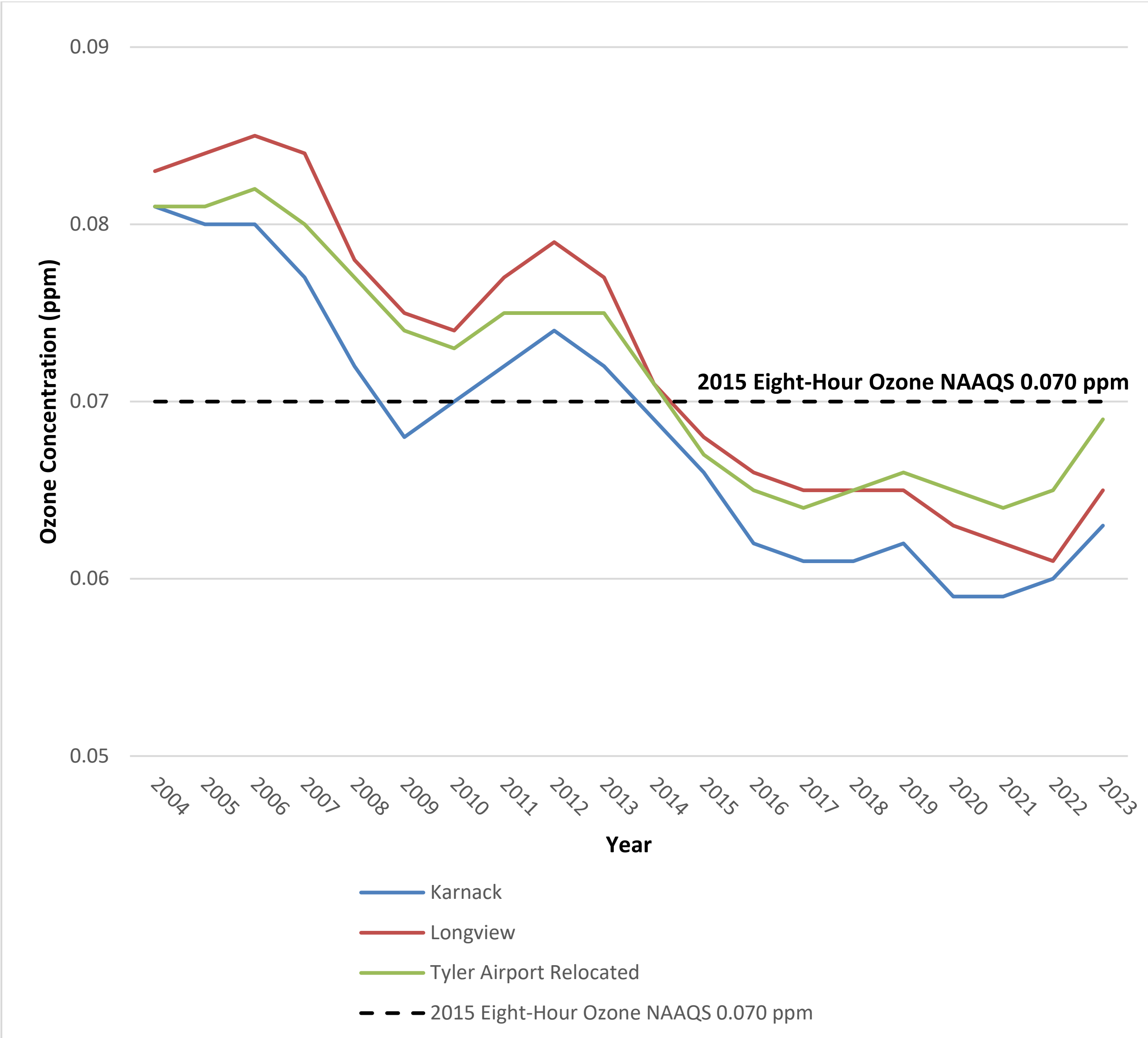
Network History and Current Status

Northeast Texas Area O_3 monitoring began in the 1980s with the deployment of the Longview monitor located to the south of the city and expanded in the 2000s to include monitors at the Tyler Airport Relocated site west of Tyler and the Karnack site east of Marshall on the Texas/Louisiana border. All three monitors provide useful O_3 data representative of general background concentrations in both populated and rural areas. The Karnack site is also used as an upwind rural monitor for the entire state to assess background and interstate transport. Since the 2020 FYA, TCEQ has made no changes to the O_3 monitoring network in the Northeast Texas area.

As of January 1, 2025, federal standards require two monitors in the Northeast Texas area for the Tyler and Longview CBSAs, based on population and design values. The TCEQ exceeds requirements with three monitors. While the number of O_3 monitors exceeds area federal requirements, the spatial distribution of the network provides valuable data for evaluating background concentrations and the impact of regional transport.

Design Values and Trends

Northeast Texas area eight-hour O_3 design values have declined since the early 2000s and consistently measure design values below the 2015 eight-hour O_3 NAAQS of 0.070 ppm since approximately 2014. Figure 87 shows the O_3 design value trends in the Northeast Texas area from 2004 through 2023.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 87: Eight-Hour Ozone Design Value Trends in the Northeast Texas Area, 2004-2023

Network Evaluation

Table 59 shows how each Northeast Texas area O_3 monitor was evaluated using the scoring system described in the *Evaluation Methods* section. O_3 monitors at the Tyler Airport Relocated and Longview sites fulfill minimum federal requirements based on population and design values. The remaining Karnack O_3 monitor provides valuable information related to interstate transport and background O_3 concentrations for the state. The monitor locations and spatial coverage, the different monitoring objectives, and historical O_3 trends data make each monitor valuable. Based on these scores, no changes to the Northeast Texas area O_3 network are recommended at this time.

Table 59: Northeast Texas Area Ozone Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Karnack	1	4	2	4	1	12	critical
Longview	4	4	2	4	1	15	critical
Tyler Airport Relocated	4	4	2	4	1	15	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Carbon Monoxide

The CO network in the North Texas area includes CO and high-sensitivity CO monitors that fulfill NCore and near-road requirements. The PAMS CO monitoring requirement was removed in 2015. CO monitoring is not required or performed in Northeast Texas areas and is not discussed further in this section. Figure 88 shows the area active CO monitors with green squares and the 2022 CO point sources with blue circles. Appendix A lists active CO monitors, locations, monitoring objectives, and associated spatial scales.

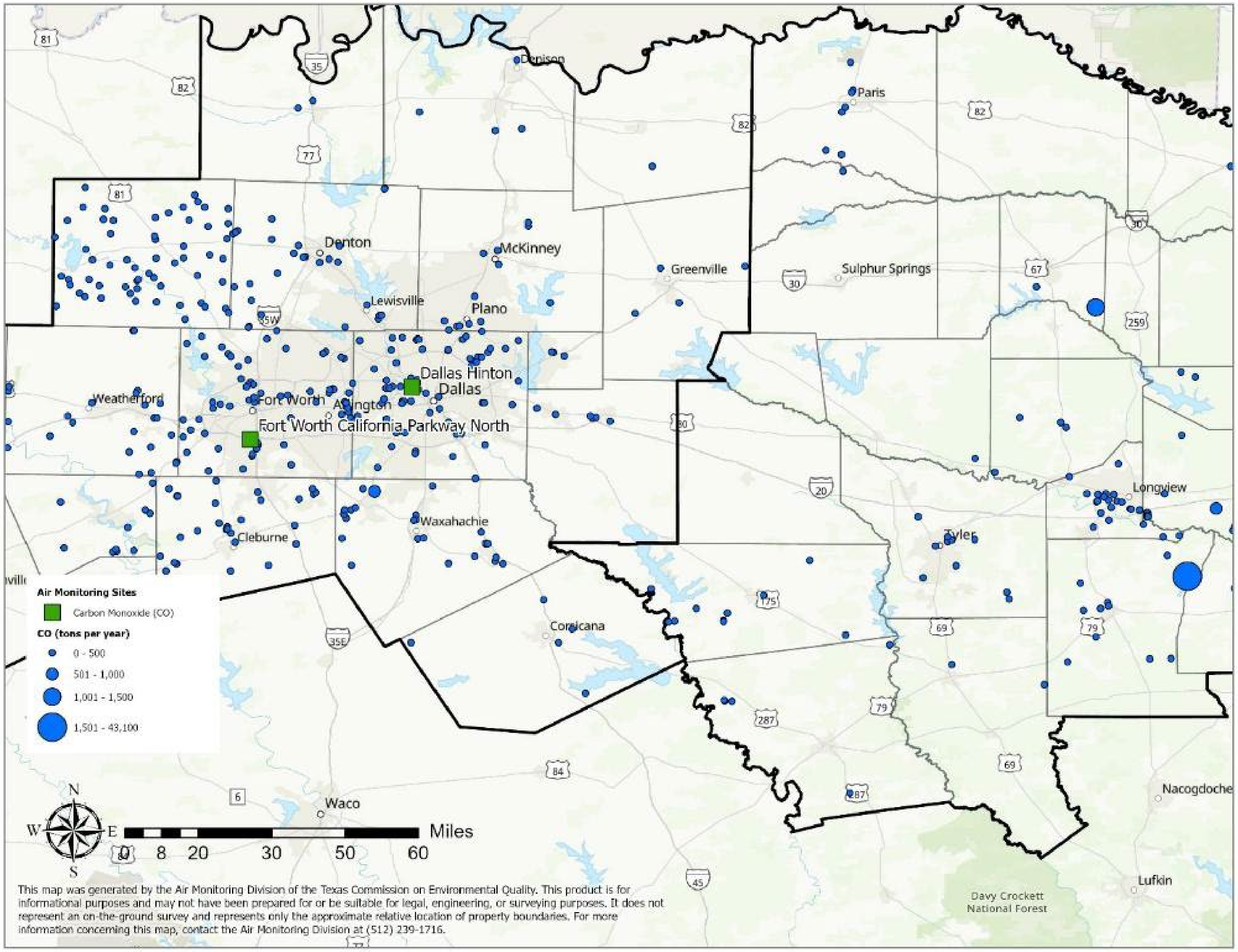


Figure 88: North and Northeast Texas Area Carbon Monoxide Monitors and 2022 Point Sources

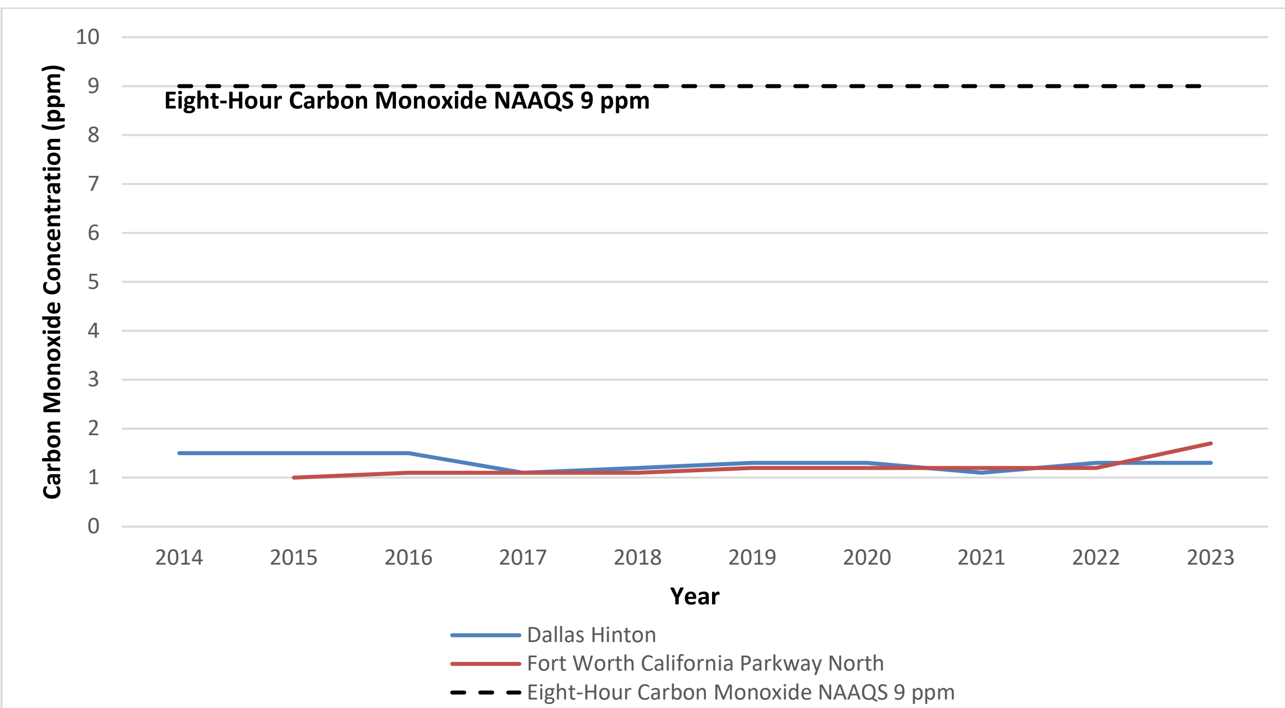
North Texas Area

Network History and Current Status

North Texas area CO monitoring began in 1995 with the deployment of the Dallas Hinton monitor to measure CO concentrations in an area of high population density. In 2010, Dallas Hinton was selected as an NCore site to meet new federal monitoring requirements, and the CO monitor was replaced with a high-sensitivity CO monitor in 2011. A CO monitor was deployed at the Fort Worth California Parkway North site in March 2015 to fulfill the near-road CO monitoring requirement. Since the 2020 FYA, one North Texas area CO network change occurred. The Dallas Hinton site and CO monitor were temporarily deactivated in February 2025 due to the property owner revoking the lease agreement for construction. The Dallas Hinton site is planned for relocation within one mile with no change to the AQS identification number and is expected later in 2025. As of January 1, 2025, federal standards require a minimum of two area CO monitors to fulfill NCore and near-road requirements. The TCEQ meets these requirements with two area monitors.

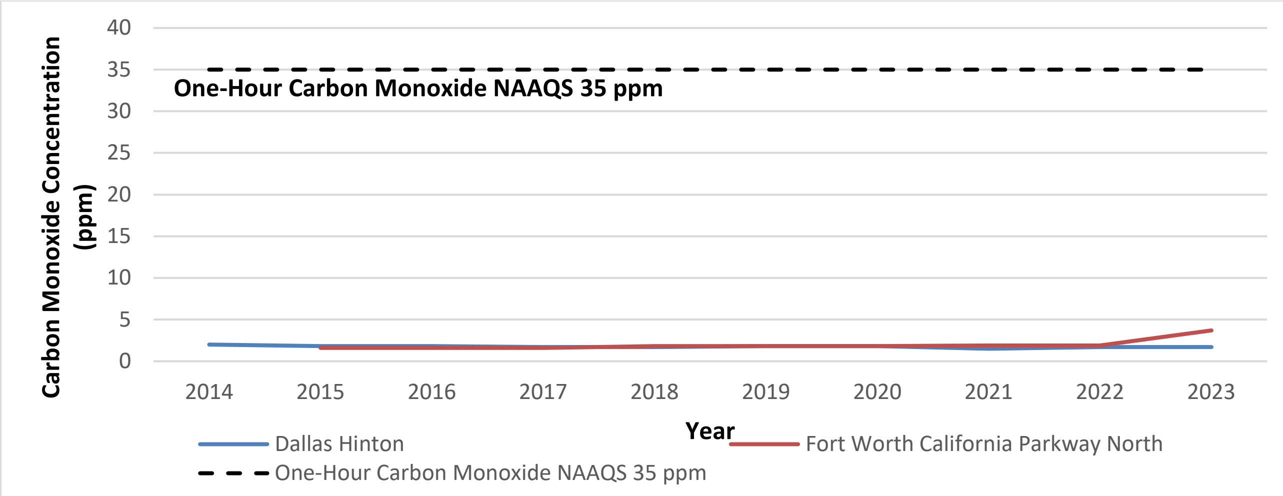
Design Values and Trends

North Texas area CO design values remain below 20% of the eight-hour NAAQS of 9 ppm and below 11% of the one-hour NAAQS of 35 ppm, as shown in Figure 89 and Figure 90.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 89: Eight-Hour Carbon Monoxide Design Value Trends in the North Texas Area, 2014-2023



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 90: One-Hour Carbon Monoxide Design Value Trends in the North Texas Area, 2014-2023

Network Evaluation

Table 60 shows how each CO monitor in the North Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Dallas Hinton monitor satisfies the requirement for monitoring CO at an NCore site while the Fort Worth California Parkway monitor satisfies the DFW area near-road requirement. No changes in the North Texas area CO network are recommended at this time.

Table 60: North Texas Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Dallas Hinton** (temporarily inactive for relocation)	4	1	1	4	1	11	critical
Fort Worth California Parkway North	4	1	3	2	3	13	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic high assessment value.
** - high-sensitivity CO monitor
NAAQS – National Ambient Air Quality Standards

Oxides of Nitrogen

The NO_x network in the North and Northeast Texas area includes NO, NO_x, NO_2, and NO_y monitoring and is designed to fulfill NO_2 area-wide, RA-40, near-road, PAMS, and NCore monitoring requirements. NO_x monitoring is not required or performed in the Sherman and Texarkana areas and these areas are not discussed further in this section. Figure 84 and Figure 85 show the area active NO_x, NO_2, and NO/NO_y monitors with green squares and the NO_x 2022 point sources with blue circles. Appendix A lists active and recently decommissioned NO_x, NO_2, and NO/NO_y monitors, locations, monitoring objectives, and associated spatial scales.

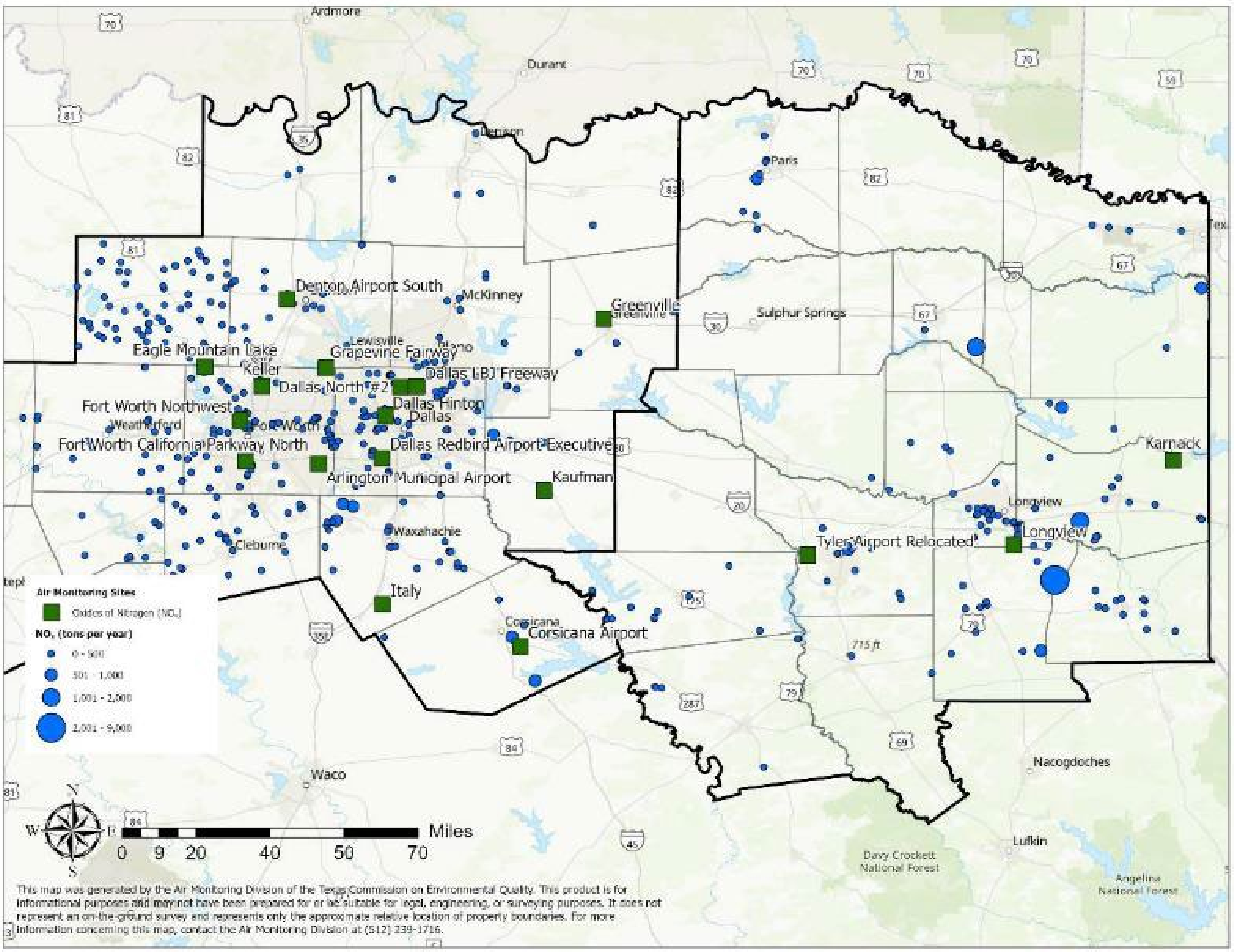


Figure 91: North and Northeast Texas Area Oxides of Nitrogen Monitors and 2022 Point Sources

North and Northeast Texas Area

Network History and Current Status

North Texas area NO_x monitoring began in the mid-1970s with a monitor deployment to Fort Worth Northwest. Significant expansion of the NO_x monitoring network in the North and Northeast Texas areas occurred in the mid-1990s and early 2000s in response to new federal PAMS requirements and the need to improve understanding of O_3 formation and O_3 precursor transport. NO_y monitors were deployed to Denton Airport South in 2008 for PAMS and at Dallas Hinton in 2011 to meet NCore and PAMS requirements. In 2014 and 2015, NO_x monitors were added to Dallas LBJ Freeway and Fort Worth California Parkway to fulfill NO_2 near-road requirements. An NO_2 (direct) monitor replaced the NO_x monitor at Dallas Hinton to fulfill new PAMS requirements in May 2019. In January 2020, TCEQ added the state-initiative Eagle Mountain Lake and Keller NO_x monitors to the federal network to support additional information important to understanding the area's O_3 formation. The distribution of the NO_x monitoring network in the North and Northeast Texas areas provides valuable information to evaluate the effectiveness of NO_x control strategies, to assist in

……………………photochemical model performance in predicting O_3 formation and provides information on the spatial and diurnal variability of O_3 precursor emissions.

Since the last FYA, two North Texas area changes occurred. The Dallas Hinton site and NO_2 direct and NO_y monitors were temporarily deactivated in February 2025 due to the property owner revoking the lease agreement for construction. The Dallas Hinton site is planned for relocation within one mile with no change to the AQS identification number and is expected later in 2025.

The Midlothian OFW site and NO_x monitor were temporarily deactivated in April 2022 due to the property owner revoking the site usage agreement for road expansion. The Midlothian OFW site is planned for relocation within one mile to the Midlothian North Ward Road site with no change to AQS identification number. The Midlothian North Ward Road site construction permit was denied by the City of Midlothian, and TCEQ continues to negotiate logistical updates to meet city Development Review Committee requirements.

As of January 1, 2025, federal standards require a minimum of five NO_X or NO_2 (direct) monitors and one NO_y monitor to satisfy area-wide, RA-40, near-road, PAMS, and NCore monitoring requirements in North Texas. There are no federal requirements for NO_x monitoring in Northeast Texas. The TCEQ exceeds requirements with 16 NO_X and NO_2 (direct) monitors and two NO_y monitors in North Texas and three NO_X monitors in Northeast Texas. Monitoring objectives related to these federal requirements include collecting ambient data in populated areas, measuring maximum O_3 precursor emissions impacts, characterizing general background concentrations, and characterizing transport of O_3 precursors.

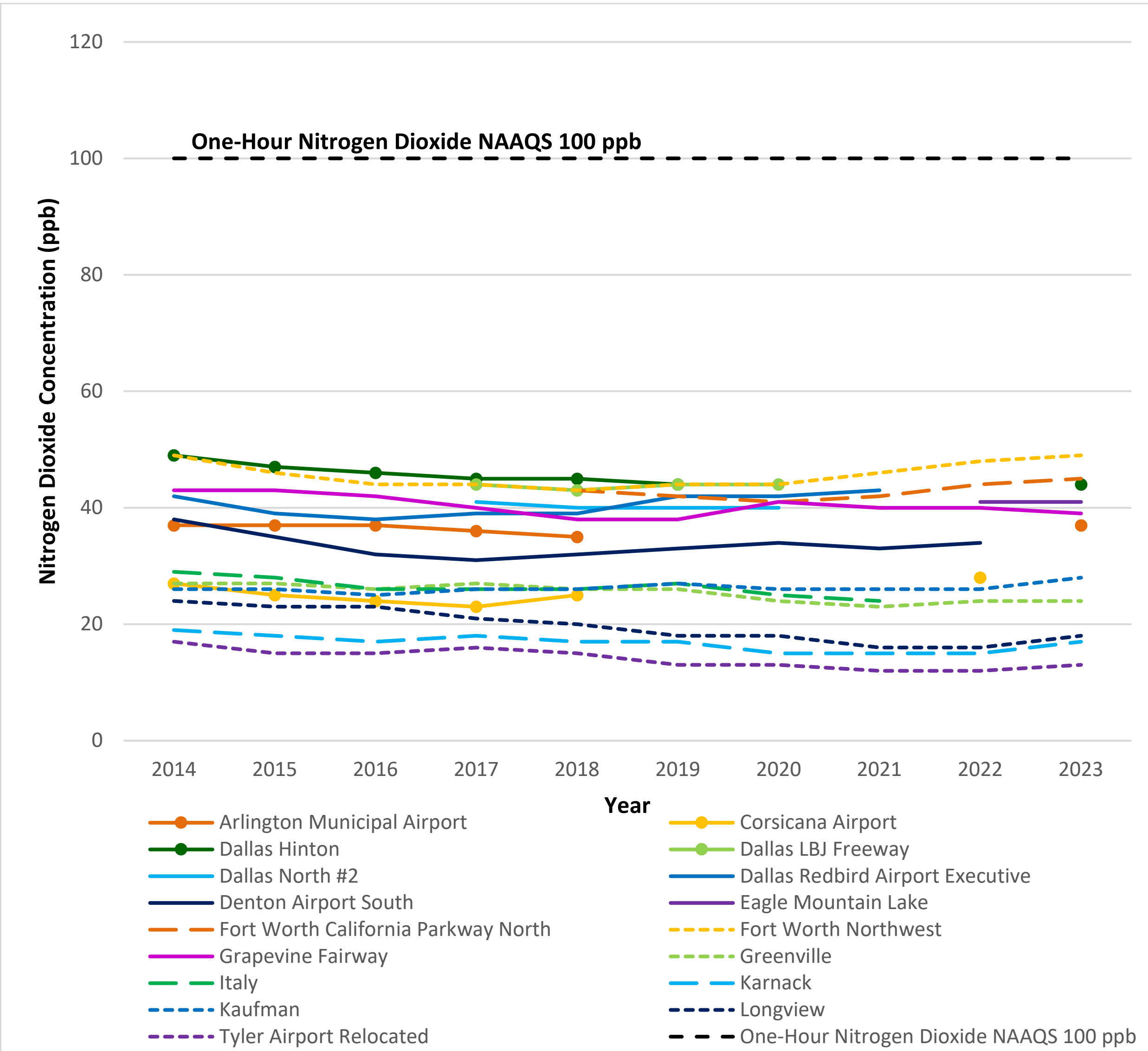
Design Values and Trends

The North and Northeast Texas area one-hour NO_2 design values continue to decline and annual NO_2 concentrations have been stable over the past ten years. All North and Northeast Texas area monitors remain well below the one-hour and annual NO_2

NAAQS. Figure 92 and Figure 93 show the design value trends in the North and Northeast Texas area from 2014 to 2023.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

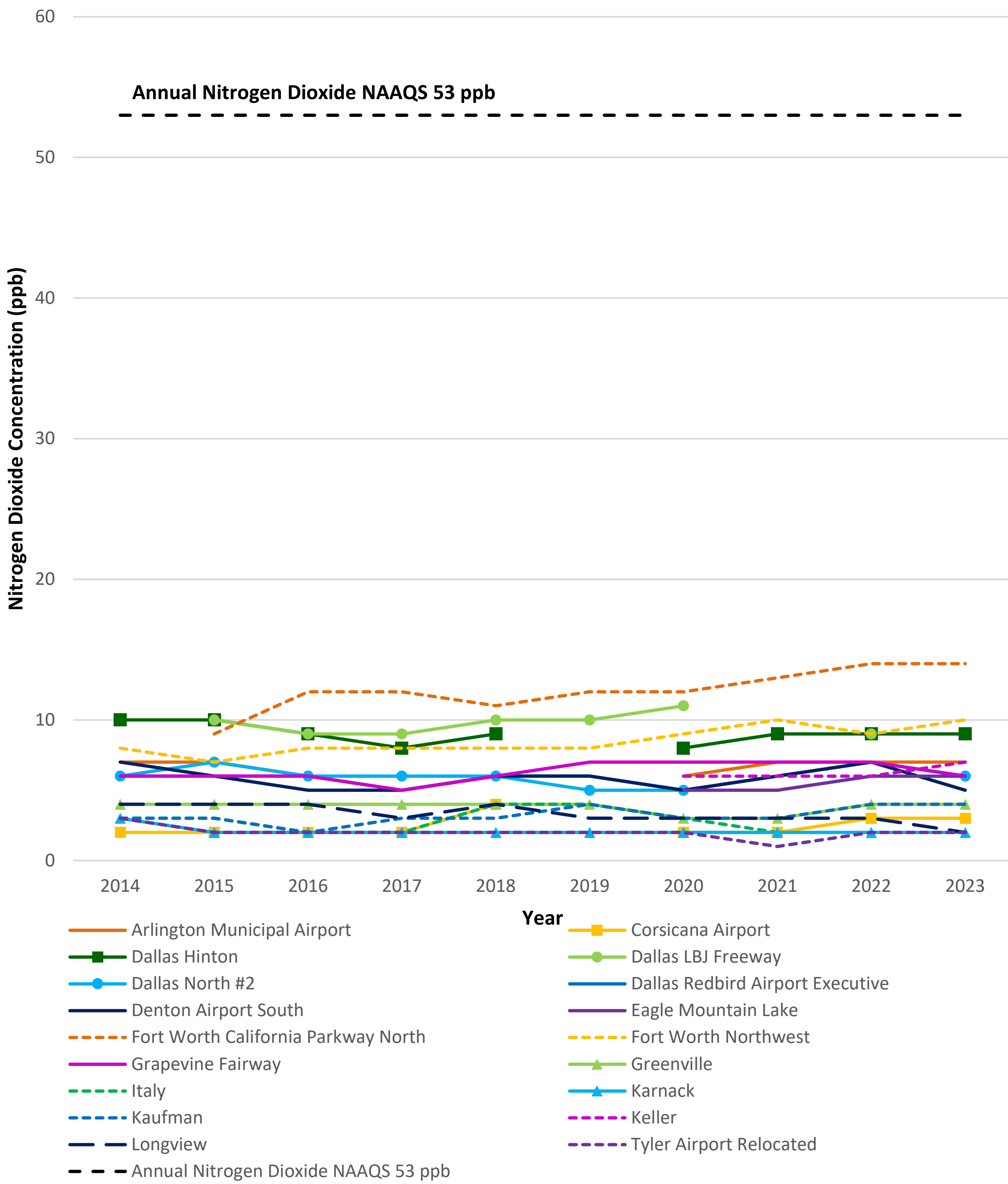
Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. Despite not showing a valid design value on the trend graphs, valid data collected during the years not shown are available online at TCEQ TAMIS.



LBJ – Lyndon B. Johnson
NAAQS - National Ambient Air Quality Standards

ppb – parts per billion
– number

Figure 92: North and Northeast Texas Area One-Hour Nitrogen Dioxide Design Value Trends, 2014–2023



LBJ – Lyndon B. Johnson
NAAQS - National Ambient Air Quality Standards
ppb – parts per billion
– number

Figure 93: North and Northeast Area Annual Nitrogen Dioxide Design Value Trends, 2014–2023

Network Evaluation

Table 61 shows how each NO_x, NO_2 (direct), or NO_y monitor in the North and Northeast Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Dallas Hinton NO_2 (direct) monitor fulfills the PAMS and area-wide requirements while the NO/NO_y monitor fulfills NCore and PAMS requirements. The Arlington Municipal Airport NO_x monitor fulfills the RA-40 requirement. The Dallas LBJ Freeway and Fort Worth California Parkway North monitors fulfill near-road requirements. The remaining area NO_x and NO_y monitors assist in evaluating the effectiveness of area NO_x control strategies and provide enhanced monitoring data important to understanding the area's O_3 formation. Based on these scores and the data usage, no changes to the North and Northeast Texas area NO_x network are recommended at this time.

Table 61: North and Northeast Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Arlington Municipal Airport	4	1	2	4	3	14	critical
Corsicana Airport	1	1	3	4	2	11	medium
Dallas Hinton** (temporarily inactive for relocation)	4	1	2	4	3	14	critical
Dallas Hinton*** (temporarily inactive for relocation)	4	NA	NA	3	2	9	critical
Dallas LBJ Freeway	4	NA	2	2	3	11	critical
Dallas North #2	1	1	2	4	2	10	medium
Dallas Redbird Airport Executive	1	1	2	4	2	10	medium
Denton Airport South	1	NA	NA	4	2	7	medium
Denton Airport South***	1	NA	NA	4	2	7	medium
Eagle Mountain Lake	1	1	3	3	2	10	medium
Fort Worth California Parkway North	4	1	3	2	2	12	critical
Fort Worth Northwest	1	1	3	4	2	11	medium

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Grapevine Fairway	1	1	2	4	2	10	medium
Greenville	1	1	2	4	2	10	medium
Italy	1	NA	1	4	2	8	medium
Karnack	1	1	1	4	2	9	medium
Kaufman	1	1	3	4	2	11	medium
Keller	1	1	3	3	2	10	medium
Longview	1	1	1	4	2	9	medium
Tyler Airport Relocated	1	1	1	4	2	9	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
LBJ – Lyndon B. Johnson
NA – Not applicable
**NO_2 (direct) monitor
***NO_y – total reactive nitrogen compounds
NO_y monitors provide nitrogen oxide data
NAAQS – National Ambient Air Quality Standards
- number

Sulfur Dioxide

The SO_2 network in the North and Northeast Texas area fulfill NCore, PWEI, and 2015 DRR requirements. SO_2 monitoring is not required or performed in the Sherman, Texarkana, and Tyler MSAs and these areas are not discussed further in this section. Figure 93 shows the area SO_2 monitors with red squares and the 2022 point sources with blue circles. Appendix A lists active SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

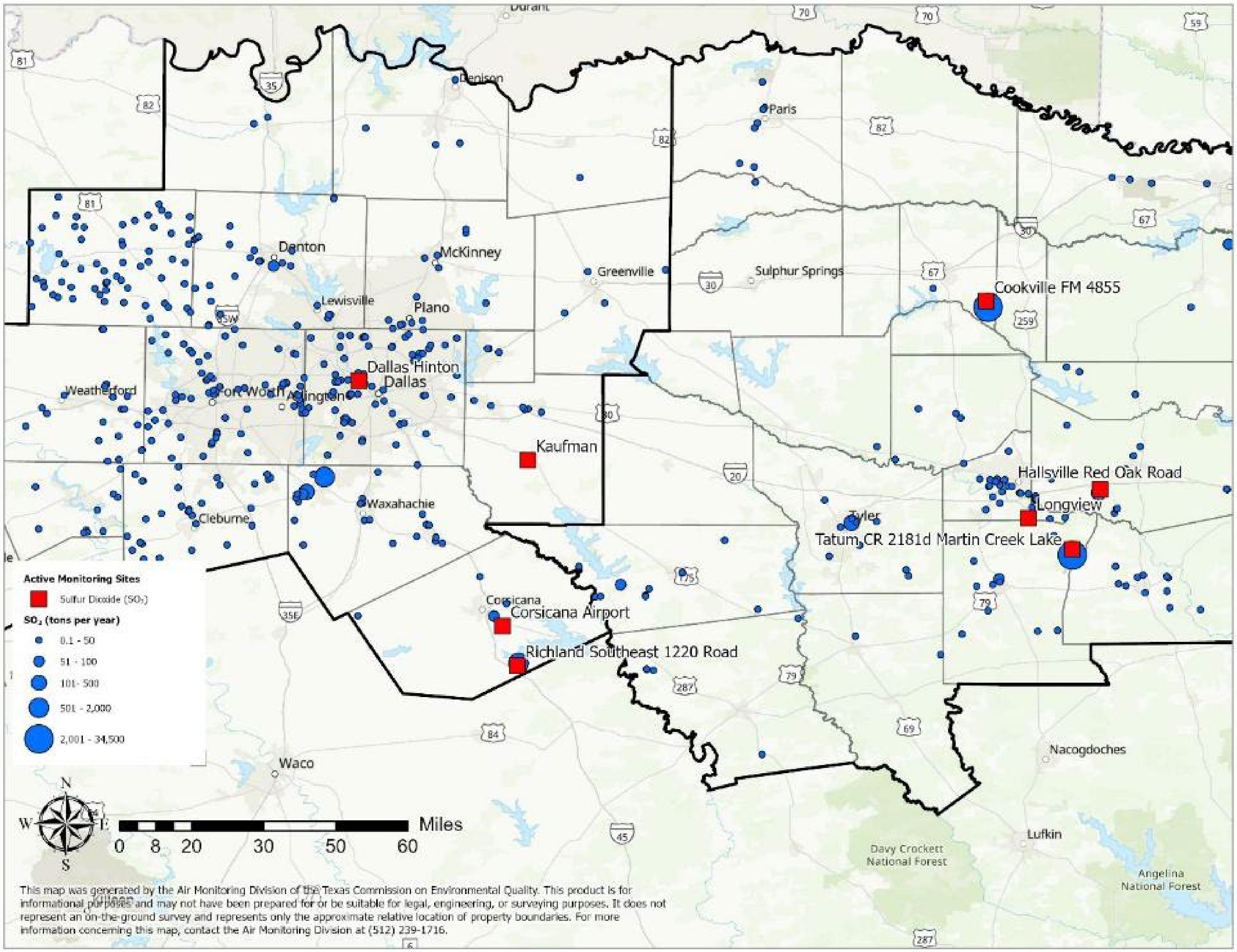


Figure 94: North and Northeast Texas Area Sulfur Dioxide Monitors and 2022 Point Sources

North Texas Area

Network History and Current Status

North Texas area SO_2 monitoring began in the mid-1990s with the deployment of SO_2 monitors at Dallas Hinton, located just to the northwest of downtown Dallas, to provide data in a highly populated area, and at Midlothian Old Fort Worth (OFW) to monitor SO_2 emissions impacts from area cement kilns and to monitor the transport of SO_2 concentrations and associated O_3 precursor contributions from upwind power plants in East Texas into the DFW area. In the early 2000s, SO_2 monitoring at the Kaufman site was established to monitor upwind background concentrations. In 2007 and 2009, SO_2 monitoring at the Italy and Corsicana sites was established to provide additional data for modeling and regional analysis.

Title 40 CFR § 51.1202 (the DRR) required air agencies to characterize air quality around applicable sources that emitted 2,000 tpy or more of SO_2 in the latest emissions inventory year of 2014. TCEQ identified one source in the North Texas area that was selected for SO_2 air quality characterization by ambient air monitoring. A new source-oriented SO_2 monitoring site was added at Richland Southeast 1220 Road (in Navarro County) in November 2016. The Italy SO_2 monitor was deactivated in December 2017. This monitor was not federally required and design values decreased from 30% to 10% of the 2010 one-hour SO_2 NAAQS from 2010 to 2016.

Since the last FYA, two North Texas area SO_2 network changes occurred. The Midlothian OFW site and SO_2 monitor were temporarily deactivated in April 2022 due to the property owner revoking the site usage agreement for road expansion. The Midlothian OFW site is planned for relocation within one mile to the Midlothian North Ward Road site with no change to the AQS identification number. The Midlothian North Ward Road site construction permit was declined by the City of Midlothian, and TCEQ continues to negotiate logistical updates to meet city Development Review Committee requirements.

The Dallas Hinton site and high-sensitivity SO_2 monitor were temporarily deactivated in February 2025 due to the property owner revoking the lease agreement for construction. The Dallas Hinton site is planned for relocation less than one mile with no change to the AQS identification number and is expected later in 2025.

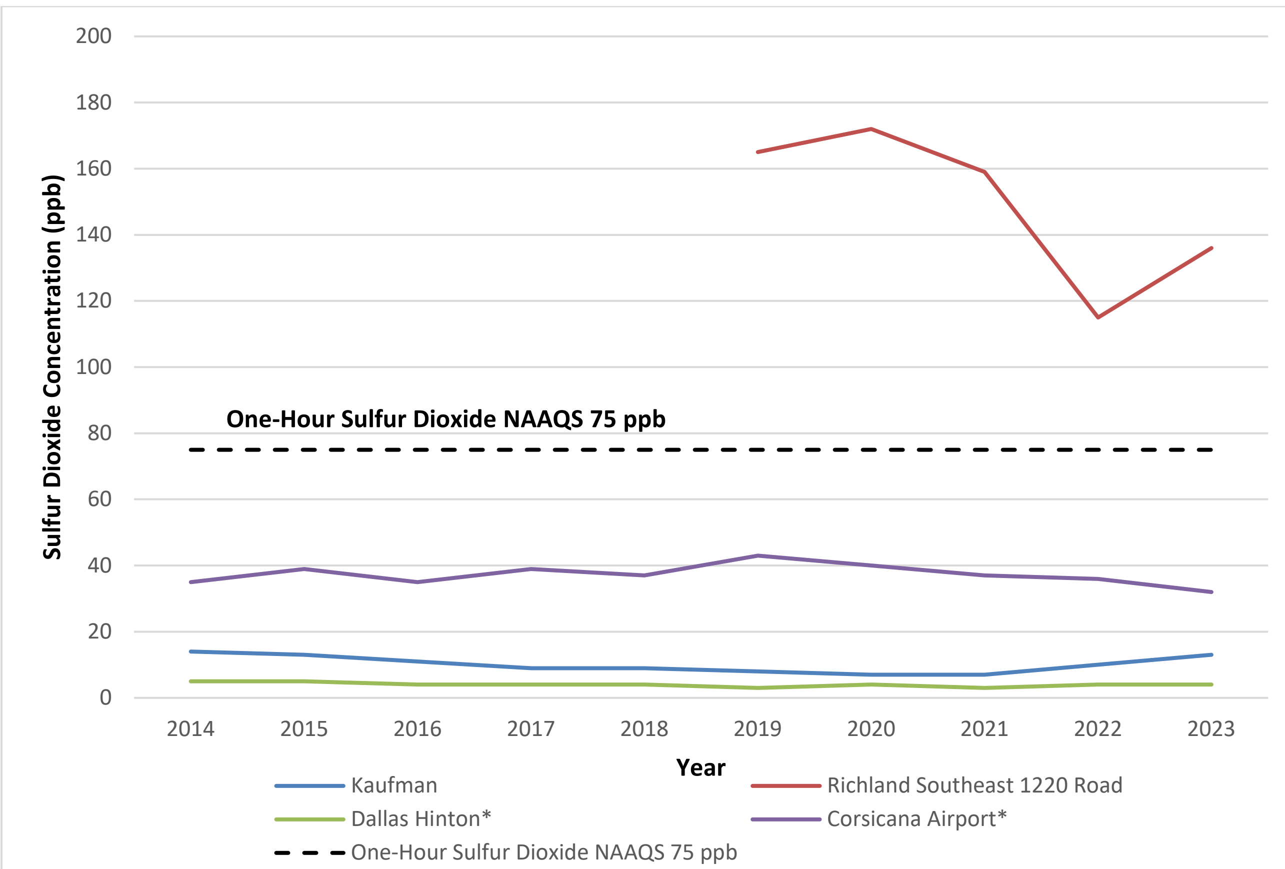
As of January 1, 2025, federal standards require a minimum of three area SO_2 monitors related to NCore, PWEI, and DRR requirements. TCEQ meets PWEI and DRR requirements with two SO_2 monitors and has an additional SO_2 monitor in the Corsicana micropolitan statistical area. The required NCore SO_2 high-sensitivity monitor is temporarily inactive due to the Dallas Hinton site relocation and is expected to be operational later in 2025.

Design Values and Trends

Most North Texas area SO_2 design values have remained stable since 2014 and are currently less than 50% of the 2010 one-hour SO_2 NAAQS of 75 ppb with the exception of one monitor, Richland Southeast 1220 Road, with SO_2 design values in exceedance of the NAAQS. The Richland Southeast 1220 Road SO_2 monitor obtained three-years of data required for design value calculation in 2019. Dallas Hinton SO_2 design values were invalid for 2018 to 2022, due to low quality assurance. The Dallas Hinton SO_2

monitor routinely measures extremely low ppb values exceedingly close to the instrument baseline resulting in occasional low quality assurance. Corsicana Airport SO_2 design values were invalid for 2020 and 2021 due to low quality assurance in one quarter of 2020. Figure 95 shows the SO_2 design value trends in the North Texas area from 2014 through 2023. Invalid design values are included for trends comparison.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues such as power interruptions, or site relocations. Design value determinations are summarized in the FYA *Pollutants* section. The valid data, surrounding the data loss, are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Dallas Hinton design value invalid for 2018 to 2022; Corsicana Airport design value invalid for 2020 and 2021.
NAAQS – National Ambient Air Quality Standard
ppb – parts per billion

Figure 95: North Texas Area One-Hour Sulfur Dioxide Design Value Trends, 2014-2023

Network Evaluation

Table 62 shows how each SO_2 monitor in the North Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Dallas Hinton high-sensitivity SO_2 monitor fulfills NCore requirements and the Kaufman monitor fulfills the PWEI area requirements. The source-oriented monitor at Richland Southeast 1220 Road is required to meet SO_2 DRR air quality characterization in portions of Navarro County. The Corsicana Airport monitor provides additional air quality characterization data downwind of sources supporting modeling and area trends analysis. Based on these scores, no changes to the North Texas area SO_2 network are recommended at this time.

Table 62: North Texas Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Corsicana Airport	1	1	2	4	4	12	medium
Dallas Hinton** (temporarily inactive for relocation)	4	1	1	3	2	11	critical
Kaufman	4	1	2	4	2	13	critical
Richland Southeast 1220 Road	4	4	3	2	4	17	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**high sensitivity SO_2 monitor
NAAQS – National Ambient Air Quality Standard

Northeast Texas Area

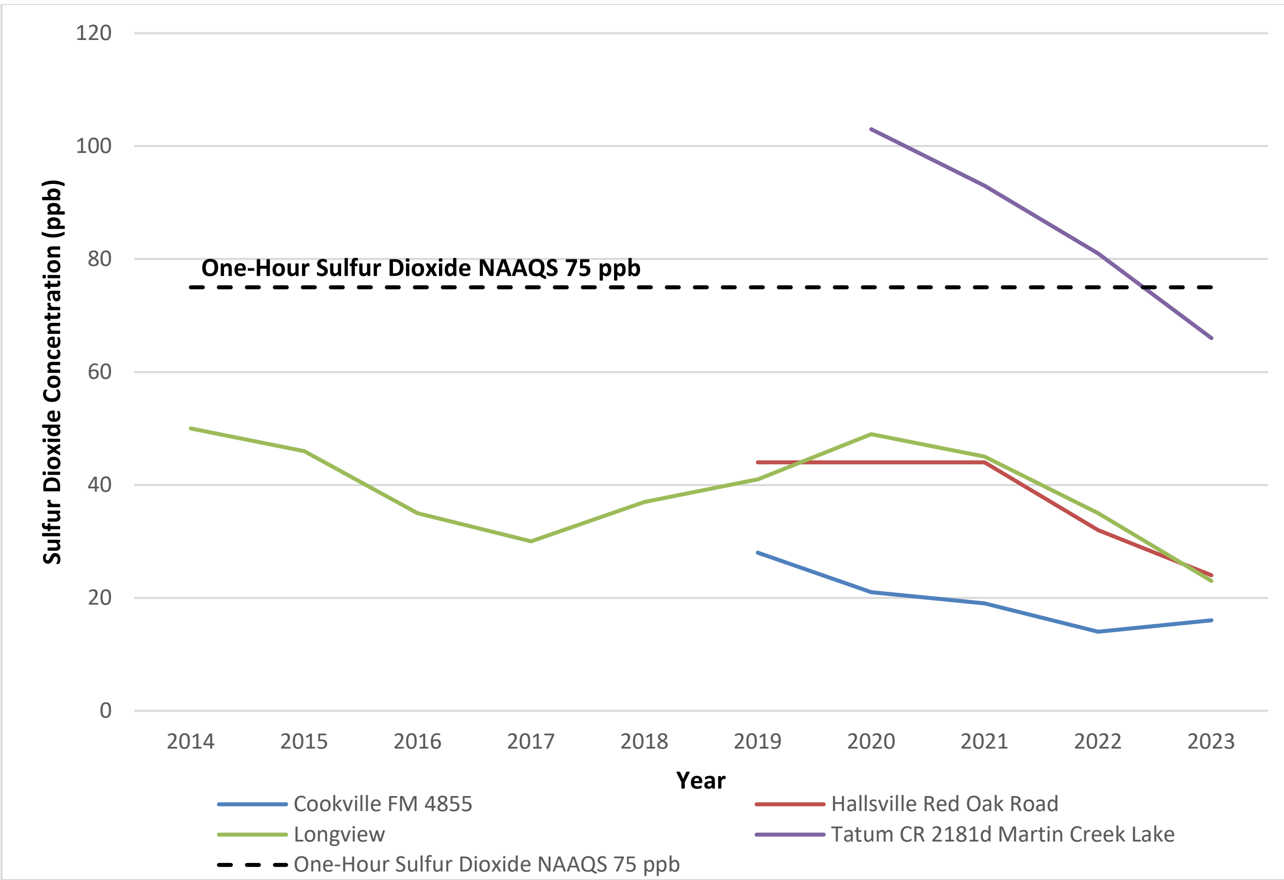
Network History and Current Status

Northeast Texas area SO_2 monitoring began in the late 1990s with the Longview SO_2 monitor located to measure background SO_2 concentrations coming into the Longview area. Title 40 CFR § 51.1202 (the DRR) required air agencies to characterize air quality around applicable sources that emitted 2,000 tpy or more of SO_2 in the latest emissions inventory year of 2014. TCEQ identified two sources in the Northeast Texas area that were selected for SO_2 air quality characterization by ambient air monitoring. New source oriented SO_2 monitors were added at Cookville RM 4855 (in Titus County) and Hallsville Red Oak Road (in Harrison County) in December 2016. The Tatum CR 2181d Martin Creek Lake site and SO_2 monitor (in Rusk County) were activated in November 2017 to characterize air quality in the portion of Rusk County designated nonattainment. Since the 2020 FYA, no Northeast Texas area SO_2 network changes occurred.

As of January 1, 2025, federal standards required a minimum of three Northeast Texas area SO_2 monitors to fulfill DRR and PWEI requirements. The TCEQ exceeds these requirements in the Northeast Texas area with four SO_2 monitors.

Design Values and Trends

Most Northeast Texas area SO_2 design values have remained below the 2010 one-hour SO_2 NAAQS of 75 ppb with the exception of the Tatum CR 2181d Martin Creek Lake monitor. The Tatum CR 2181d Martin Creek Lake SO_2 monitor obtained three years of data required for a design value calculation in 2020 and measured SO_2 design values in exceedance of the NAAQS from 2020 to 2022. The Cookville RM 4855 and Hallsville Red Oak Road SO_2 monitors obtained three years of data required for design value calculation in 2019. Figure 96 shows the SO_2 design value trends in the Northeast Texas area from 2014 to 2023.



CR – county road
FM – farm to market
NAAQS – National Ambient Air Quality Standard
ppb – parts per billion

Figure 96: Northeast Texas Area One-Hour Sulfur Dioxide Design Value Trends, 2014-2023

Network Evaluation

Table 63 shows how each SO_2 monitor in the Northeast Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Longview monitor fulfills the PWEI area requirement in the Longview CBSA. The source-oriented monitors at Cookville FM 4855 and Hallsville Red Oak Road are required to meet SO_2 DRR air quality characterization in those areas. The remaining SO_2 monitor at Tatum CR 2181d Martin Creek Lake supports air characterization in a nonattainment area. No changes to the Northeast Texas area SO_2 network are recommended at this time.

Table 63: Northeast Texas Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Cookville FM 4855	4	1	3	2	4	14	critical
Hallsville Red Oak Road	4	1	1	2	4	12	critical
Longview	4	1	1	4	2	12	critical
Tatum CR 2181d Martin Creek Lake	4	4	3	2	4	17	critical

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
CR – county road
FM – farm to market
NAAQS – National Ambient Air Quality Standard

Particulate Matter of 2.5 Micrometers or Less in Diameter

The $PM_{2.5}$ network in the North and Northeast Texas area fulfills SLAMS, NCore, and near-road requirements using a combination of non-continuous FRM, continuous FEM, non-NAAQS comparable continuous, and speciation monitors. Non-NAAQS comparable data were not evaluated for trends against the *NAAQS Value* criteria in this FYA. $PM_{2.5}$ monitoring is not required or performed in the Sherman or Tyler areas and these areas are not discussed further in this section. Figure 97 shows the area $PM_{2.5}$ monitors with a blue square and 2022 point sources with yellow circles. Appendix A lists active and recently deactivated $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

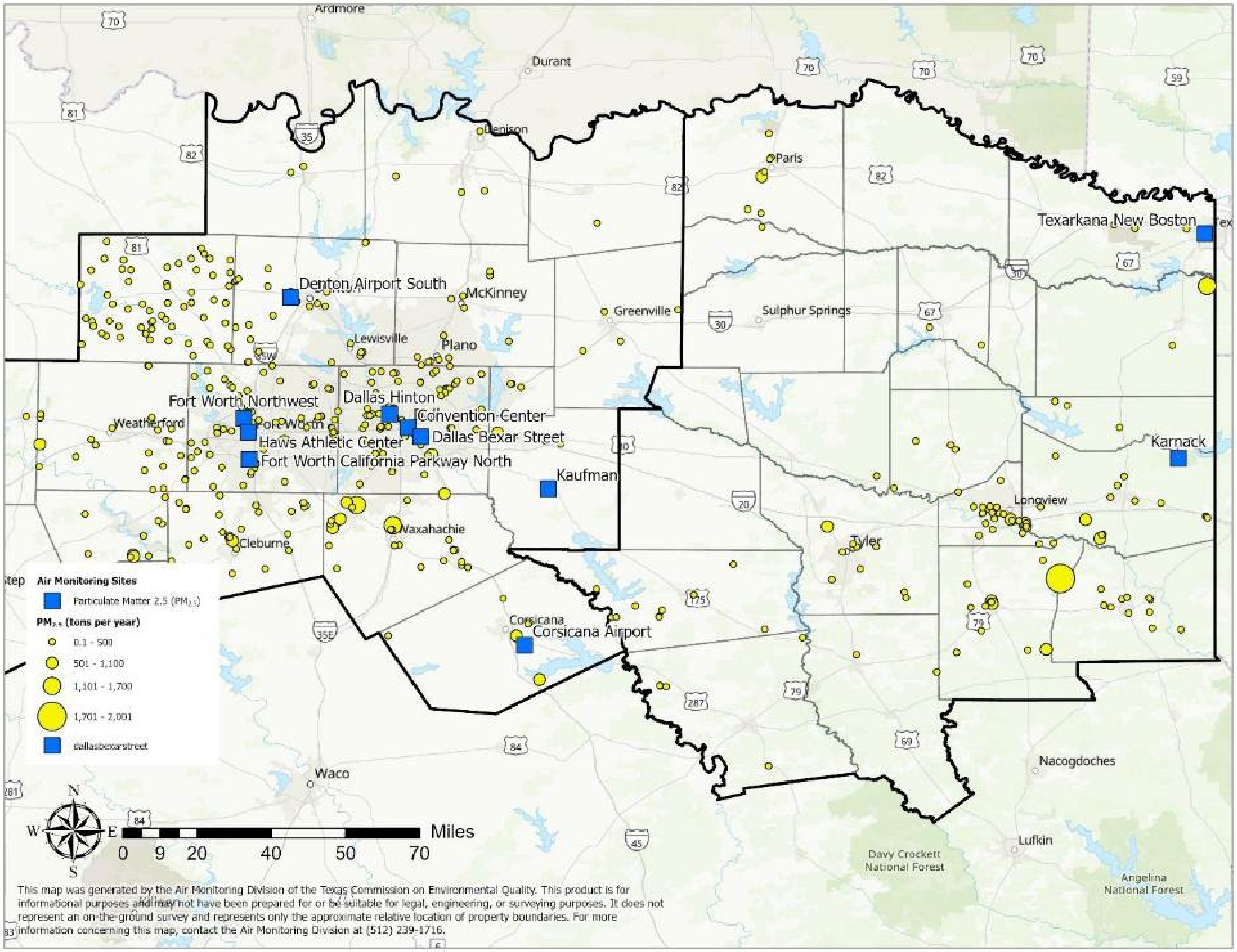


Figure 97: North and Northeast Area Particulate Matter of 2.5 Micrometers or Less in Diameter Monitors and 2022 Point Sources

North Texas Area

Network History and Current Status

The North Texas area $PM_{2.5}$ monitoring began in the late 1990s and early 2000s with the deployment of Dallas Hinton, Denton Airport South, Convention Center, and Fort Worth Northwest monitors. Through the 2000s the $PM_{2.5}$ network expanded with a variety of $PM_{2.5}$ samplers with most monitors disbursed throughout the Dallas, Fort Worth, and Arlington urban cores. Near-road microscale $PM_{2.5}$ monitoring began at Fort Worth California Parkway in 2015. The area's monitoring objectives include evaluating regional transport, $PM_{2.5}$ background levels, and ambient $PM_{2.5}$ concentrations in populated areas.

The non-NAAQS comparable monitors at Italy and Arlington Municipal Airport were deactivated in December 2016 and December 2018, respectively, due to low measured concentrations and similar spatial coverage provided by nearby monitors. $PM_{2.5}$ FRM monitors were upgraded to FEM continuous monitors at Fort Worth California Parkway North and Fort Worth Northwest and a non-NAAQS comparable monitor was upgraded to a $PM_{2.5}$ FEM continuous monitor at Denton Airport South in July 2019. The Haws Athletic Center $PM_{2.5}$ FRM monitor was upgraded to a FEM continuous monitor in December 2019.

Since the 2020 FYA, several changes occurred. The non-NAAQS comparable monitors were upgraded to $PM_{2.5}$ FEM continuous monitors at Corsicana Airport and Kaufman in April 2022. The Corsicana Airport and Kaufman $PM_{2.5}$ FEM monitors have incomplete design values, pending three full years of data and will not be assessed with the *NAAQS Value* metric. A $PM_{2.5}$ FRM monitor was upgraded to a FEM continuous monitor at Convention Center in April 2022. The new Dallas Bexar Street air quality monitoring site and non-NAAQS comparable $PM_{2.5}$ monitor was added near the Dallas southern sector industrial corridor to improve spatial coverage in February 2022. The Dallas Bexar Street non-NAAQS comparable $PM_{2.5}$ monitor is planned to be upgraded to a FEM continuous monitor in 2026.

The Midlothian OFW site and $PM_{2.5}$ monitors were temporarily deactivated in April 2022 due to the property owner revoking the site usage agreement for road expansion. The Midlothian OFW site is planned for relocation within one mile to the Midlothian North Ward Road site with no change to the AQS identification number. The Midlothian North Ward Road site construction permit was denied by the City of Midlothian, and TCEQ continues to negotiate logistical updates to meet city Development Review Committee requirements.

The Dallas Hinton site and $PM_{2.5}$ monitors were temporarily deactivated in February 2025 due to the property owner revoking the lease agreement for construction. The Dallas Hinton site is planned for relocation within one mile with no change to the AQS identification number and is expected later in 2025.

As of January 1, 2020, federal standards require a minimum of eight $PM_{2.5}$ monitors. The TCEQ exceeds requirements with 11 $PM_{2.5}$ monitors in the DFW MSA and one $PM_{2.5}$ monitor in the Corsicana micropolitan statistical area using gravimetric, speciation, and continuous methods to determine maximum concentrations, concentrations in areas of high population density, and background and transport concentrations.

$PM_{2.5}$ Micro-scale Near-Road Monitors

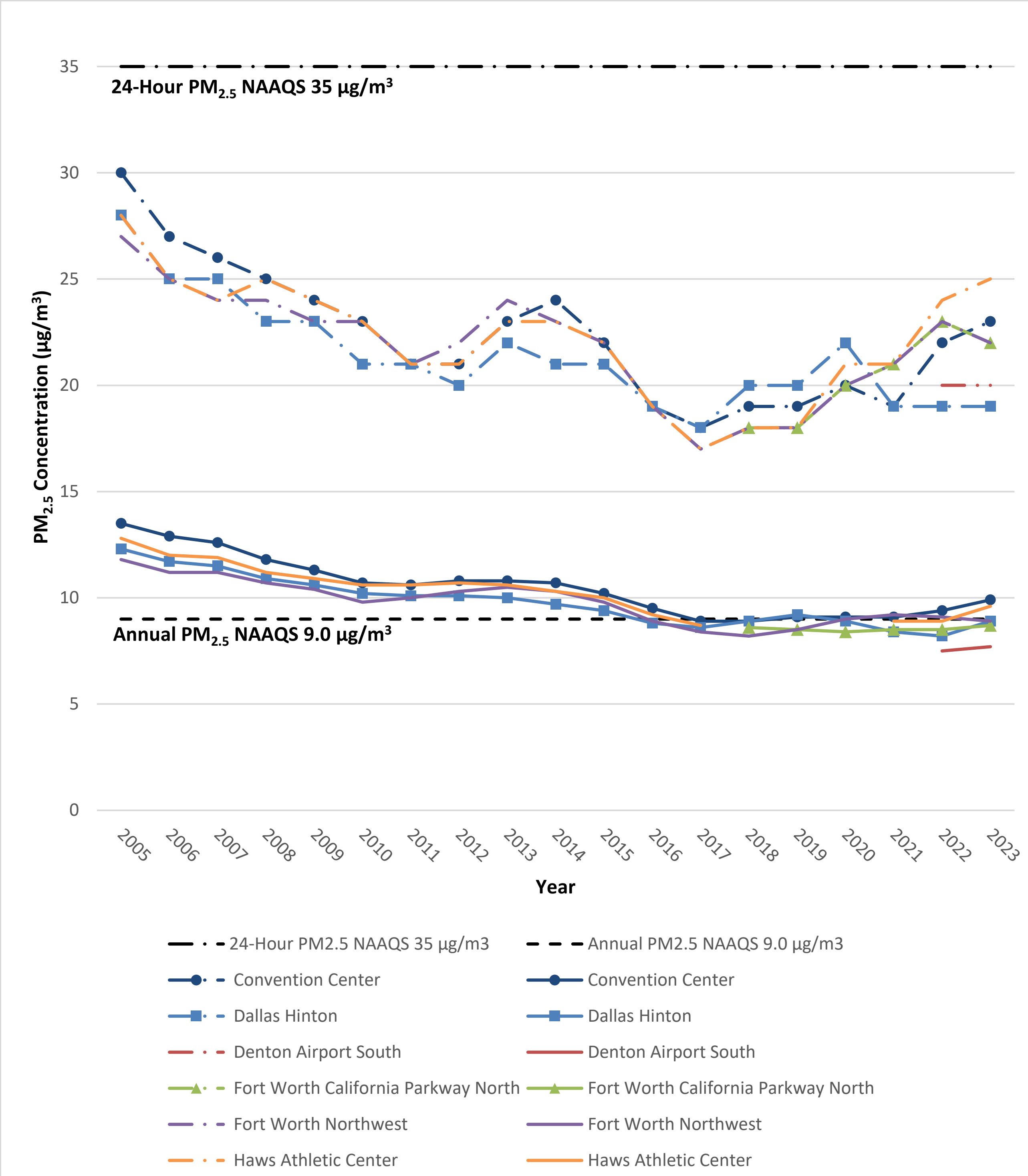
TCEQ established near-road monitoring sites in accordance with 40 CFR Part 58, Appendices D and E and the *Near-Road NO_2 Technical Assistance Document* guidelines. $PM_{2.5}$ monitors deployed to meet near-road monitoring requirements provide measurements of localized microenvironments near highly trafficked roadways that are not representative of a broader airshed. The traffic counts at the near-road monitoring sites are not representative across a CBSA as the counts on the roadway being monitored are generally 10 to 30 times greater than the surrounding area roadways.

The $PM_{2.5}$ concentrations measured at the near-road sites are impacted by particulate matter from the nearby localized traffic and are not representative of area-wide air quality. $PM_{2.5}$ measurement data from all eligible monitors that are representative of area-wide air quality are comparable to the annual and 24-hour $PM_{2.5}$ NAAQS. However, according to 40 CFR § 58.30, $PM_{2.5}$ measurement data from monitors that are not representative of area-wide air quality but rather of relatively unique micro-scale, localized hot spot, or unique middle-scale impact sites are not eligible for comparison to the annual $PM_{2.5}$ NAAQS but would remain eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS.

EPA noted in the response letter to the TCEQ's 2024 AMNP, that information on monitors that are not suitable for comparison against the annual $PM_{2.5}$ NAAQS, as described in 40 CFR § 58.30, should be identified in the AMNP. TCEQ requested approval in the 2025 AMNP to designate the micro-scale near-road site $PM_{2.5}$ monitor data as not suitable for comparison with the annual $PM_{2.5}$ NAAQS. The DFW area micro-scale near-road $PM_{2.5}$ monitoring site data are adjacent to a unique dominating local $PM_{2.5}$ source. Accordingly, the micro-scale $PM_{2.5}$ measurement data from the Fort Worth California Parkway North monitor should only be eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS.

Design Values and Trends

The North Texas area $PM_{2.5}$ annual and 24-hour $PM_{2.5}$ design values show overall declining trends. North Texas area design values have consistently remained below the 24-hour $PM_{2.5}$ NAAQS of 35 $\mu g/m^3$. Annual mean $PM_{2.5}$ concentrations have exhibited an overall decrease since 2005 with recent design values showing some slight increases and some monitor design values exceeding the 9.0 $\mu g/m^3$ annual 2024 NAAQS. Corsicana Airport and Kaufman $PM_{2.5}$ FEM monitors activated in 2022 have not achieved the required three years of data to calculate a design value; therefore, these monitors are not in the trends graph below and will be assessed in the next FYA. The Dallas Bexar Street $PM_{2.5}$ monitor is non-NAAQS comparable; therefore, this monitor will not be assessed with the *NAAQS Value* and *Data Trend* metrics or shown in the trends graph below. Figure 98 shows the annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends in the North Texas area from 2005 through 2023.



NAAQS - National Ambient Air Quality Standards
µg/m^3 - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Figure 98: North Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2005-2023

Network Evaluation

Table 64 shows how each $PM_{2.5}$ monitor in the North Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Dallas Hinton $PM_{2.5}$ monitors satisfy multiple $PM_{2.5}$ NCore requirements. Convention Center and Fort Worth North $PM_{2.5}$ monitors satisfy $PM_{2.5}$ SLAMS requirements. The Fort Worth California Parkway North monitor satisfies $PM_{2.5}$ near-road requirements. Based on these scores and the area spatial coverage, no changes to the North Texas area $PM_{2.5}$ network are recommended at this time.

Table 64: North Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value**	Source Impact Value	Total Monitor Value	Assessment Value
Convention Center	$PM_{2.5}$ FEM	4	4	2	1	2	13	critical
Corsicana Airport	$PM_{2.5}$ FEM	1	NA	2	1	2	6	medium
Dallas Bexar Street	$PM_{2.5}$ (TEOM)	1	NA	NA	1	2	4	low
Dallas Hinton* **	$PM_{2.5}$ FEM	4	4	2	1	2	13	critical
Dallas Hinton* **	$PM_{2.5}$ FRM	4	4	2	4	2	16	critical
Dallas Hinton* **	$PM_{2.5}$ Speciation	4	NA	NA	4	2	10	critical
Dallas Hinton* **	$PM_{10-2.5}$	4	NA	NA	4	2	10	critical
Denton Airport South	$PM_{2.5}$ FEM	1	4	2	1	2	10	critical
Fort Worth California Parkway North	$PM_{2.5}$ FEM	4	4	3	1	2	14	critical
Fort Worth Northwest	$PM_{2.5}$ FEM	4	4	2	1	2	13	critical
Haws Athletic Center	$PM_{2.5}$ FEM	4	4	2	1	2	13	critical
Kaufman	$PM_{2.5}$ FEM	1	NA	2	1	2	6	medium

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Historical Value based on all years of site $PM_{2.5}$ monitoring
***Dallas Hinton temporarily inactive for relocation
NAAQS – National Ambient Air Quality Standards
NA – not applicable
FEM – federal equivalent method
FRM – federal reference method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
TEOM – tapered element oscillating microbalance, non-NAAQS comparable

Northeast Texas Area

Network History and Current Status

Northeast Texas area $PM_{2.5}$ monitoring began in the late 1990s to early 2000s with the deployment of the Texarkana and Karnack monitors. The Texarkana site relocated to the Texarkana New Boston site with a new AQS identification number in March 2016 to improve site safety. The $PM_{2.5}$ FRM monitor at Texarkana New Boston was upgraded to a $PM_{2.5}$ FEM continuous monitor in January 2019.

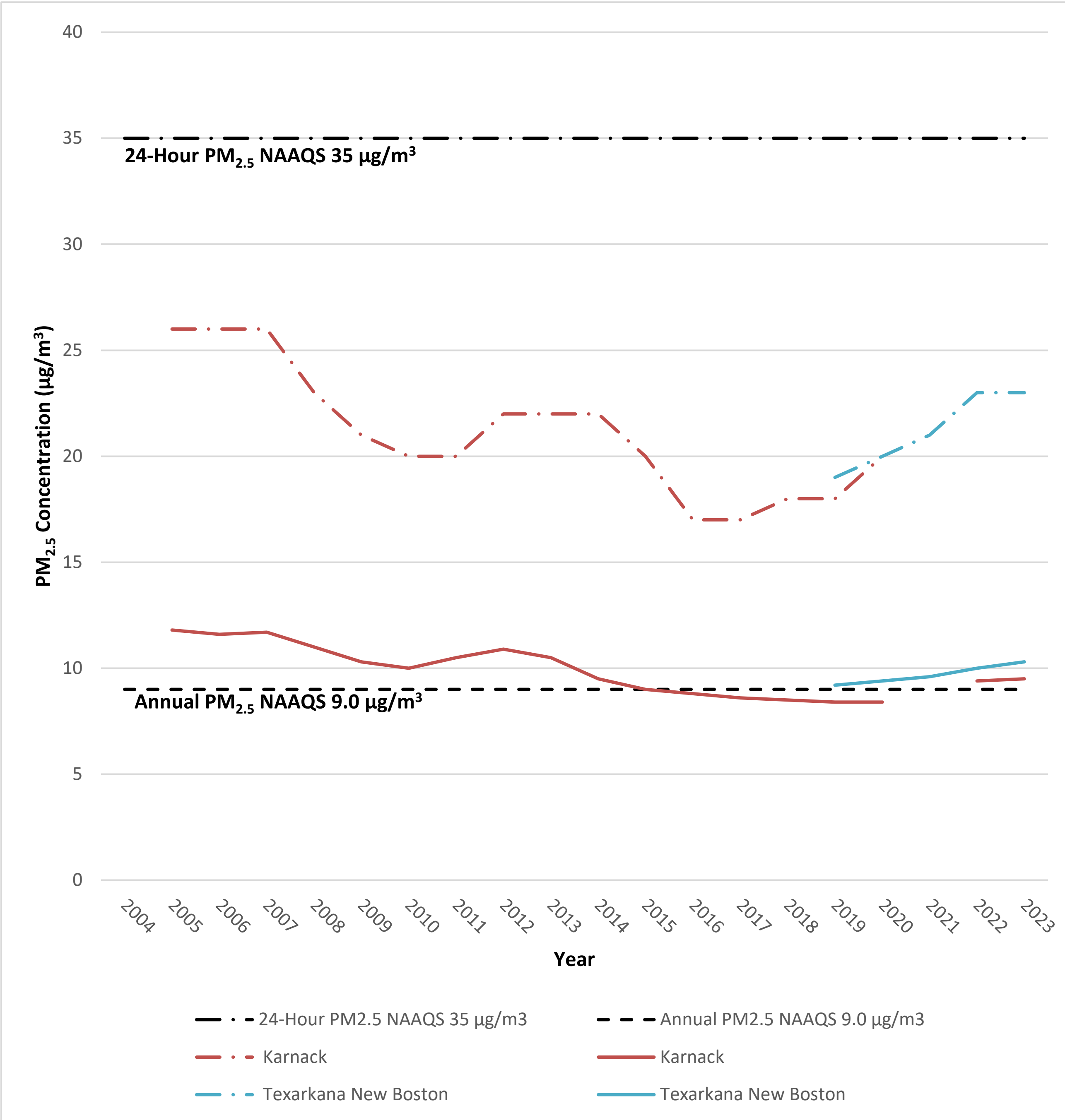
There have been no area changes since the 2020 FYA. As of January 1, 2025, federal standards require a minimum of one $PM_{2.5}$ monitor in the Longview MSA and one $PM_{2.5}$ monitor in the Texarkana MSA. TCEQ meets these requirements with one $PM_{2.5}$ monitor in each area plus a speciation monitor at Karnack. These monitors provide informative data related to background and regional transport and concentrations in populated areas.

Design Values and Trends

The Northeast Texas area $PM_{2.5}$ 24-hour and annual $PM_{2.5}$ design values show overall declining trends. Figure 99 shows the valid 24-hour and annual $PM_{2.5}$ design value trends in the Northeast Texas area from 2005 through 2023. Northeast Texas area design values have consistently remained below the 24-hour $PM_{2.5}$ NAAQS of 35 µg/m^3. Annual $PM_{2.5}$ design values have exhibited an overall decrease since 2005 with recent slight increases and current design values exceeding the 9.0 µg/m^3 annual 2024 NAAQS.

Karnack $PM_{2.5}$ data were impacted by exceptional events in 2022 and 2023. Exceptional events are unusual or naturally occurring events that affect air quality and are not reasonably controllable or preventable. States can request the EPA not consider air quality data affected by an exceptional event when determining if an area met an air quality health standard. TCEQ submitted an exceptional event demonstration to the EPA Region 6, after a 30-day public comment period, in February 2025. The exceptional event demonstration details information on the Karnack $PM_{2.5}$ regulatory significant event days in 2022 and 2023. At the time the FYA was drafted, the EPA has not acted on this exceptional event demonstration. The Karnack exceptional event data are included in the $PM_{2.5}$ graph below for trends analysis. Exceptional event regulations and guidance are provided on EPA's Treatment of Air Quality Data Influenced by Exceptional Events website.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations. Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. Despite not showing a valid design value on the trend graphs, valid data collected during the years not shown are available online at TCEQ TAMIS



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Figure 99: Northeast Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2004-2023

Network Evaluation

Table 65 shows how each $PM_{2.5}$ monitor in the Northeast Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Texarkana New Boston and Karnack $PM_{2.5}$ monitors fulfill $PM_{2.5}$ SLAMS requirements in their respective MSAs and provide valuable spatial coverage and data about inter- and intra-regional transport of $PM_{2.5}$. No changes to the Northeast Texas area $PM_{2.5}$ network are recommended at this time.

Table 65: Northeast Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value	Data Trend Value	Historical Value**	Source Impact Value	Total Monitor Value	Assessment Value
Karnack	$PM_{2.5}$ FEM	4	4	2	3	2	15	critical
Karnack	$PM_{2.5}$ Speciation	1	NA	NA	3	2	6	medium
Texarkana New Boston	$PM_{2.5}$ FEM	4	4	3	2	2	15	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Historical Value based on all years of site $PM_{2.5}$ monitoring
NA – Not applicable
NAAQS – National Ambient Air Quality Standards
FEM – federal equivalent method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Particulate Matter of 10 Micrometers or Less in Diameter

The PM_{10} network in the North Texas area fulfills SLAMS requirements based on CBSA populations and area concentrations. Figure 100 shows the area PM_{10} monitors with a purple square and 2022 point sources with blue circles. PM_{10} monitoring is not required or performed in the Northeast Texas area and is not discussed further in this section. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

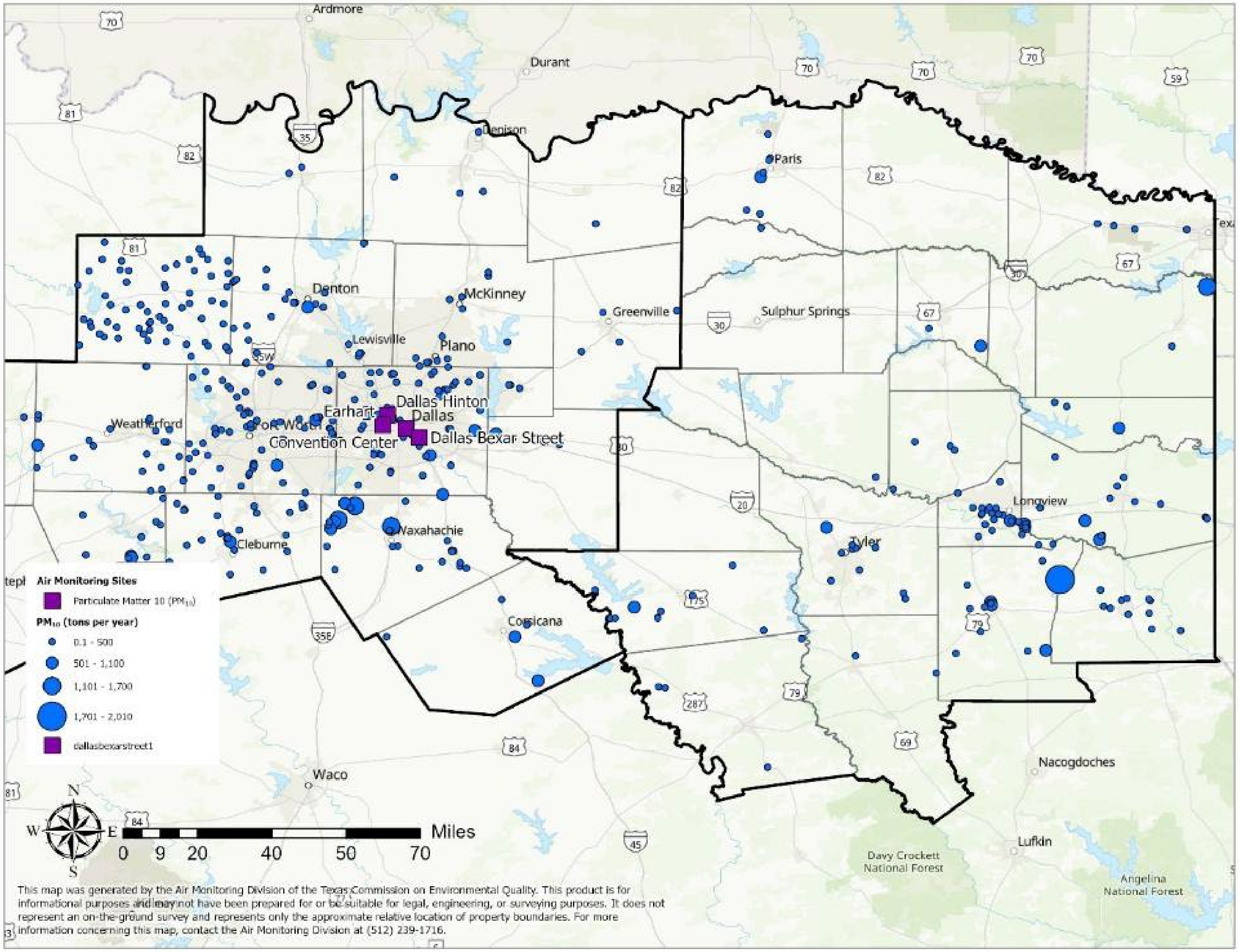


Figure 100: North and Northeast Texas Area Particulate Matter of 10 Micrometers or Less in Diameter Monitors and 2022 Point Sources

North Texas

Network History and Current Status

PM_{10} monitoring began in the North Texas area in the late 1980s with deployment of the Convention Center monitor and expanded in the 2000s to include monitoring at Stage Coach in Fort Worth, Earhart, and Dallas North #2. The PM_{10} monitors at Stage Coach and Dallas North #2 were deactivated in October and December 2018 due to low and declining PM_{10} trends.

Since the 2020 FYA, several PM_{10} network changes occurred. The new Dallas Bexar Street air quality monitoring site and PM_{10} FRM monitor was added near the Dallas southern sector industrial corridor to improve spatial coverage in February 2022. A new PM_{10} FEM continuous monitor was added to Dallas Hinton for spatial coverage and population exposure in June 2023. The Dallas Hinton site and PM_{10} monitor were temporarily deactivated in February 2025 due to the property owner revoking the lease agreement for construction. The Dallas Hinton site is planned for relocation within one mile with no change to the AQS identification number and is expected later in 2025.

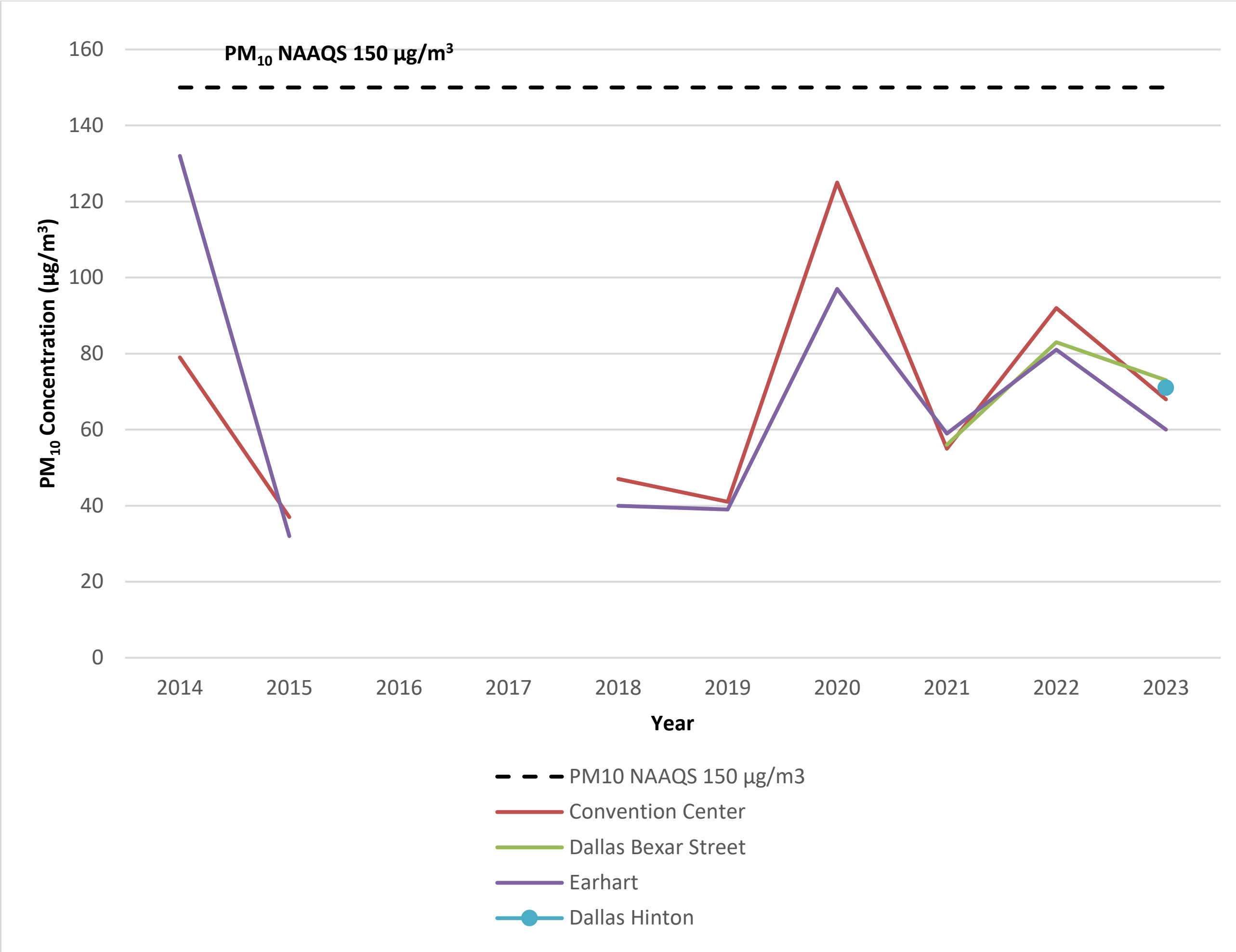
As of January 1, 2025, federal standards require a minimum of four to eight DFW MSA PM_{10} monitors. Currently, PM_{10} is monitored at four sites to measure population exposure and highest concentrations.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 $\mu g/m^3$ standard averaged over three years. No exceedances at any North Texas area sites have been recorded since the last FYA. Figure 101 provides maximum daily PM_{10} concentration trends from 2014 to 2023.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations.

Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. Despite not showing a valid design value on the trend graphs, valid data collected during the years not shown are available online at TCEQ TAMIS.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less in diameter

Figure 101: North Texas Area Particulate Matter of 10 Micrometers or Less in Diameter Maximum Concentration Trends, 2014-2023

Network Evaluation

Table 66 shows how each PM_{10} monitor in the North Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. No sites in the North Texas area exceeded the PM_{10} NAAQS in this assessment. The Convention Center, Dallas Bexar Street, Dallas Hinton, and Earhart PM_{10} monitors satisfy SLAMS requirements. Based on these scores, no changes to the North Texas area PM_{10} network are recommended at this time.

Table 66: North Texas Area Particulate Matter of 10 Micrometers or Less in Diameter Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value *	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Convention Center	4	1	1	4	2	12	critical
Dallas Bexar Street	4	1	3	1	2	11	critical
Dallas Hinton (temporarily inactive for relocation)	4	1	2	1	2	10	critical
Earhart	4	1	1	4	2	12	critical

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Lead

The TCEQ Pb network is designed to meet SLAMS source-oriented monitoring to measure maximum Pb concentrations and SIP maintenance plan requirements. Figure 102 shows the area Pb monitors at sites with a black section. Pb monitoring is not required or performed in the Northeast Texas area and is not discussed further in this section. Appendix A lists active and recently decommissioned Pb monitors, locations, monitoring objectives, and associated spatial scales.

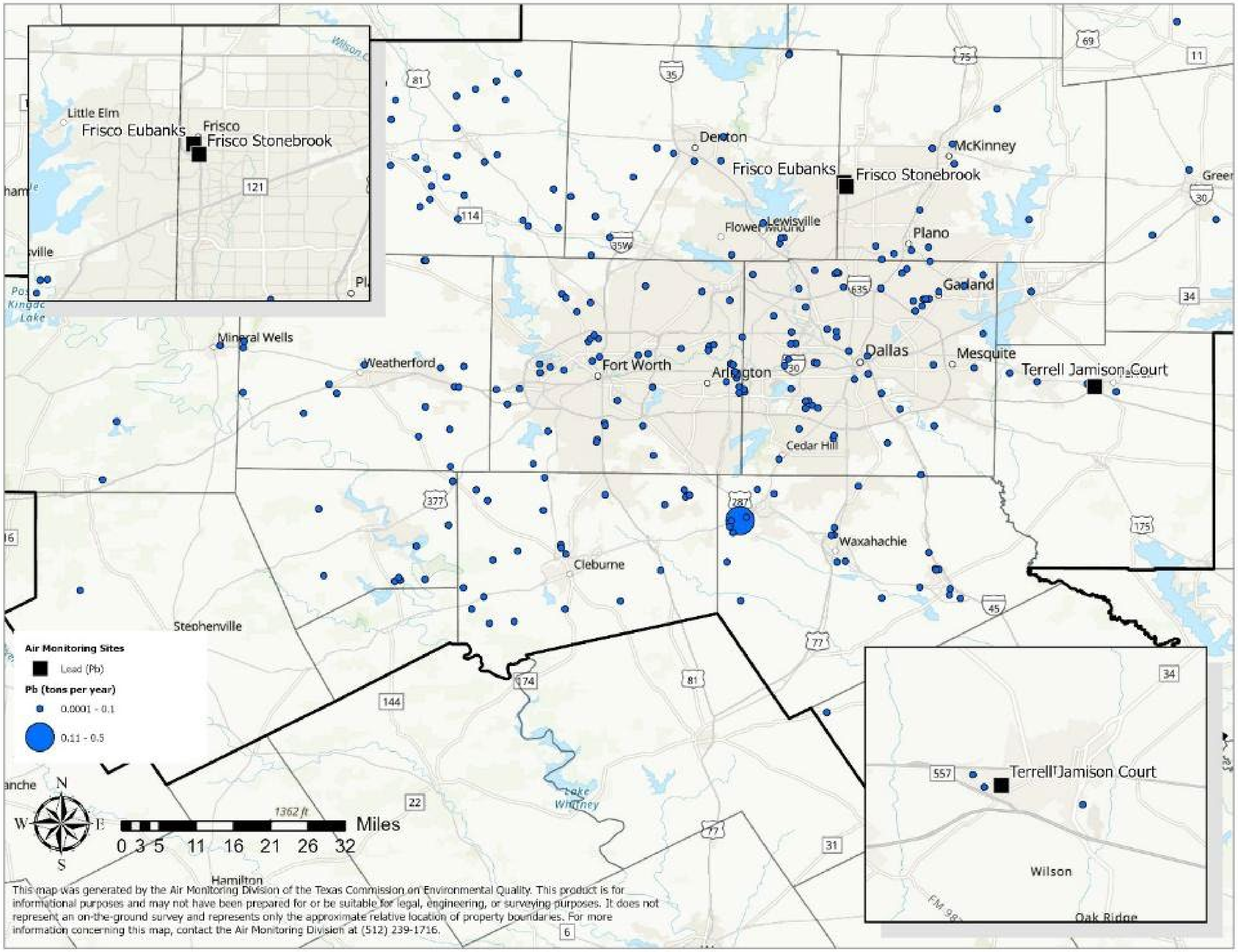


Figure 102: North Texas Area Lead Monitors and 2022 Point Sources

North Texas

Network History and Current Status

North Texas area Pb monitoring began in the mid-1980s at Frisco 5th Street to characterize the area surrounding the Exide Technologies Recycling Center in Frisco. Additional monitoring was added in the mid-1990s at Frisco Eubanks and Frisco 7, and in 2011 at Frisco Stonebrook. The Exide facility permanently shut down at the end of 2012 and was dismantled. The Terrell Temtex monitor was deployed in 2011 to characterize ambient concentrations of Pb around a local metal recycling facility. Also in 2011, a new Pb monitor was deployed at Dallas Hinton to fulfill NCore requirements. The Dallas Hinton Pb monitor was deactivated in December 2016, after the requirement was eliminated in the EPA's final rule (81 FR 17248) published on March 28, 2016, Revisions to the *Ambient Monitoring Quality Assurance and Other Requirements; Final Rule.* The Frisco 5th Street and Frisco 7 Pb monitors were deactivated in December 2018 due to low design value trends of 6% of the standard and a redesignation of the area to attainment. Pb monitoring continues at Frisco Eubanks and Frisco Stonebrook supporting SIP maintenance plans.

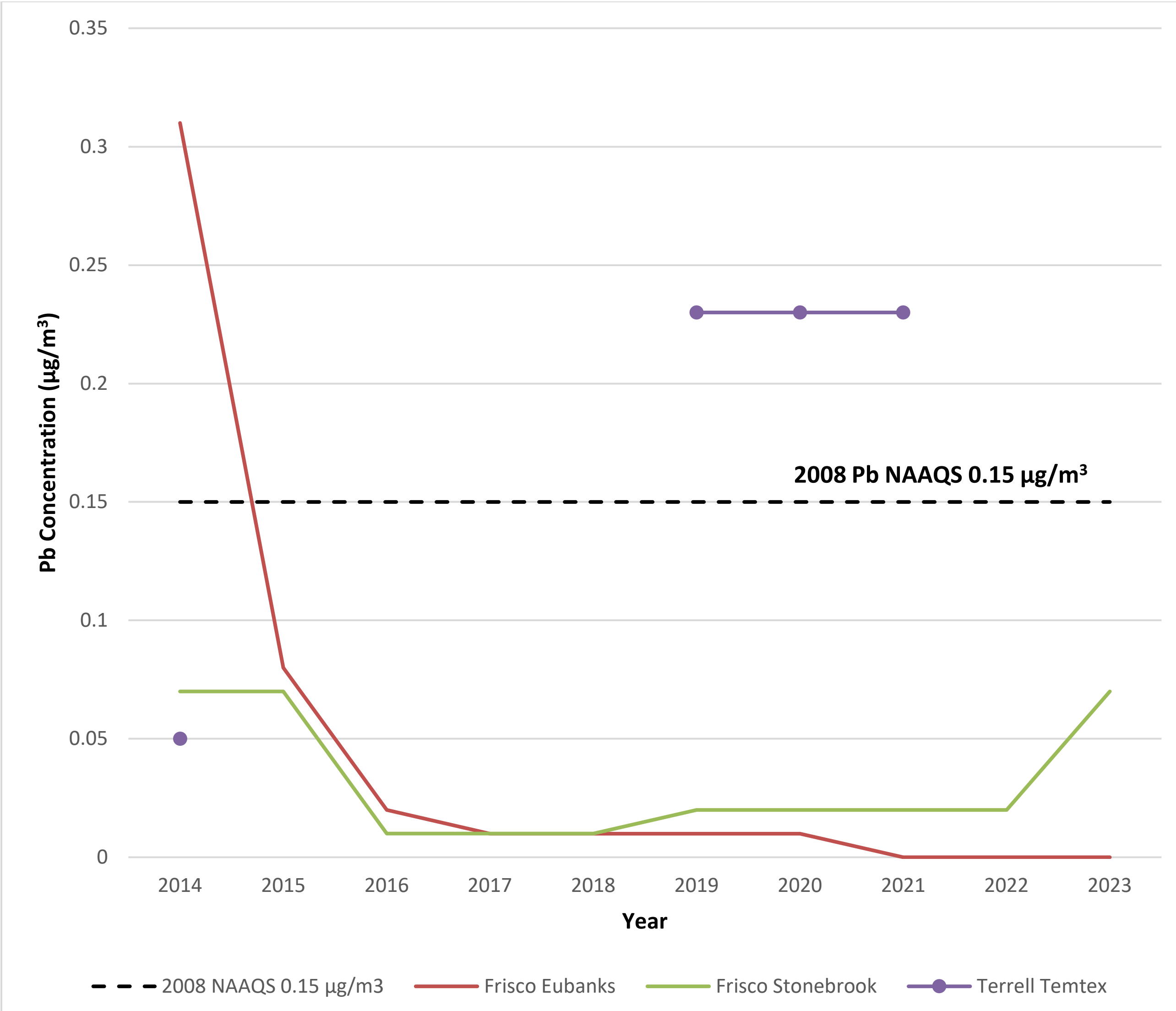
There was one change since the last FYA. TCEQ was required to temporarily deactivate the Terrell Temtex Pb monitor in late May 2022 due to the property owner revoking the site usage agreement for construction. The Terrell Temtex Pb monitor was relocated 0.2 miles south to Terrell Jamison Court in October 2024.

As of January 1, 2025, three monitors are required in locations likely to measure maximum Pb concentrations. TCEQ meets these requirements with three source-oriented Pb monitors.

Design Values and Trends

The North Texas area Pb design values in Collin County indicate continued compliance with the Pb NAAQS and are provided below in Figure 103. The Terrell Temtex 2012-2014 maximum rolling three-month average was 0.05 $\mu g/m^3$, 33% of the 2008 Pb NAAQS; design values for 2015-2018 were affected due to data quality concerns. Terrell Temtex Pb design values for 2022-2023 were incomplete due to the temporary deactivation of the site for relocation.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations. Design value determinations are summarized in the FYA *Pollutants* section. Only complete and valid design values are shown in the trend graphs below. Despite not showing a valid design value on the trend graphs, valid data collected during the years of active monitoring are available online at TCEQ TAMIS.



NAAQS – National Ambient Air Quality Standard
Pb - lead
µg/m³ – micrograms per cubic meter

Figure 103: Rolling Three-Month Average Lead Design Value Trends in the North Texas Area, 2014-2023

Network Evaluation

Table 67 shows how each Pb monitor in the North Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Frisco Eubanks, Frisco Stonebrook, and Terrell Jamison Court monitors satisfy SIP maintenance plan and SLAMS requirements. These monitors are located in areas with current or previous Pb sources and fulfill the original monitoring objectives. Based on these scores, no changes to the North Texas area network are recommended at this time.

Table 67: North Texas Area Lead Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Frisco Eubanks	4	1	1	4	4	14	critical
Frisco Stonebrook	4	1	2	3	4	14	critical
Terrell Jamison Court	4	NA	1	3	4	12	critical

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS Value and Data Trend Values assessed based on available data
NAAQS – National Ambient Air Quality Standards

Photochemical Assessment Monitoring

The VOC and carbonyl network in the North Texas area fulfills requirements for and supports PAMS and enhanced monitoring for O_3. Figure 104 shows the area VOC and carbonyl monitors with green squares and the 2022 point sources with blue circles. Sites with active carbonyl monitoring, listed in Table 68, coincide with VOC monitoring and are not differentiated on the maps. VOC and carbonyl monitoring are not required or performed in Northeast Texas and are not discussed further in this section. Appendix A lists active and recently decommissioned VOC and carbonyl monitors, locations, monitoring objectives, and associated spatial scales.

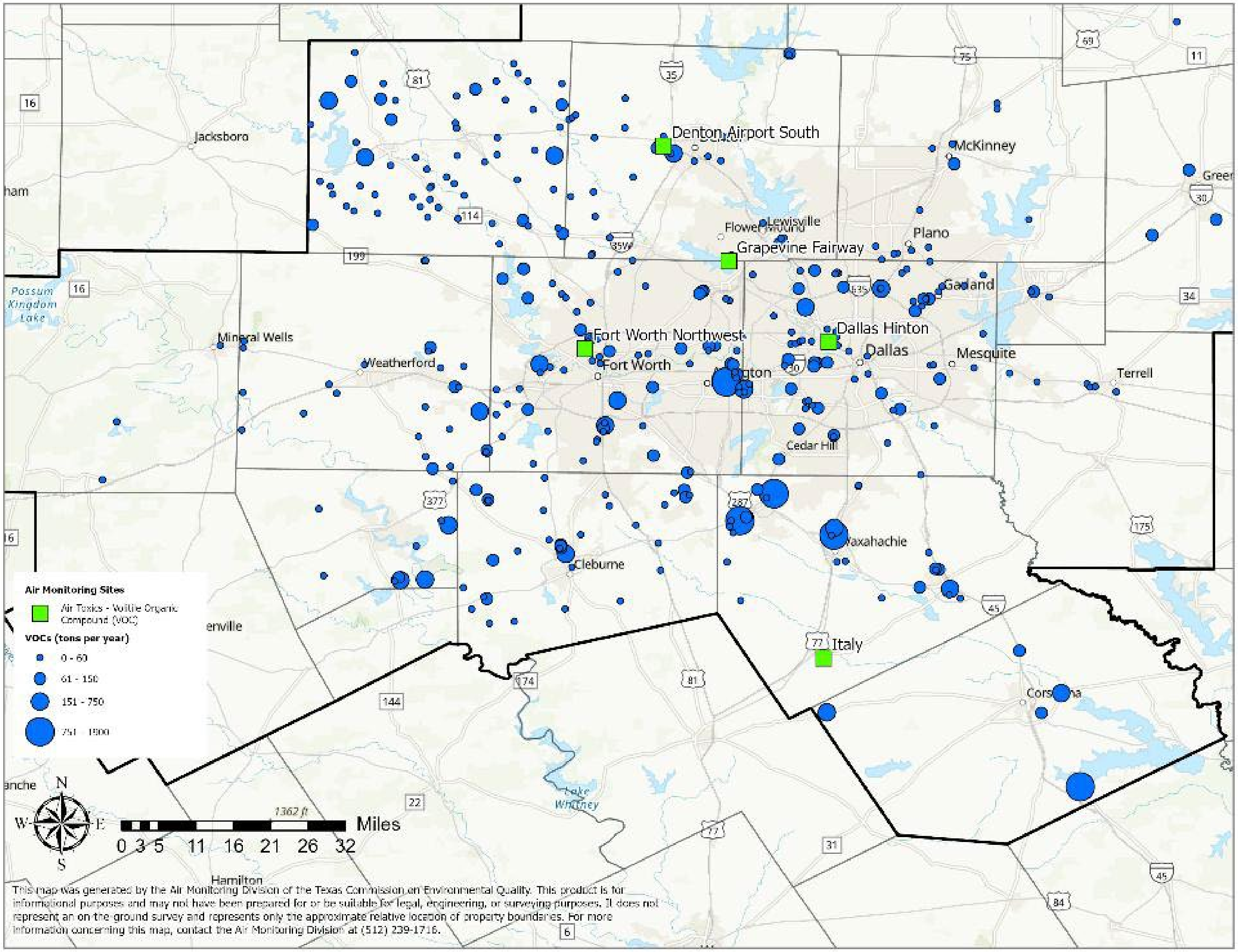


Figure 104: North Texas Area Volatile Organic Compounds and Carbonyl Monitors and 2022 Point Sources

North Texas Area

Network History and Current Status

North Texas area VOC monitoring began in the mid-1990s with continuous VOCs by autoGC at Dallas Hinton to meet PAMS requirements and expanded with a non-continuous canister deployment at Denton Airport South. In the early 2000s, an autoGC was deployed to Fort Worth Northwest to assist with understanding the area's photochemical characteristics. Later in the mid-2000s, VOC canister sampling was added to the Grapevine Fairway and Italy sites to further evaluate O_3 precursors upwind and downwind of the North Texas urban area. North Texas area carbonyl monitoring began in the late 1990s and the early 2000s at Dallas Hinton and Fort Worth Northwest to support PAMS requirements. Since the last FYA, one change occurred. The Dallas Hinton site, autoGC, and carbonyl monitors were temporarily deactivated in February 2025 due to the property owner revoking the lease agreement for construction. The Dallas Hinton site is planned for relocation within one mile with no change to the AQS identification number and is expected later in 2025.

As of January 1, 2025, federal standards require a minimum of one autoGC and one carbonyl sampler for PAMS. TCEQ exceeds requirements with two autoGCs, three VOC by canister monitors, and two carbonyl monitors.

Design Values and Trends

Design values and associated trends are not applicable to VOCs and carbonyl monitoring. Monitoring objectives for photochemical assessment monitoring of O_3 precursors include creating a representative VOC and carbonyl ambient air database useful in photochemical grid modeling, developing emission control strategies, and furthering the understanding of pollution transport mechanisms to aid in reaching attainment designations. These data are part of TCEQ's Enhanced Monitoring Plan detailed in FYA Appendix D.

Network Evaluation

Table 68 shows how each VOC and carbonyl monitor in the North Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The Dallas Hinton autoGC and carbonyl monitors satisfy PAMS requirements. The remaining autoGCs, carbonyl monitor, and VOC canister monitors provide valuable data supporting enhanced monitoring for O_3. Monitors are located in areas of interest and are meeting the original monitoring objectives. Based on these scores, no changes to the North Texas area network are recommended at this time.

Table 68: North Texas Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Dallas Hinton (temporarily inactive for relocation)	Carbonyl	4	NA	NA	4	2	10	critical
Dallas Hinton (temporarily inactive for relocation)	Speciated VOC (AutoGC)	4	NA	NA	4	2	10	critical
Denton Airport South	Speciated VOC (Canister)	1	NA	NA	4	2	7	medium
Fort Worth Northwest	Carbonyl	1	NA	NA	4	2	7	medium
Fort Worth Northwest	Speciated VOC (AutoGC)	1	NA	NA	4	2	7	medium
Grapevine Fairway	Speciated VOC (Canister)	1	NA	NA	4	2	7	medium
Italy	Speciated VOC (Canister)	1	NA	NA	4	2	7	medium

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
AutoGC – automated gas chromatograph
NA – not applicable
NAAQS – National Ambient Air Quality Standards
VOC – volatile organic compound

Panhandle and West Texas Area Evaluation

(Abilene, Amarillo, Lubbock, Midland, Odessa, San Angelo, and Wichita Falls Areas)

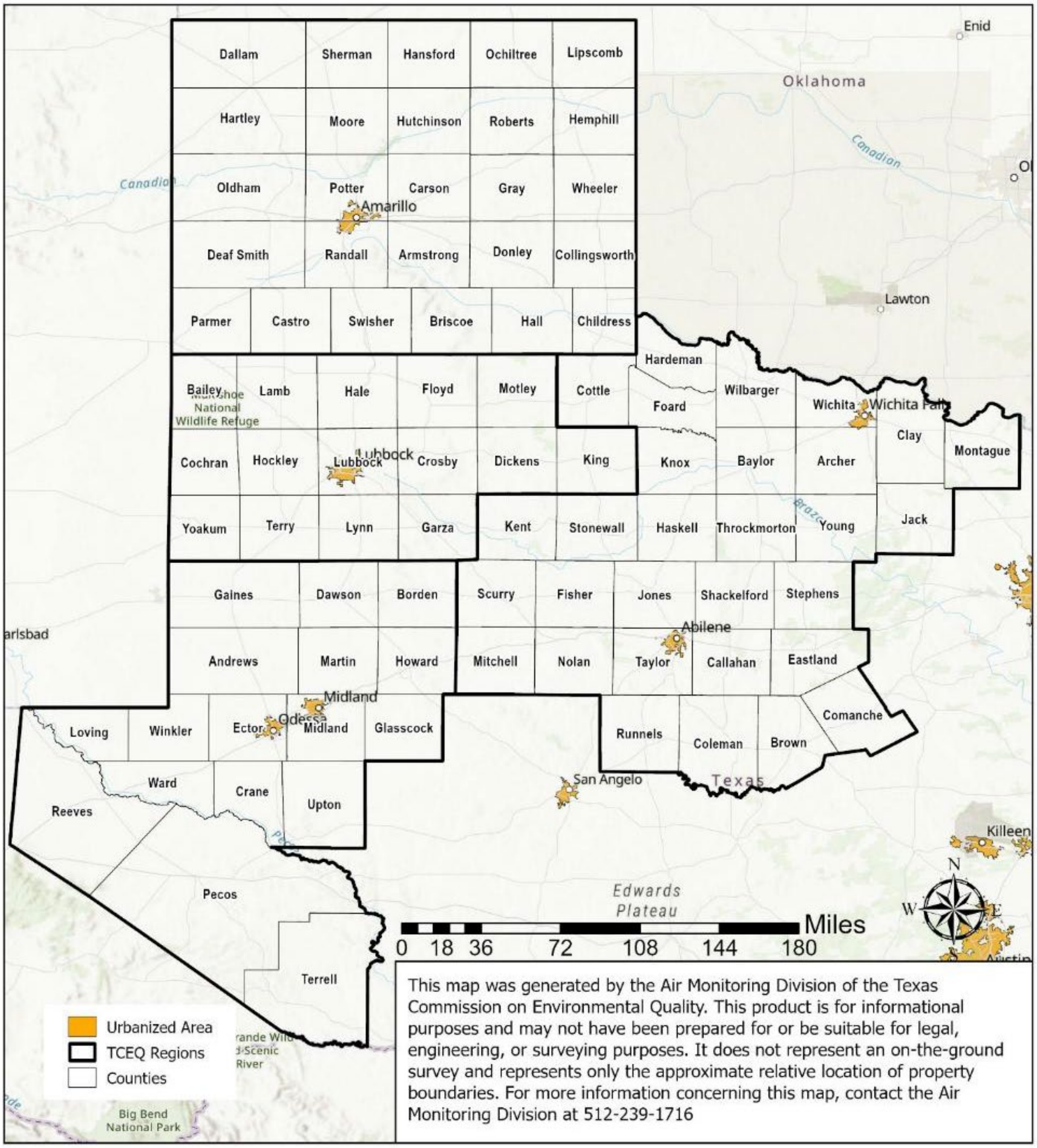


Figure 105: Panhandle and West Texas Area Counties and Urban Areas

Panhandle and West Texas Area Characteristics and Background

Population and Monitoring Requirements

The Panhandle and West Texas area is comprised of five TCEQ Regional Areas: Region 1 Amarillo, Region 2 Lubbock, Region 3 Abilene, Region 7 Midland, and Region 8 San Angelo. There are seven major CBSAs that include multiple counties in addition to counties that are not in CBSAs or micropolitan statistical areas. Monitoring is also conducted in two micropolitan statistical areas. TCEQ Regions, CBSAs, and associated counties are summarized below for areas containing ambient air monitors. Pollutants that are not required or monitored in these areas are not discussed in this section.

TCEQ Region 1 – Amarillo

- Amarillo CBSA: Armstrong, Carson, Oldham, Potter, and Randall Counties
- Borger micropolitan statistical area includes Hutchinson County

TCEQ Region 2 – Lubbock

- Lubbock CBSA: Cochran, Crosby, Garza, Hockley, Lubbock, and Lynn Counties

TCEQ Region 7 – Midland

- Odessa CBSA: Ector County
- Big Spring micropolitan statistical area includes Howard County

The Texas Demographics Center projects that the combined population of the seven Panhandle and West Texas area CBSAs will exceed 1.4 million persons in 2025. The Panhandle and West Texas area 2030 projection estimates a 4% population increase from 2025 with the largest growth in the Midland and Odessa areas at 6% each. Table 69 shows the Panhandle and West Texas CBSA population projections. Figure 106 and Figure 107 illustrate the population densities across the Panhandle and West Texas urban areas with active sites and monitors and wind roses. Population density is illustrated by square mile for each area zip code. Population densities were obtained from TDC Population Density in Texas, 2022 data using the 2018-2022 five-year population estimates (latest available data at the time the FYA was drafted).

Table 69: North and Northeast Texas Area Population Projections

Core Based Statistical Area (CBSA)	2020 Census Count	2025	2030	Change (2020 - 2025)	Change (2025-2030)
Abilene	176,579	181,778	186,362	3%	3%
Amarillo	268,691	274,380	279,707	2%	2%
Lubbock	351,268	370,183	387,313	5%	5%
Midland	175,220	186,670	198,030	7%	6%

Core Based Statistical Area (CBSA)	2020 Census Count	2025	2030	Change (2020 - 2025)	Change (2025-2030)
Odessa	165,171	175,276	185,716	6%	6%
San Angelo	121,516	125,879	130,003	4%	3%
Wichita Falls	148,128	147,959	147,119	0%	-1%
CBSA Totals	1,406,573	1,462,125	1,514,250	4%	4%

Minimum monitoring network design requirements under 40 CFR Part 58, Appendix D are evaluated annually in TCEQ's AMNP based on the latest available census population estimates.

The Amarillo CBSA is required to have the following:

- one SO_2 monitor, and
- zero to one PM_{10} monitor.

The Lubbock CBSA is required to have the following:

- one O_3 monitor, and
- zero to one PM_{10} monitor.

The Big Spring micropolitan statistical area is required to have one SO_2 monitor.

The Borger micropolitan statistical area is required to have one SO_2 monitor.

TCEQ evaluated population projection data illustrated in Table 2 and Table 69 against the Panhandle and West Texas area minimum monitoring design requirements. No Panhandle and West Texas area CBSA monitoring requirements would increase based on the projected population assessment, with one exception. The Lubbock CBSA requires one O_3 monitor based on the 2025 Census population estimate. TCEQ meets and exceeds the monitoring requirements noted above with the planned Lubbock O_3 monitor and the monitors illustrated in Figure 106 and Figure 107.

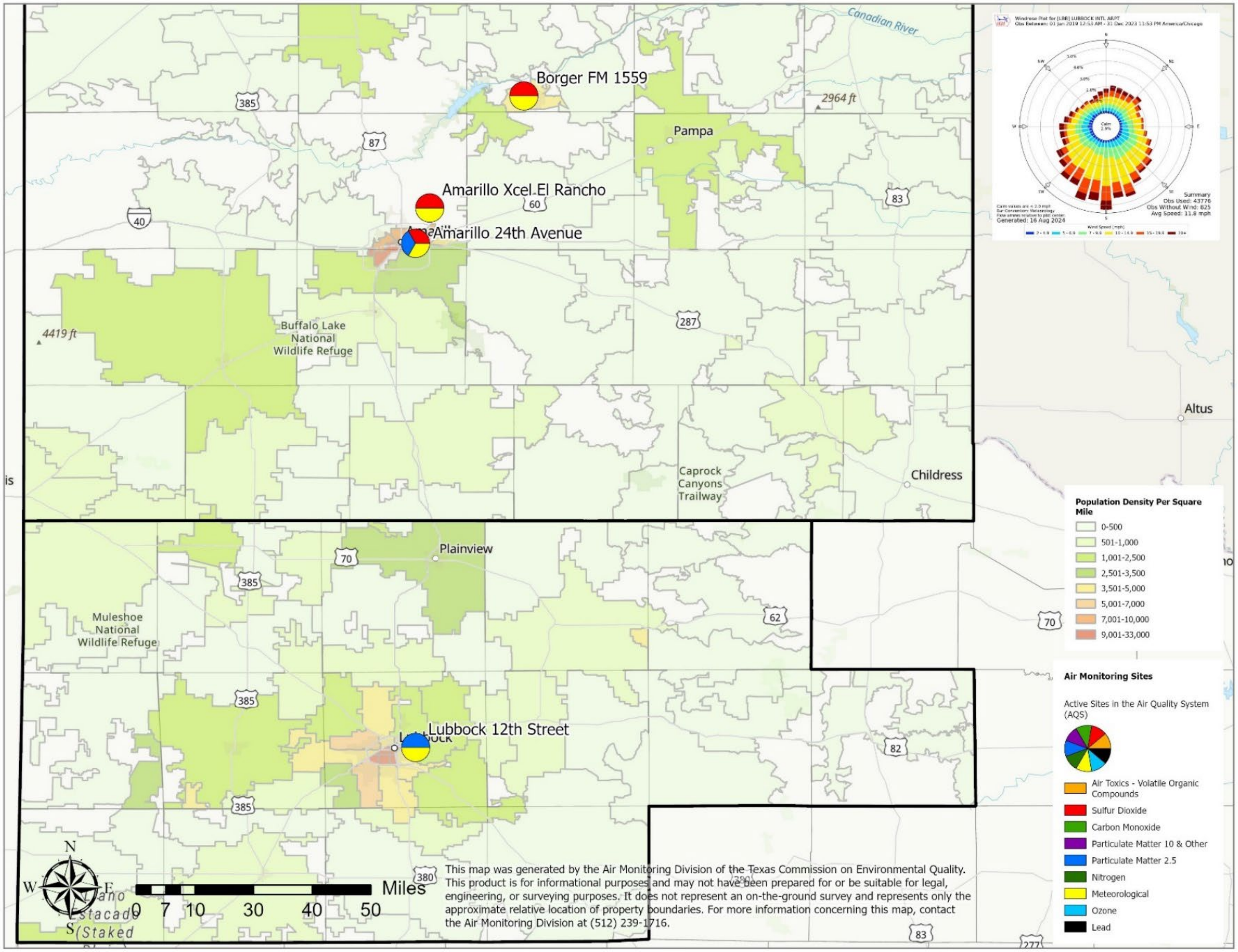


Figure 106: Panhandle Texas Area Active Sites and Monitors, Population Density, and Wind Rose

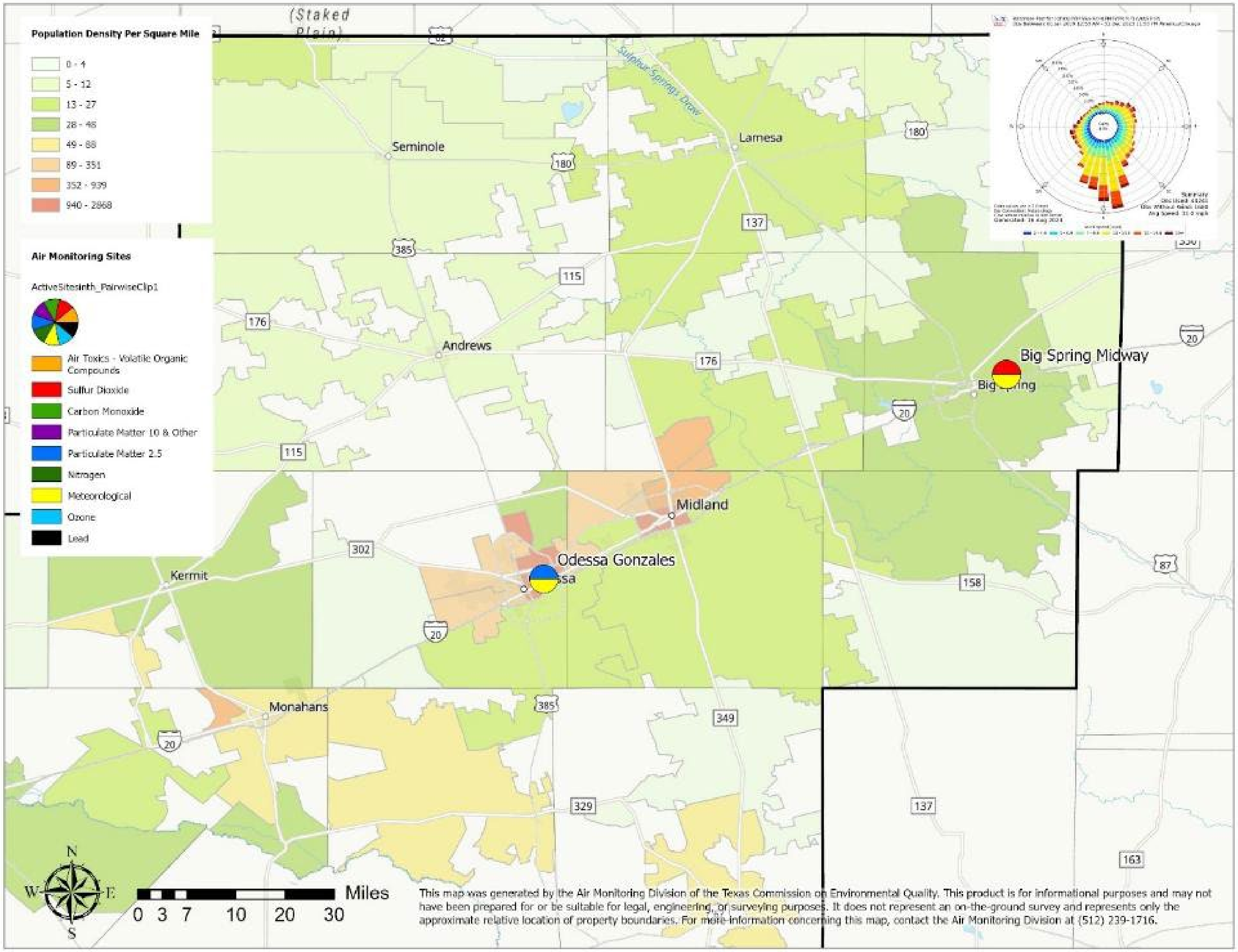


Figure 107: West Texas Area Active Sites and Monitors, Population Density, and Wind Rose

Wind Patterns

Figure 105 illustrates the counties included in the Texas Panhandle and West Texas area evaluation. Figure 106 and Figure 107 illustrate typical Panhandle and West Texas area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2019 to 2022. Figure 106 wind rose was derived from the Lubbock Preston Smith International Airport. Figure 107 wind rose was derived from Odessa-Schlemeyer Field. Wind data indicate the predominant flow is primarily from the south and includes winds from the south-southwest to the south-southeast in the Lubbock and Amarillo areas and mostly from the south in the Odessa and Midland areas. The plains, tablelands, and plateaus of the Panhandle and West Texas area provide few wind breaks, allowing pollutant transport across the entire region.

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Data from EI source categories show the following for the Panhandle and West Texas area:

- The majority of CO is emitted from on-road and non-road mobile sources in the Amarillo, Lubbock, and Abilene areas, from area sources in Midland, and from area and on-road mobile sources in the San Angelo area.
- NO_x emissions are predominately from point sources in the Amarillo and Lubbock areas, from on-road mobile sources, area sources, and point sources in the Abilene area, and from area sources in the Midland and San Angelo areas.
- Area sources account for the majority of VOC, PM_{10}, and $PM_{2.5}$emissions.
- Point sources are the primary contributors of SO_2 emissions for the Amarillo, Lubbock, and Abilene areas, while area sources contribute the most SO_2 in the Midland and San Angelo areas.
- Non-road mobile sources contribute the majority of the total Pb emissions.

EI source data for the Panhandle and West Texas area are detailed in Table 70. This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 70: 2020 Panhandle and West Texas Area Emissions Inventory in Tons Per Year

Area	Source	VOC	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R1 Amarillo	Point	3,574	12,951	10,434	1,700	961	17,846	0.21
R1 Amarillo	Area	55,392	7,108	9,679	146,542	17,518	135	0.00
R1 Amarillo	On-Road Mobile	1,385	8,673	24,131	479	222	19	0.00
R1 Amarillo	Non-Road Mobile	1,320	8,385	16,478	380	367	22	0.42
R2 Lubbock	Point	779	7,387	4,262	1,547	505	4,903	0.02

Area	Source	VOC	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R2 Lubbock	Area	44,222	4,055	7,051	120,407	16,429	2,670	0.00
R2 Lubbock	On-Road Mobile	1,012	3,912	17,899	285	109	13	0.00
R2 Lubbock	Non-Road Mobile	982	3,158	14,544	266	257	22	0.38
R3 Abilene	Point	1,467	7,648	2,543	1,438	986	1,425	0.04
R3 Abilene	Area	63,255	8,387	13,334	110,595	16,046	704	0.00
R3 Abilene	On-Road Mobile	1,578	8,843	29,299	471	223	22	0.00
R3 Abilene	Non-Road Mobile	2,117	5,336	23,722	331	319	50	0.53
R7 Midland	Point	8,252	18,818	10,155	1,220	995	8,486	0.01
R7 Midland	Area	668,800	52,700	59,047	104,192	12,915	18,022	0.00
R7 Midland	On-Road Mobile	1,377	8,137	28,292	521	214	24	0.00
R7 Midland	Non-Road Mobile	1,393	8,557	14,641	240	231	33	0.29
R8 San Angelo	Point	1,358	2,996	1,397	110	95	112	0.00
R8 San Angelo	Area	58,734	9,024	8,537	27,077	3,706	664	0.00
R8 San Angelo	On-Road Mobile	506	2,742	9,863	153	70	7	0.00
R8 San Angelo	Non-Road Mobile	566	1,027	6,085	60	58	10	0.09

CO – carbon monoxide
NO_x – oxides of nitrogen
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
PM_{10} – particulate matter of 10 micrometers or less in diameter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

The Panhandle and West Texas area is affected by the same seasonal pollutant transport that influences air quality in the North, Coastal, and Far West Texas areas. Regional blowing dust from the White Sands area of New Mexico, eastern New Mexico, and local Texas Panhandle areas can be transported behind strong cold fronts. These regional-scale dust storms occur mainly in the spring but can develop from late October through the winter and spring into early June. The origin and tracks of these storms can be characterized using satellite imagery and correlated with increased local $PM_{2.5}$ data during these events.

Smoke events that affect the Panhandle and West Texas area are typically prevalent in the summer months. Accumulated smoke and haze from the eastern United States generally arrive in late spring through early fall, while smoke from agricultural burning in North and Central America arrives in April and May. Like dust storms, these events are also often visible on satellite imagery and can be associated with discernable increases in local $PM_{2.5}$.

Regional Air Quality

Regional air quality history and current status were evaluated to determine monitoring needs, including the continued need for monitoring during maintenance periods after an area has met all air quality standards. Details on the Panhandle and West Texas area's current and historical air quality designations for the six criteria pollutants are detailed on TCEQ's SIP webpage.

Criteria Pollutants

As of January 1, 2025, all Panhandle and West Texas geographical areas are designated attainment/unclassifiable for all current NAAQS, with the exception of Potter, Hutchinson, and Howard Counties.

2010 One-Hour SO_2

In June 2010, the primary SO_2 NAAQS was revised to a one-hour standard of 75 ppb. EPA completed initial designations in July 2013 and no areas in Texas were designated at that time. A March 2015 consent decree between the Sierra Club and EPA set deadlines for EPA to complete designations for the one-hour SO_2 NAAQS.

Potter County was designated as unclassifiable for the 2010 primary SO_2 NAAQS. On October 21, 2020, TCEQ adopted an agreed order between TCEQ and Xcel Energy to support attainment and maintenance of the 2010 SO_2 NAAQS in Potter County.

In March 2021, EPA designated portions of Howard and Hutchinson Counties as nonattainment for the 2010 one-hour SO_2 NAAQS (86 FR 16055). TCEQ adopted the Howard County Attainment Demonstration SIP Revision for the 2010 One-Hour SO_2 NAAQS and Hutchinson County Attainment Demonstration SIP Revision for the 2010 One-Hour SO_2 NAAQS on October 5, 2022. All other Panhandle and West Texas region counties were designated as attainment/unclassifiable for the 2010 primary SO_2 NAAQS.

Panhandle and West Texas Monitoring Network Evaluation

Ozone

The OMB added three counties to the Lubbock MSA, subsequently increasing the 2023 U.S. Census Bureau population estimate to over 350,000. The 2023 Lubbock MSA estimated population requires the addition of an O_3 monitor. TCEQ is evaluating Lubbock MSA O_3 monitor placement options, including utilization of the existing Lubbock 12th Street air monitoring site. The Lubbock MSA O_3 monitor is expected to be activated by December 31, 2026.

Sulfur Dioxide

The SO_2 network in the Panhandle and West Texas area fulfills 2015 DRR requirements based on characterizing air quality around sources emitting 2,000 tpy or more of SO_2.

Figure 108 shows SO_2 monitor locations at sites in the Amarillo, Big Spring, and Borger areas with red squares and the 2022 point sources with blue circles. SO_2 monitoring is not required or performed in the Abilene, Lubbock, Midland, Odessa, San Angelo, or Wichita Falls MSAs, and these areas are not discussed further in this section. Appendix A lists active SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

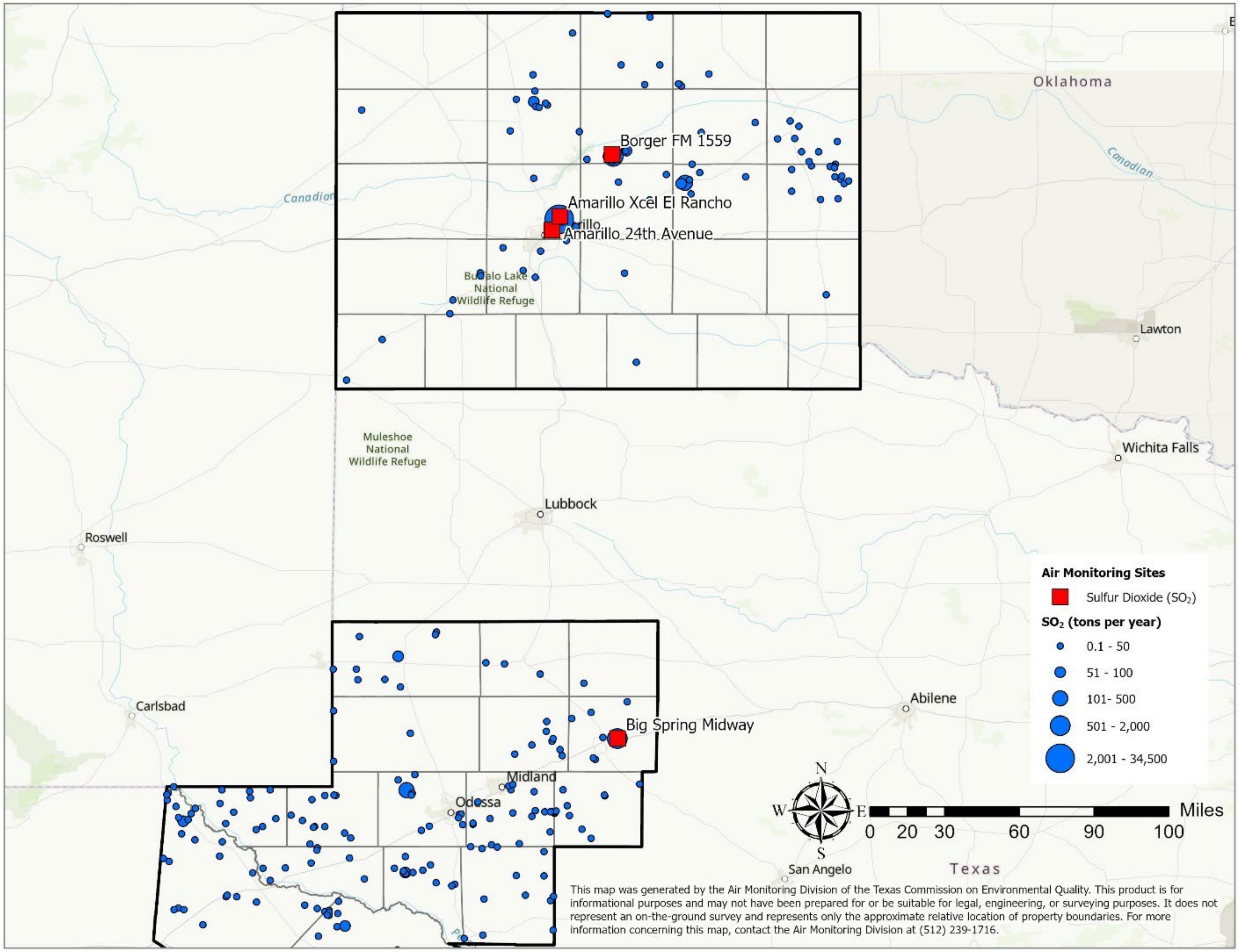


Figure 108: Panhandle and West Texas Area Sulfur Dioxide Monitors and 2022 Point Sources

Panhandle and West Texas Area

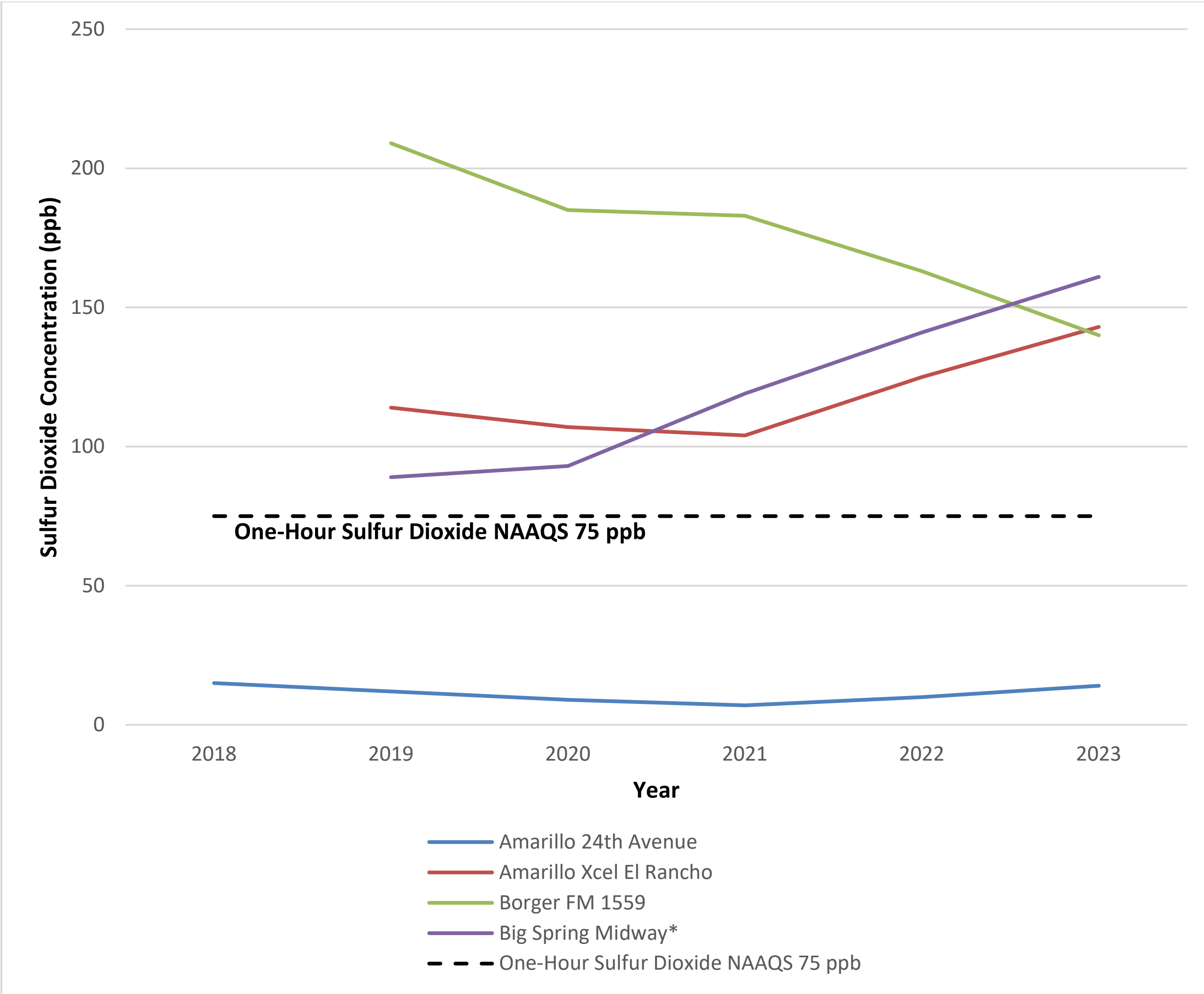
Network History and Current Status

Panhandle and West Texas area SO_2 monitoring began in October 2013 with the deployment of the Amarillo 24th Avenue monitor. The Amarillo 24th Avenue SO_2 monitor, located in northeast Amarillo near the edge of a residential area, was sited to measure SO_2 concentrations in a highly populated area. Title 40 CFR § 51.1202 (the DRR) required air agencies to characterize air quality around applicable sources that emitted 2,000 tpy or more of SO_2 in the latest emissions inventory year of 2014. TCEQ identified three sources in the Panhandle and West Texas areas that were selected for SO_2 air quality characterization by ambient air monitoring. New source-oriented SO_2 monitoring sites were added at Amarillo Xcel El Rancho (Potter County), Big Spring Midway (Howard County), and Borger FM 1559 (Hutchinson County) in late 2016. As of January 1, 2025, federal standards require a minimum of three area SO_2 monitors related to the DRR. The TCEQ exceeds requirements with four federal SO_2 monitors.

Design Values and Trends

Amarillo 24th Avenue SO_2 design values have remained stable since the first valid design value in 2018 and are currently less than 50% of the 2010 one-hour SO_2 NAAQS of 75 ppb. The remaining SO_2 sites show design value trends in exceedance of the standard. The Amarillo Xcel El Rancho, Big Spring Midway, and Borger FM 1559 SO_2 monitors completed three-years of data required for design value calculation in 2019. Big Spring Midway SO_2 design values were invalid for 2021 and 2022 due to quality assurance issues. Figure 109 shows the annual one-hour SO_2 99th percentile concentrations for the four sites in the Panhandle and West Texas area. Invalid design values were included for trends assessments.

TCEQ uses multiple levels of checks and measures to ensure its air monitoring data is of the utmost quality. Data that do not meet the required sampling and/or quality control checks or audits may be invalidated. Invalidated data (also considered data loss) may be short-term (for example less than three days) or longer depending on each unique monitor situation and associated quality system. Design values can be impacted by these periods of data loss due to instrument quality assurance issues (invalid data), site logistical issues, such as power interruptions, or site relocations. Design value determinations are summarized in the FYA *Pollutants* section. The valid data surrounding the data loss incident are available and important to understanding the area's air quality characterization. Air monitoring data discussed in this evaluation are available online at TCEQ TAMIS.



*Big Spring Midway design value invalid for 2021 and 2022
FM – farm to market
NAAQS – National Ambient Air Quality Standard
ppb – parts per billion

Figure 109: Panhandle and West Texas Area One-Hour Sulfur Dioxide Design Value Trends, 2018-2023

Network Evaluation

Table 71 shows how each SO_2 monitor in the Panhandle and West Texas area was evaluated using the scoring system described in the *Evaluation Methods* section. The DRR source-oriented monitors at Amarillo Xcel El Rancho, Big Spring Midway, and Borger FM 1559 are required to meet SO_2 DRR designations. The remaining SO_2 monitor at Amarillo 24th Avenue is sited to measure SO_2 levels in populated areas and continues to meet its monitoring objective. Although the Assessment Value for the SO_2 monitor at Amarillo 24th Avenue is medium, this monitor provides valuable data for the area. No changes to the Panhandle and West Texas area SO_2 network are recommended at this time.

Table 71: Panhandle and West Texas Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Amarillo 24th Avenue	1	1	2	3	3	10	medium
Amarillo Xcel El Rancho	4	4	3	2	4	17	critical
Big Spring Midway	4	4	3	2	4	17	critical
Borger FM 1559	4	4	1	2	4	15	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
FM – farm to market
NAAQS – National Ambient Air Quality Standard

Particulate Matter of 2.5 Micrometers or Less in Diameter

The $PM_{2.5}$ network in the Panhandle and West Texas area measures ambient concentrations of $PM_{2.5}$ in populated areas and aids in evaluating exceptional events. Figure 110 shows the Amarillo, Lubbock, and Odessa area $PM_{2.5}$ monitors with a blue square and 2022 point sources with yellow circles. $PM_{2.5}$ monitoring is not required or performed in the Abilene, Midland, San Angelo, or Wichita Falls MSAs, and these areas are not discussed further in this section. Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

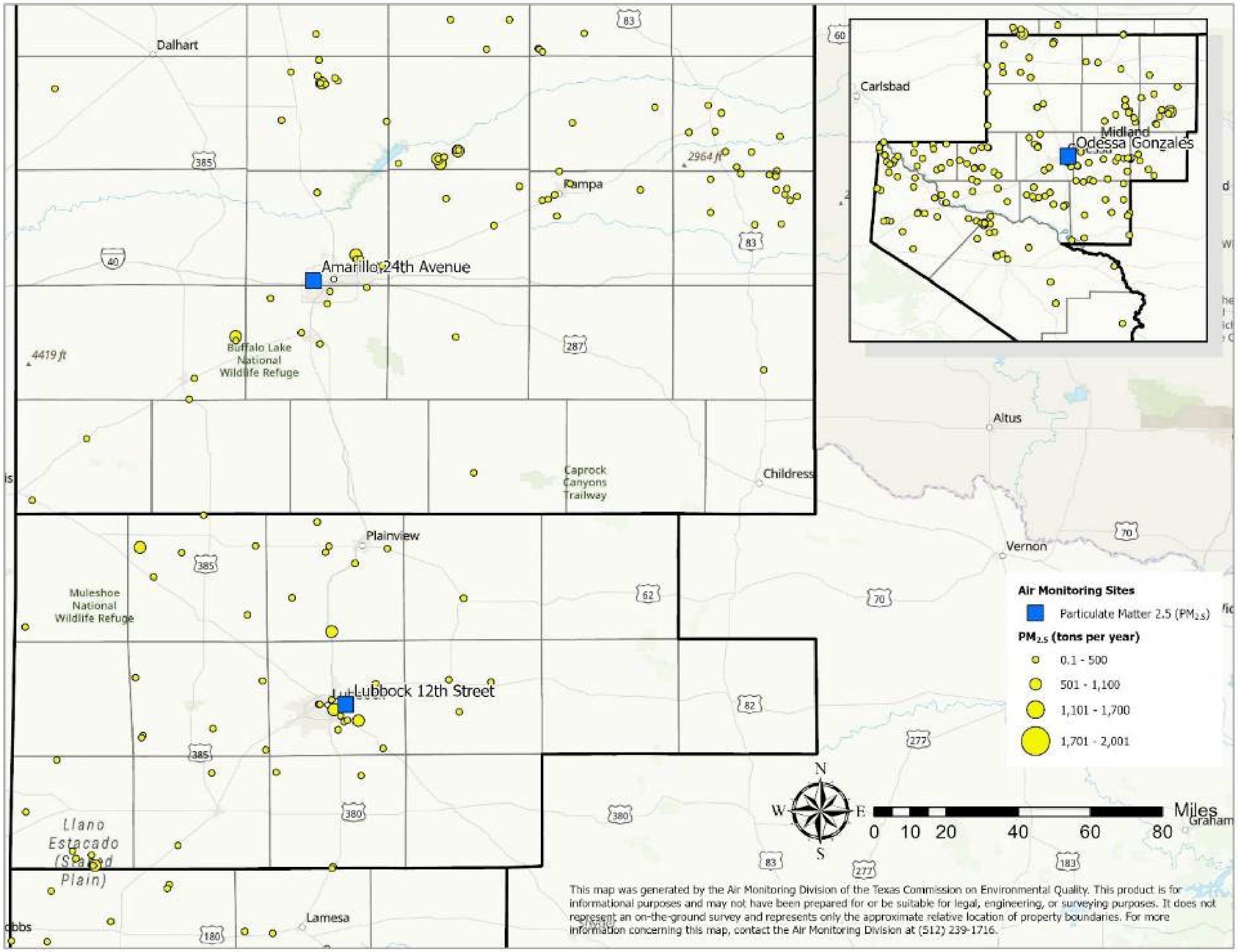


Figure 110: Panhandle and West Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter Monitors and 2022 Point Sources

Panhandle and West Texas Area

Network History and Current Status

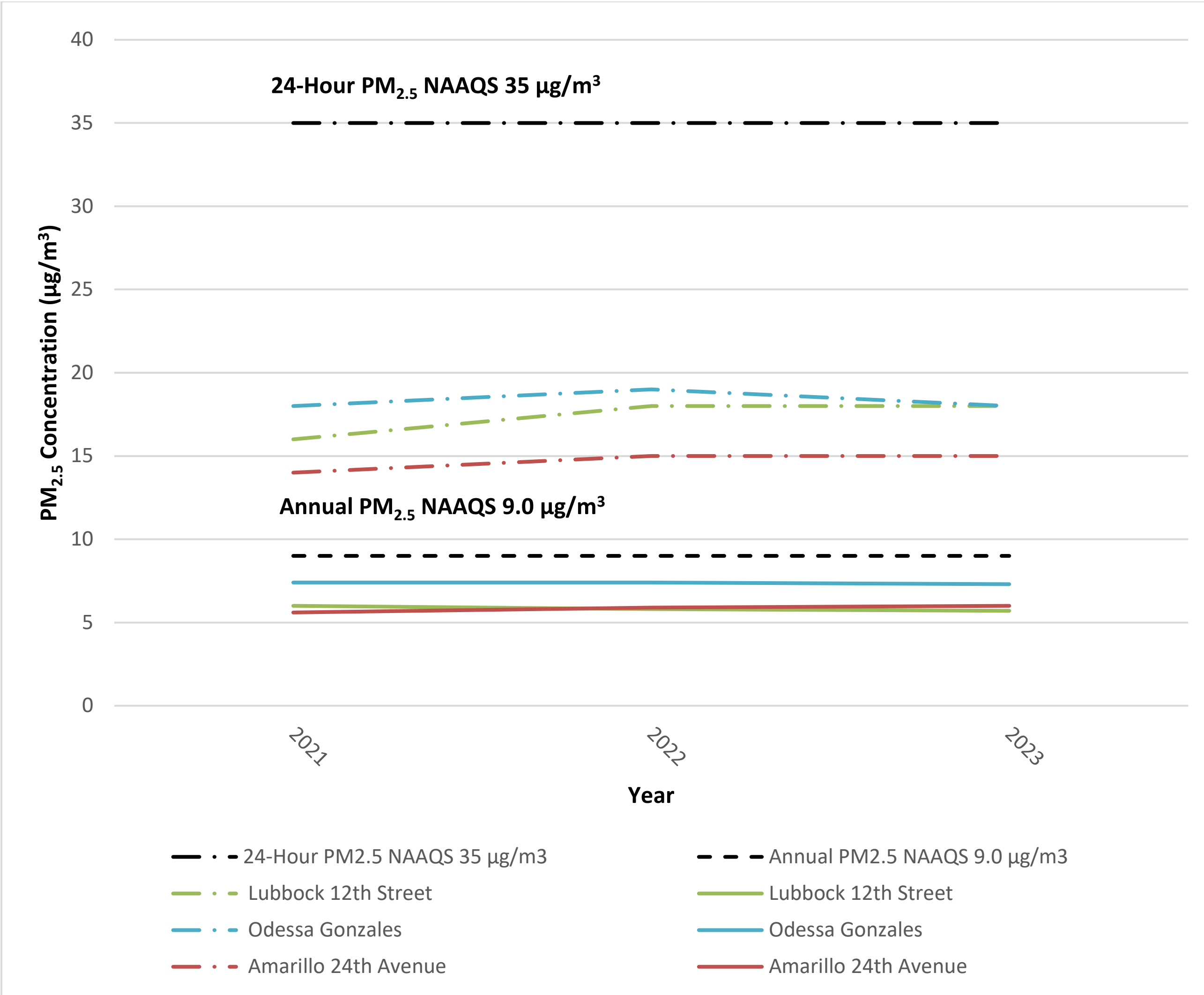
Panhandle and West Texas area $PM_{2.5}$ monitoring began in the early 2000s with the deployment of continuous $PM_{2.5}$ monitors at Odessa-Hays Elementary School and Odessa Gonzales in 2000 and 2002, respectively, to improve spatial coverage in West Texas and provide data representative of ambient conditions in populated areas. A continuous non-NAAQS comparable $PM_{2.5}$ monitor was deployed at the Amarillo A&M site in 2005 to measure ambient concentrations in populated areas of Amarillo and evaluate the effects of regional dust storms in the Texas Panhandle. A non-NAAQS comparable $PM_{2.5}$ continuous monitor was deployed at the Lubbock-$PM_{2.5}$ site in 2008 with similar monitoring objectives. The Lubbock-$PM_{2.5}$ air monitoring site and non-NAAQS comparable $PM_{2.5}$ monitor were temporarily deactivated for relocation in November 2014 due to the property owner revoking the site usage agreement. The Lubbock-$PM_{2.5}$ air monitoring site and continuous non-NAAQS comparable $PM_{2.5}$ monitor was relocated to the Lubbock 12th Street site in August 2016 with a new AQS identification number.

The Odessa-Hays Elementary School non-NAAQS comparable $PM_{2.5}$ monitor was deactivated in December 2016, due to low measured concentrations and additional $PM_{2.5}$ monitoring coverage in the Odessa area. In mid-2018, non-NAAQS comparable monitors at Amarillo A&M, Lubbock 12th Street, and Odessa Gonzales were upgraded to $PM_{2.5}$ FEM monitors, and each area obtained $PM_{2.5}$ design values with three years of complete data in 2021.

Since the last FYA, one $PM_{2.5}$ area network change occurred. The Amarillo A&M site and $PM_{2.5}$ FEM monitor were relocated due to the property owner revoking the site usage agreement (sale of property) and relocated 7.25 miles north-northeast to the existing Amarillo 24th Street air monitoring site in December 2024. The Amarillo A&M $PM_{2.5}$ monitor was eligible for relocation since the design value was less than 67% of both the annual and 24-hour $PM_{2.5}$ standards. The Amarillo 24th Street $PM_{2.5}$ FEM monitor is expected to obtain a three-year design value in 2027. The Amarillo A&M $PM_{2.5}$ monitor and design values are assessed in this FYA, and the Amarillo 24th Street $PM_{2.5}$ monitor will be assessed in the next FYA. As of January 1, 2025, there are no Panhandle or West Texas MSA $PM_{2.5}$ federal monitoring requirements; however, the three current monitors provide valuable data related to transport, background $PM_{2.5}$ concentrations, and concentrations in populated areas.

Design Values and Trends

The Panhandle and West Texas area $PM_{2.5}$ FEM monitors, deployed in mid-2018, obtained three complete years of data for a design value calculation in 2021. Data from the non-NAAQS comparable monitors prior to 2018 are available online at TCEQ TAMIS and are not included in the design value trends assessment below. $PM_{2.5}$ design values in all three areas show concentrations in compliance with the 24-hour and 2024 annual $PM_{2.5}$ NAAQS. Design values from the Amarillo A&M $PM_{2.5}$ FEM monitor are provided in the trends graph below, as the location did not change until December 2024. Figure 111 shows the 24-hour and the annual $PM_{2.5}$ design value trends for the Panhandle and West Texas monitors from 2021 through 2023.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Figure 111: Panhandle and West Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value, 2021-2023

Network Evaluation

Table 72 shows how each $PM_{2.5}$ monitor in the Panhandle and West Texas area were evaluated using the scoring system described in the *Evaluation Methods* section. There are no Panhandle or West Texas MSA $PM_{2.5}$ federal monitoring requirements based on the current MSA populations and $PM_{2.5}$ design values. The Odessa Gonzales *NAAQS Value* was scored a four based on the 2023 $PM_{2.5}$ design value (at 81% of the annual $PM_{2.5}$ NAAQS), resulting in a critical *Assessment Value* score. The Amarillo and Lubbock MSA $PM_{2.5}$ monitors provide useful information related to concentrations in populated areas, regional $PM_{2.5}$ transport, and exceptional events in areas that have historically been impacted by dust events. No changes to the Panhandle and West Texas area $PM_{2.5}$ network are recommended at this time.

Table 72: Panhandle and West Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter Network Evaluation

Site Name	Sampler Type	Regulatory Value*	2023 NAAQS Value*	Data Trend Value	Historical Value**	Source Impact Value	Total Monitor Value	Assessment Value
Amarillo A&M (relocated to Amarillo 24th Street in late 2024)	$PM_{2.5}$ FEM	1	2	2	3	1	9	medium
Lubbock 12th Street	$PM_{2.5}$ FEM	1	2	2	3	1	9	medium
Odessa Gonzales	$PM_{2.5}$ FEM	1	4	4	4	1	14	critical

*Regulatory Value or NAAQS Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Historical Value based on all years of site $PM_{2.5}$ monitoring
A&M – Agriculture and Mechanical
NAAQS – National Ambient Air Quality Standards
FEM – federal equivalent method
NA – Not applicable
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

Lead

Network History and Current Status

The TCEQ Pb network is designed to meet source-oriented SLAMS monitoring requirements to measure maximum Pb concentrations near point sources emitting 0.50 tpy or more of Pb. Source-oriented Pb monitoring is not required or performed in the Panhandle or West Texas area. The Amarillo State Highway (SH) 136 Pb monitor was deployed in 2010 due to the most recently available point-source emissions inventory levels during the AMNP assessment at that time; however, emission inventory levels significantly decreased after monitor deployment. The Amarillo SH 136 Pb monitor design value for 2017 was 0.00 µg/m^3, and the monitor was deactivated in November 2018. The Pb monitor was not federally required, was not necessary for source-oriented monitoring, and was eligible for deactivation based on historically low design value trends. Based on historical monitoring data, TCEQ demonstrated that the Pb source would not contribute to a maximum Pb concentration in ambient air of more than 50% of the standard. Appendix A lists active and recently decommissioned Pb monitor locations, monitoring objectives, and spatial scales.

Conclusion

TCEQ conducted the *Texas 2025 Five-Year Ambient Air Monitoring Network Assessment* (FYA) to assess if the existing federal network continues to meet the objectives in 40

CFR Part 58, Appendix D and to evaluate whether individual federal network monitors should be added, relocated, or decommissioned to best understand and evaluate air quality with existing resources. As described in the FYA *Evaluation Section*, TCEQ assessed each of the 278 active ambient air monitors in TCEQ's federal network. Additionally, TCEQ evaluated how population projection data illustrated in Table 2 could affect minimum monitoring design requirements. TCEQ's inactive monitors and quality assurance (QA) collocated monitors listed in the FYA Appendix A *Site List* were not evaluated in this assessment. TCEQ's QA collocated monitors are assessed annually in the AMNP. TCEQ recommends the network changes listed in Table 73 to add, relocate, or decommission federal network monitors to best understand and evaluate air quality with existing resources. TCEQ submits all federal ambient air monitoring network changes for EPA's review and concurrence by July 1 each year in the AMNP. After consideration of the federal regulations, population projection estimates, EI data, and 2021-2023 design values, TCEQ has determined that it will meet or exceed all monitoring requirements and monitoring objectives with the below-mentioned recommendations for the next five years.

Table 73: Summary of Proposed Changes

Section	Core Based Statistical Area	Air Monitoring Site Name	Parameter(s)	Proposed Action	Estimated Completion Date
Coastal	Corpus Christi	Corpus Christi West	sulfur dioxide	Deactivate SPM monitor, TCEQ 2020 and 2025 Five Year Assessment evaluated monitor as low value	December 31, 2025
Coastal	Houston-Pasadena-The Woodlands	Park Place	sulfur dioxide	Deactivate SPM monitor, TCEQ 2020 and 2025 Five Year Assessment evaluated monitor as low value	December 31, 2025
Central	Austin-Round Rock-San Marcos	Austin Audubon Society	$PM_{2.5}$	Add state-initiative monitor to federal network if near-road $PM_{2.5}$ data exclusion request is approved	January 1, 2025 (activated as a state-initiative monitor)
Central	Austin-Round Rock-San Marcos	To be determined	nitrogen dioxide	Add near-road monitor to meet federal requirements due to increased population estimates	December 31, 2027
Central	Killeen-Temple	Temple Georgia	PM_{10}	Add to meet federal requirements due to increased population estimates	December 31, 2026

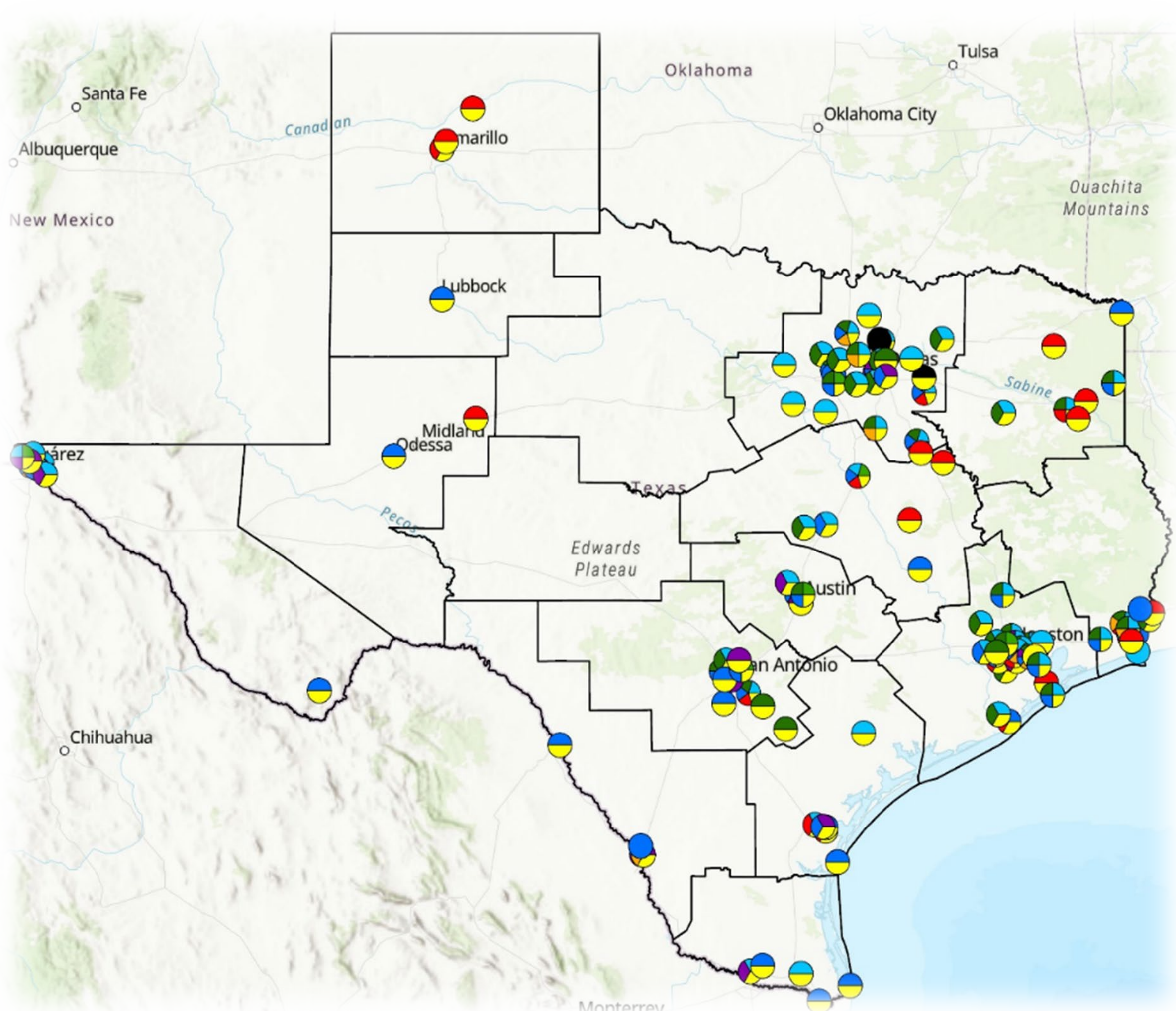
Section	Core Based Statistical Area	Air Monitoring Site Name	Parameter(s)	Proposed Action	Estimated Completion Date
Central	San Antonio-New Braunfels	Frank Wing Municipal Building	site and PM_{10}	Deactivate site and relocate 4.5 miles west to Old Highway 90, improving staff accessibility and safety	December 31, 2025
Central	San Antonio-New Braunfels	Old Highway 90	PM_{10}	Add continuous FEM monitor (relocated from Frank Wing Municipal Building)	December 31, 2025
Panhandle and West Texas	Lubbock	Lubbock 12th Street	ozone	Add monitor to meet federal requirements due to increased population estimates from addition of three counties to the MSA	December 31, 2026

FEM – federal equivalent method
MSA- metropolitan statistical area
NAAQS - National Ambient Air Quality Standard
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
PM_{10} – particulate matter of 10 micrometers or less in diameter
SPM - Special Purpose Monitor
TCEQ - Texas Commission on Environmental Quality

Appendix A

Ambient Air Monitoring Network Site List 2020-2025

Texas Commission on Environmental Quality
Texas 2025 Five-Year Ambient Air Monitoring Network Assessment



Appendix A: Ambient Air Monitoring Network Site List 2020-2025

Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
Coastal Texas	Beaumont-Port Arthur	Beaumont Downtown	482450009	1086 Vermont Avenue, Beaumont	NO, NO2, and NOx	active	1/1/1980	PAMS, SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	medium
Coastal Texas	Beaumont-Port Arthur	Beaumont Downtown	482450009	1086 Vermont Avenue, Beaumont	O3	active	1/1/1980	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Beaumont-Port Arthur	Beaumont Downtown	482450009	1086 Vermont Avenue, Beaumont	SO2	active	1/1/1980	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	medium
Coastal Texas	Beaumont-Port Arthur	Beaumont Downtown	482450009	1086 Vermont Avenue, Beaumont	VOCs by AutoGC	active	8/29/2006	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Suburban	medium
Coastal Texas	Beaumont-Port Arthur	Hamshire	482450022	12552 Second St, Not In A City	NO, NO2, and NOx	active	2/16/2000	SLAMS	Continuous	General Background; Regional Transport	Neighborhood, Urban Scale	Suburban	medium
Coastal Texas	Beaumont-Port Arthur	Hamshire	482450022	12552 Second St, Not In A City	O3	active	2/16/2000	SLAMS	Continuous	General Background; Regional Transport	Urban Scale	Suburban	critical
Coastal Texas	Beaumont-Port Arthur	Hamshire	482450022	12552 Second St, Not In A City	PM2.5 FEM (Beta)	active	5/16/2017	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Beaumont-Port Arthur	Nederland 17th Street (previously Nederland High School)	482451035	1516 17th Street, Nederland (relocated from 1800 N. 18th Street)	NO, NO2, and NOx	active	8/30/2006	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Beaumont-Port Arthur	Nederland 17th Street (previously Nederland High School)	482451035	1516 17th Street, Nederland (relocated from 1800 N. 18th Street)	O3	active	9/1/2006	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Beaumont-Port Arthur	Nederland 17th Street (previously Nederland High School)	482451035	1516 17th Street, Nederland (relocated from 1800 N. 18th Street)	VOCs by AutoGC	active	9/1/2006	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Suburban	medium
Coastal Texas	Beaumont-Port Arthur	Orange 1st Street	483611083	2239 1st Street, Orange	SO2	active	10/3/2016	SLAMS	Continuous	Source Oriented	Neighborhood	Urban and Center City	critical
Coastal Texas	Beaumont-Port Arthur	Port Arthur Memorial School	482450021	2200 Jefferson Drive, Port Arthur	PM2.5 FEM (Beta)	active	7/25/2017	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical

Appendix A: Ambient Air Monitoring Network Site List 2020-2025

Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
Coastal Texas	Beaumont-Port Arthur	Port Arthur Memorial School	482450021	2200 Jefferson Drive, Port Arthur	PM2.5 FEM (Beta)	active	9/29/2021	QA Collocated, SLAMS	Continuous	Quality Assurance	Neighborhood	Suburban	QA collocated monitors not assessed in the FYA
Coastal Texas	Beaumont-Port Arthur	Port Arthur West	482450011	623 Ellias Street, Port Arthur	O3	active	7/24/2012	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Beaumont-Port Arthur	Port Arthur West	482450011	623 Ellias Street, Port Arthur	SO2	active	7/24/2012	SLAMS	Continuous	Source Oriented	Neighborhood	Urban and Center City	critical
Coastal Texas	Beaumont-Port Arthur	Port Arthur West 7th Street Gate 2	482451071	West 7th Street, Valero Port Arthur Gate 2, Port Arthur	SO2	active	9/30/2016	SLAMS	Continuous	Source Oriented	Neighborhood	Rural	critical
Coastal Texas	Beaumont-Port Arthur	SETRPC 40 Sabine Pass	482450101	5200 Mechanic, Not In A City	O3	active	9/22/1999	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighborhood	Rural	critical
Coastal Texas	Beaumont-Port Arthur	SETRPC 42 Mauriceville	483611100	Intersection of TX Hwys 62 & 12, Port Arthur	PM2.5 FEM (Beta)	active	7/27/2017	SPM	Continuous	Regional Transport; Upwind Background	Regional Scale	Suburban	critical
Coastal Texas	Beaumont-Port Arthur	SETRPC 43 Jefferson Co Airport	482450102	Jefferson County Airport, Port Arthur	O3	active	7/7/1999	SPM	Continuous	Max Precursor Emissions Impact	Middle Scale	Suburban	critical
Coastal Texas	Beaumont-Port Arthur	West Orange	483611001	2700 Austin Ave, West Orange	NO, NO2, and NOx	active	12/10/1997	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	medium
Coastal Texas	Beaumont-Port Arthur	West Orange	483611001	2700 Austin Ave, West Orange	O3	active	12/10/1997	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Corpus Christi	Corpus Christi Huisache	483550032	3810 Huisache Street, Corpus Christi	PM2.5 FEM (Beta)	active	3/13/2018	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Corpus Christi	Corpus Christi Huisache	483550032	3810 Huisache Street, Corpus Christi	PM2.5 FEM (Beta)	active	3/13/2018	QA Collocated, SLAMS	Continuous	Quality Assurance	Neighborhood	Urban and Center City	QA collocated monitors not assessed in the FYA
Coastal Texas	Corpus Christi	Corpus Christi Huisache	483550032	3810 Huisache Street, Corpus Christi	SO2	active	8/6/1997	SLAMS	Continuous	Highest Concentration; Population Exposure	Neighborhood	Urban and Center City	high
Coastal Texas	Corpus Christi	Corpus Christi Tuloso	483550026	9860 La Branch, Corpus Christi	O3	active	7/26/1984	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Corpus Christi	Corpus Christi Tuloso	483550026	9860 La Branch, Corpus Christi	SO2	active	10/31/1987	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	medium

Appendix A: Ambient Air Monitoring Network Site List 2020-2025

Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
Coastal Texas	Corpus Christi	Corpus Christi West	483550025	902 Airport Road, Corpus Christi	O3	active	3/18/1998	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Corpus Christi	Corpus Christi West	483550025	902 Airport Road, Corpus Christi	SO2	active	3/18/1998	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	low
Coastal Texas	Corpus Christi	Dona Park	483550034	5707 Up River Rd, Corpus Christi	PM10 (FRM)	inactive	1/26/2024	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Urban and Center City	inactive
Coastal Texas	Corpus Christi	Dona Park	483550034	5707 Up River Rd, Corpus Christi	PM10 FEM	active	1/31/2024	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	medium
Coastal Texas	Corpus Christi	Dona Park	483550034	5707 Up River Rd, Corpus Christi	PM2.5 (TEOM)	inactive	5/24/2022	SPM	Continuous	Regional Transport	Neighborhood	Urban and Center City	inactive, replaced by FEM
Coastal Texas	Corpus Christi	Dona Park	483550034	5707 Up River Rd, Corpus Christi	PM2.5 FEM	active	1/31/2024	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Corpus Christi	Dona Park	483550034	5707 Up River Rd, Corpus Christi	PM2.5 Speciation	active	1/31/2001	QA Collocated, SPM	24 Hours; 1/6 Days	Population Exposure; Unknown	Neighborhood	Urban and Center City	high
Coastal Texas	Houston-Pasadena-The Woodlands	Baytown	482010058	7210 1/2 Bayway Drive, Baytown	PM2.5 FEM (Beta)	active	3/21/2017	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Baytown Garth	482011017	8622 Garth Road Unit A, Baytown (relocated from 4898 Ashbel Cove Drive, Trailer A)	O3	active	2/20/2014	SLAMS	Continuous	Max Ozone Concentration	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Baytown Garth	482011017	8622 Garth Road Unit A, Baytown	SO2	inactive	10/21/2020	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	inactive
Coastal Texas	Houston-Pasadena-The Woodlands	Channelview	482010026	1405 Sheldon Road, Channelview	NO, NO2, and NOx	active	7/15/2010	PAMS, SLAMS	Continuous	Population Exposure	Middle Scale Neighbor-hood	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Channelview	482010026	1405 Sheldon Road, Channelview	O3	active	1/1/1980	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Channelview	482010026	1405 Sheldon Road, Channelview	VOCs by AutoGC	active	8/4/2001	PAMS, SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	medium

Appendix A: Ambient Air Monitoring Network Site List 2020-2025

Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	Carbonyl	active	5/16/1996	PAMS, SLAMS	24 Hours; Seasonal	Max Precursor Emissions Impact	Neighborhood	Urban and Center City	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	CO high sensitivity	active	1/1/1978	SPM	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	NO, NO2, and NOx	active	1/18/2000	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	O3	active	1/18/2000	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	PM10 (FRM)	inactive	2/25/2025	QA Collocated, SLAMS	24 Hours; 1/12 Days	Highest Concentration; Population Exposure	Neighborhood	Urban and Center City	inactive, relocated to Houston Monroe
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	PM10 (FRM)	inactive	2/25/2025	SLAMS	24 Hours; 1/6 Days	Highest Concentration; Source Oriented	Neighborhood	Urban and Center City	inactive, replaced by FEM
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	PM10 FEM	active	10/16/2024	SLAMS, SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	PM2.5 FRM	active	1/1/1999	SLAMS	24 Hours; 1/6 Days	Highest Concentration; Population Exposure; Source Oriented	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	PM2.5 FRM	active	4/6/1999	QA Collocated, SLAMS	24 Hours; 1/12 Days	Highest Concentration; Population Exposure	Neighborhood	Urban and Center City	QA collocated monitors not assessed in the FYA
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	PM2.5 (TEOM)	inactive	6/6/2024	SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	inactive, replaced by FEM

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Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	PM2.5 FEM	active	10/16/2024	SLAMS, SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	PM2.5 Speciation	active	7/1/2006	SPM	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Urban and Center City	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	SO2	active	4/28/1982	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Clinton	482011035	9525 1/2 Clinton Dr, Houston	VOCs by AutoGC	active	7/1/1995	PAMS, SLAMS	Continuous	Highest Concentration; Population Exposure; Source Oriented	Neighborhood	Urban and Center City	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Conroe Relocated	483390078	9472A Hwy 1484, Conroe	NO, NO2, and NOx	active	10/26/2001	PAMS, SLAMS	Continuous	General Background; Population Exposure	Urban Scale	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Conroe Relocated	483390078	9472A Hwy 1484, Conroe	O3	active	10/26/2001	PAMS, SLAMS	Continuous	General Background; Population Exposure	Urban Scale	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Conroe Relocated	483390078	9472A Hwy 1484, Conroe	PM2.5 (TEOM)	inactive	9/30/2021	SPM	Continuous	General, Background	Neighborhood	Suburban	inactive, replaced by FEM
Coastal Texas	Houston-Pasadena-The Woodlands	Conroe Relocated	483390078	9472A Hwy 1484, Conroe	PM2.5 FEM (Beta)	active	9/30/2021	SPM	Continuous	General, Background	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Freeport South Avenue I	480391012	207 South Avenue I, Freeport	PM2.5 FRM	active	5/23/2011 (activated 1/1/2023 federal network)	SPM	24 Hours; 1/6 Days	Source Oriented	Middle Scale	Suburban	low
Coastal Texas	Houston-Pasadena-The Woodlands	Freeport South Avenue I	480391012	207 South Avenue I, Freeport	PM2.5 Speciation	active	5/23/2011 (activated 1/1/2023 federal network)	SPM	24 Hours; 1/6 Days	Source Oriented	Middle Scale	Suburban	low
Coastal Texas	Houston-Pasadena-The Woodlands	Freeport South Avenue I	480391012	207 South Avenue I, Freeport	SO2	active	5/25/2011 (activated 1/1/2023 federal network)	Non-Regulatory, SPM	Continuous	Source Oriented	Middle Scale	Suburban	medium

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Coastal Texas	Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	9511 Avenue V 1/2, Galveston	NO, NO2, and NOx	active	3/20/2007	PAMS, SLAMS	Continuous	General Background; Upwind Background	Middle Scale Urban Scale	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	9511 Avenue V 1/2, Galveston	O3	active	3/20/2007	PAMS, SLAMS	Continuous	Max Ozone Concentration; Upwind Background	Urban Scale	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	9511 Avenue V 1/2, Galveston	PM2.5 FEM (Beta)	active	4/15/2019	SPM	Continuous	Regional Transport	Regional Scale	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Aldine	482010024	4510 1/2 Aldine Mail Rd, Houston	NO, NO2, and NOx	active	4/2/1997	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighbor-hood	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Aldine	482010024	4510 1/2 Aldine Mail Rd, Houston	NOy high sensitivity	active	6/7/2000	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighbor-hood	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Aldine	482010024	4510 1/2 Aldine Mail Rd, Houston	O3	active	4/2/1997	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Aldine	482010024	4510 1/2 Aldine Mail Rd, Houston	PM2.5 FRM	active	8/14/2000	QA Collocated, SLAMS	24 Hours; 1/12 Days	Population Exposure	Neighborhood	Suburban	QA collocated monitors not assessed in the FYA
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Aldine	482010024	4510 1/2 Aldine Mail Rd, Houston	PM2.5 FEM (Beta)	active	5/22/2019	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Bayland Park	482010055	6400 Bissonnet Street, Houston	NO, NO2, and NOx	active	3/24/1998	SLAMS	Continuous	Population Exposure	Middle Scale Neighbor-hood	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Bayland Park	482010055	6400 Bissonnet Street, Houston	O3	active	3/24/1998	SLAMS	Continuous	Population Exposure	Middle Scale	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Bayland Park	482010055	6400 Bissonnet Street, Houston	PM2.5 FEM (Beta)	active	4/22/2022	SPM	Continuous	Population Exposure	Neighborhood	Suburban	low
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Croquet	482010051	13826 1/2 Croquet, Houston	O3	active	2/8/2000	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical

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Coastal Texas	Houston-Pasadena-The Woodlands	Houston Croquet	482010051	13826 1/2 Croquet, Houston	SO2	active	2/8/2000	SLAMS, SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4413 Glenwood Avenue, Deer Park	Carbonyl	active	6/3/1998	PAMS, SLAMS	24 Hours; Seasonal, 8 Hour; Seasonal	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4414 Glenwood Avenue, Deer Park	CO high sensitivity	active	12/14/2010	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4415 Glenwood Avenue, Deer Park	NO2 (Direct)	active	3/15/2019	PAMS, SLAMS	Continuous	Population Exposure; Source Oriented	Neighbor-hood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4416 Glenwood Avenue, Deer Park	NOy high sensitivity	active	12/14/2010	NCORE, PAMS, SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4417 Glenwood Avenue, Deer Park	O3	active	3/20/1997	NCORE, PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4418 Glenwood Avenue, Deer Park	PM10 FEM	active	2/23/2023	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4419 Glenwood Avenue, Deer Park	PM10-2.5	active	2/23/2023	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4420 Glenwood Avenue, Deer Park	PM2.5 FRM	active	8/10/2013	NCORE, SLAMS	24 Hours; 1/3 Days	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4421 Glenwood Avenue, Deer Park	PM2.5 FEM	active	2/23/2023	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4422 Glenwood Avenue, Deer Park	PM2.5 Speciation	active	1/1/2000	CSN CTN, CSN Supplement al, SLAMS	24 Hours; 1/3 Days	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4423 Glenwood Avenue, Deer Park	PM2.5 Speciation	active	1/1/2000	QA Collocated, CSN CTN, SLAMS	24 Hours; 1/3 Days	Population Exposure	Neighborhood	Urban and Center City	QA collocated monitors not assessed in the FYA

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Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4424 Glenwood Avenue, Deer Park	SO2 high sensitivity	active	12/13/2010	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	4425 Glenwood Avenue, Deer Park	VOCs by AutoGC	active	1/16/1997	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston East	482011034	1262 1/2 Mae Drive, Houston	NO, NO2, and NOx	active	5/7/1997	SLAMS	Continuous	Highest Concentration; Population Exposure	Middle Scale Neighbor-hood	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Houston East	482011034	1262 1/2 Mae Drive, Houston	O3	active	5/7/1997	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston East	482011034	1262 1/2 Mae Drive, Houston	PM2.5 FEM (Beta)	active	7/13/2017	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Harvard Street	482010417	160 Harvard Street, Houston	NO, NO2, and NOx	active	1/25/2021	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	low
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Harvard Street	482010417	160 Harvard Street, Houston	O3	active	1/25/2021	SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Monroe	482010062	9726 1/2 Monroe, Houston	O3	active	2/9/2000	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Monroe	482010062	9726 1/2 Monroe, Houston	PM10 (FRM)	active	3/2/2025	QA Collocated, SLAMS	24 Hours; 1/12 Days	Population Exposure	Neighborhood	Suburban	QA collocated monitors not assessed in the FYA
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Monroe	482010062	9726 1/2 Monroe, Houston	PM10 (FRM)	active	10/1/1989	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston North Loop	482011052	822 North Loop, Houston	CO	active	4/15/2015	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston North Loop	482011052	822 North Loop, Houston	NO, NO2, and NOx	active	4/15/2015	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical

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Coastal Texas	Houston-Pasadena-The Woodlands	Houston North Loop	482011052	822 North Loop, Houston	PM2.5 FRM	inactive	5/11/2021	Near Road, SLAMS	24 Hours; 1/3 Days	Max Precursor Emissions Impact	Microscale	Urban and Center City	inactive, replaced by FEM
Coastal Texas	Houston-Pasadena-The Woodlands	Houston North Loop	482011052	822 North Loop, Houston	PM2.5 FEM (Beta)	active	5/12/2021	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston North Wayside	482010046	7330 1/2 North Wayside, Houston	O3	active	2/22/2000	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston North Wayside	482010046	7330 1/2 North Wayside, Houston	PM10 (TEOM)	active	9/1/2021	SPM	Continuous	Population Exposure	Neighborhood	Suburban	low
Coastal Texas	Houston-Pasadena-The Woodlands	Houston North Wayside	482010046	7330 1/2 North Wayside, Houston	PM2.5 FEM (Beta)	active	5/4/2021	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Southwest Freeway	482011066	5617 Westward Avenue, Houston	NO, NO2, and NOx	active	1/22/2014	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Westhollow	482010066	3333 1/2 Hwy 6 South, Houston	O3	active	3/7/2000	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Westhollow	482010066	3333 1/2 Hwy 6 South, Houston	PM10 (FRM)	inactive	12/30/2020	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Suburban	inactive, upgraded to PM2.5 FEM
Coastal Texas	Houston-Pasadena-The Woodlands	Houston Westhollow	482010066	3333 1/2 Hwy 6 South, Houston	PM2.5 FEM (Beta)	active	1/19/2021	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Lake Jackson	480391016	109B Brazoria Hwy 332 West, Lake Jackson	NO, NO2, and NOx	active	6/10/2003	SLAMS	Continuous	Population Exposure; Source Oriented	Middle Scale Neighbor-hood	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Lake Jackson	480391016	109B Brazoria Hwy 332 West, Lake Jackson	O3	active	6/10/2003	SLAMS	Continuous	Population Exposure; Source Oriented	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Lang	482010047	4401 1/2 Lang Rd, Houston	NO, NO2, and NOx	active	3/8/2000	SLAMS	Continuous	Population Exposure	Middle Scale Urban Scale	Suburban	medium

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Coastal Texas	Houston-Pasadena-The Woodlands	Lang	482010047	4401 1/2 Lang Rd, Houston	O3	active	3/8/2000	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Lang	482010047	4401 1/2 Lang Rd, Houston	PM10 (FRM)	active	10/2/1998	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Lynchburg Ferry	482011015	4364 Independence Parkway South, Baytown	NO, NO2, and NOx	active	4/24/2003	SLAMS	Continuous	Source Oriented	Middle Scale Neighbor-hood	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Lynchburg Ferry	482011015	4364 Independence Parkway South, Baytown	O3	active	4/24/2003	SLAMS	Continuous	Source Oriented	Middle Scale	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Manvel Croix Park	480391004	4503 Croix Pkwy, Manvel	NO, NO2, and NOx	active	8/23/2001	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Manvel Croix Park	480391004	4503 Croix Pkwy, Manvel	O3	active	8/23/2001	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Northwest Harris County	482010029	16822 Kitzman, Tomball	NO, NO2, and NOx	active	4/1/1997	PAMS, SLAMS	Continuous	Extreme Downwind; Population Exposure	Urban Scale	Rural	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Northwest Harris County	482010029	16822 Kitzman, Tomball	O3	active	4/1/1997	PAMS, SLAMS	Continuous	Extreme Downwind; Population Exposure	Urban Scale	Rural	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Park Place	482010416	7421 Park Place Blvd, Houston	NO, NO2, and NOx	active	2/22/2006	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Park Place	482010416	7421 Park Place Blvd, Houston	O3	active	2/22/2006	SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Park Place	482010416	7421 Park Place Blvd, Houston	SO2	active	2/22/2006	SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	low
Coastal Texas	Houston-Pasadena-The Woodlands	Seabrook Friendship Park	482011050	4522 Park Rd, Seabrook	NO, NO2, and NOx	active	7/29/2001	SLAMS	Continuous	Population Exposure	Middle Scale Neighbor-hood	Suburban	medium

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Coastal Texas	Houston-Pasadena-The Woodlands	Seabrook Friendship Park	482011050	4522 Park Rd, Seabrook	O3	active	7/29/2001	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Seabrook Friendship Park	482011050	4522 Park Rd, Seabrook	PM2.5 (TEOM)	inactive	9/30/2021	SPM	Continuous	Highest Concentration	Middle Scale	Suburban	inactive, replaced by FEM
Coastal Texas	Houston-Pasadena-The Woodlands	Seabrook Friendship Park	482011050	4522 Park Rd, Seabrook	PM2.5 FEM (Beta)	active	9/30/2021	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
Coastal Texas	Houston-Pasadena-The Woodlands	Texas City Ball Park	481670005	2516 1/2 Texas Avenue, Texas City	SO2	active	2/17/2004	SPM	Continuous	Highest Concentration	Neighborhood	Urban and Center City	medium
Coastal Texas	Houston-Pasadena-The Woodlands	Texas City Fire Station	481670004	2516 Texas Avenue, Texas City	PM10 (FRM)	active	11/24/1989	SLAMS	24 Hours; 1/6 Days	Highest Concentration	Neighborhood	Urban and Center City	medium
Coastal Texas	Kingsville	National Seashore	482730314	20420 Park Road, Corpus Christi	PM2.5 FEM (Beta)	active	3/14/2018	SPM	Continuous	Regional Transport	Regional Scale	Rural	critical
Coastal Texas	Victoria	Victoria	484690003	106 Mockingbird Lane, Victoria	O3	active	1/21/1998	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Central Texas	Austin-Round Rock-San Marcos	Austin Audubon Society	484530020	12200 Lime Creek Rd, Leander	O3	active	3/10/1997	SLAMS	Continuous	Population Exposure	Neighborhood	Rural	critical
Central Texas	Austin-Round Rock-San Marcos	Austin Audubon Society	484530020	12200 Lime Creek Rd, Leander	PM10 (FRM)	active	1/1/2008	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Rural	critical
Central Texas	Austin-Round Rock-San Marcos	Austin North Hills Drive (previously Austin Northwest)	484530014	3824 North Hills Drive, Austin	NO, NO2, and NOx	active	3/28/2012	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
Central Texas	Austin-Round Rock-San Marcos	Austin North Hills Drive (previously Austin Northwest)	484530014	3824 North Hills Drive, Austin	O3	active	9/20/1979	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Central Texas	Austin-Round Rock-San Marcos	Austin North Hills Drive (previously Austin Northwest)	484530014	3824 North Hills Drive, Austin	PM2.5 (TEOM)	inactive	2/18/2020	SPM	Continuous	Population Exposure	Neighborhood	Suburban	inactive, replaced by FEM
Central Texas	Austin-Round Rock-San Marcos	Austin North Hills Drive (previously Austin Northwest)	484530014	3824 North Hills Drive, Austin	PM2.5 FEM (Beta)	active	10/15/2020	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical

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Central Texas	Austin-Round Rock-San Marcos	Austin North Hills Drive (previously Austin Northwest)	484530014	3824 North Hills Drive, Austin	SO2	active	11/28/2012	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	medium
Central Texas	Austin-Round Rock-San Marcos	Austin North Interstate 35	484531068	8912 N IH 35 SVRD SB, Austin	CO	active	12/19/2016	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Central Texas	Austin-Round Rock-San Marcos	Austin North Interstate 35	484531068	8912 N IH 35 SVRD SB, Austin	NO, NO2, and NOx	active	4/16/2014	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Central Texas	Austin-Round Rock-San Marcos	Austin North Interstate 35	484531068	8912 N IH 35 SVRD SB, Austin	PM2.5 FEM (Beta)	active	10/25/2018	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Central Texas	Austin-Round Rock-San Marcos	Austin Webberville Rd	484530021	2600B Webberville Rd, Austin	PM10 (FRM)	inactive	11/9/2023	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Urban and Center City	inactive, replaced by FEM
Central Texas	Austin-Round Rock-San Marcos	Austin Webberville Rd	484530021	2600B Webberville Rd, Austin	PM10 FEM	active	11/9/2023	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Central Texas	Austin-Round Rock-San Marcos	Austin Webberville Rd	484530021	2600B Webberville Rd, Austin	PM2.5 FEM	active	11/9/2023	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Central Texas	College Station-Bryan	Bryan Finfeather Road	480411086	3670 Finfeather Road, Bryan	PM2.5 FEM (Beta)	active	2/27/2020	SPM	Continuous	Population Exposure; Regional Transport	Neighborhood	Rural	critical
Central Texas	College Station-Bryan	Franklin Oak Grove	483951076	8127 Oak Grove Road, Franklin	SO2	active	10/13/2016	SLAMS	Continuous	Source Oriented	Neighborhood	Rural	critical
Central Texas	Killeen-Temple-Fort Hood	Killeen Skylark Field	480271047	1605 Stone Tree Drive, Killeen	NO, NO2, and NOx	active	4/3/2018	SPM	Continuous	General, Background	Urban Scale	Urban and Center City	low
Central Texas	Killeen-Temple-Fort Hood	Killeen Skylark Field	480271047	1605 Stone Tree Drive, Killeen	O3	active	6/11/2009	SLAMS	Continuous	Population Exposure	Urban Scale	Urban and Center City	critical
Central Texas	Killeen-Temple-Fort Hood	Temple Georgia	480271045	8406 Georgia Avenue, Temple	O3	active	10/4/2013	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
Central Texas	Killeen-Temple-Fort Hood	Temple Georgia	480271045	8406 Georgia Avenue, Temple	PM2.5 FEM (Beta)	active	3/15/2019	SPM	Continuous	Population Exposure	Urban Scale	Suburban	critical
Central Texas	none	Fairfield FM 2570 Ward Ranch	481611084	488 FM 2570, Fairfield	SO2	active	10/30/2017	SPM	Continuous	Source Oriented	Neighborhood	Rural	low
Central Texas	none	Karnes County	482551070	1100B East Main Avenue, Karnes City	NO, NO2, and NOx	active	1/7/2015	SPM	Continuous	Max Precursor Emissions Impact; Upwind Background	Urban Scale	Rural	medium

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Central Texas	none	Rockdale John D. Harper Road	483311075	3990 John D Harper Road, Rockdale	SO2	inactive	6/5/2020	SLAMS	Continuous	Source Oriented	Neighborhood	Rural	inactive
Central Texas	San Antonio-New Braunfels	Calaveras Lake	480290059	14620 Laguna Rd, San Antonio	NO, NO2, and NOx	active	5/13/1998	SLAMS	Continuous	Source Oriented; Upwind Background	Urban Scale	Rural	medium
Central Texas	San Antonio-New Braunfels	Calaveras Lake	480290059	14620 Laguna Rd, San Antonio	O3	active	5/13/1998	SLAMS	Continuous	Source Oriented; Upwind Background	Urban Scale	Rural	critical
Central Texas	San Antonio-New Braunfels	Calaveras Lake	480290059	14620 Laguna Rd, San Antonio	PM2.5 FEM (Beta)	active	11/8/2018	SLAMS	Continuous	Population Exposure; Source Oriented	Urban Scale	Rural	critical
Central Texas	San Antonio-New Braunfels	Calaveras Lake	480290059	14620 Laguna Rd, San Antonio	SO2	active	12/17/2012	SLAMS	Continuous	Population Exposure; Source Oriented	Neighborhood	Rural	critical
Central Texas	San Antonio-New Braunfels	Camp Bullis	480290052	F Range (1000Yd marker off Wilderness Trail), Near Wilderness Rd, San Antonio	NO, NO2, and NOx	active	8/18/2014	SPM	Continuous	Max Precursor Emissions Impact	Urban Scale	Rural	low
Central Texas	San Antonio-New Braunfels	Camp Bullis	480290052	F Range (1000Yd marker off Wilderness Trail), Near Wilderness Rd, San Antonio	O3	active	8/12/1998	SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Urban Scale	Rural	critical
Central Texas	San Antonio-New Braunfels	Floresville Hospital Boulevard	484931038	1404 Hospital Blvd, Floresville	NO, NO2, and NOx	active	8/13/2013	SPM	Continuous	Max Precursor Emissions Impact; Upwind Background	Urban Scale	Rural	medium
Central Texas	San Antonio-New Braunfels	Frank Wing Municipal Court	480290060	401 South Frio St, San Antonio	PM10 (FRM)	active	5/18/2000	SLAMS	24 Hours; 1/6 Days	Population Exposure	Middle Scale	Urban and Center City	critical
Central Texas	San Antonio-New Braunfels	Old Hwy 90	480290677	911 Old Hwy 90 West, San Antonio	PM2.5 (TEOM)	inactive	7/10/2024	SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	inactive, replaced by FEM
Central Texas	San Antonio-New Braunfels	Old Hwy 90	480290677	911 Old Hwy 90 West, San Antonio	PM2.5 FEM (Beta)	active	7/10/2024	SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	medium
Central Texas	San Antonio-New Braunfels	Palo Alto	480290676	9011 Poteet Jourdanton Hwy, San Antonio	PM2.5 (TEOM)	inactive	6/11/2020	SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	inactive, relocated to Von Ormy Highway 16
Central Texas	San Antonio-New Braunfels	San Antonio Bulverde Parkway	480291087	3843 Bulverde Parkway, San Antonio	PM10 (FRM)	inactive	11/15/2023	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Suburban	inactive, replaced by FEM
Central Texas	San Antonio-New Braunfels	San Antonio Bulverde Parkway	480291087	3843 Bulverde Parkway, San Antonio	PM10 FEM	active	11/15/2023	SLAMS, SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical

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Central Texas	San Antonio-New Braunfels	San Antonio Bulverde Parkway	480291087	3843 Bulverde Parkway, San Antonio	PM2.5 FEM	active	11/15/2023	SLAMS, SPM	Continuous	Population Exposure	Neighborhood	Suburban	medium
Central Texas	San Antonio-New Braunfels	San Antonio Gardner Road	480291080	7145 Gardner Road, San Antonio	SO2	inactive	3/13/2023	SLAMS	Continuous	Source Oriented	Neighborhood	Suburban	inactive
Central Texas	San Antonio-New Braunfels	San Antonio Interstate 10 West	480291097	5821 IH 10 West, San Antonio	NO, NO2, and NOx	active	3/31/2025	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Central Texas	San Antonio-New Braunfels	San Antonio Interstate 35	480291069	9904 IH 35 N, San Antonio	CO	active	12/22/2016	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Central Texas	San Antonio-New Braunfels	San Antonio Interstate 35	480291069	9904 IH 35 N, San Antonio	NO, NO2, and NOx	active	1/8/2014	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Central Texas	San Antonio-New Braunfels	San Antonio Interstate 35	480291069	9904 IH 35 N, San Antonio	PM2.5 FEM (Beta)	active	11/8/2018	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
Central Texas	San Antonio-New Braunfels	San Antonio Northwest	480290032	6655 Bluebird Lane, San Antonio	NO, NO2, and NOx	active	10/17/2012	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Central Texas	San Antonio-New Braunfels	San Antonio Northwest	480290032	6655 Bluebird Lane, San Antonio	O3	active	7/17/1981	SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Urban Scale	Suburban	critical
Central Texas	San Antonio-New Braunfels	San Antonio Northwest	480290032	6655 Bluebird Lane, San Antonio	PM2.5 FRM	active	1/1/2008	QA Collocated, SLAMS	24 Hours; 1/12 Days	Population Exposure; Quality Assurance	Urban Scale	Suburban	QA collocated monitors not assessed in the FYA
Central Texas	San Antonio-New Braunfels	San Antonio Northwest	480290032	6655 Bluebird Lane, San Antonio	PM2.5 FEM (Beta)	active	11/8/2018	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
Central Texas	San Antonio-New Braunfels	Von Ormy Highway 16	480131090	17534 North State Highway 16, Not In A City	PM2.5 FEM (Beta)	active	5/29/2020	SPM	Continuous	Population Exposure; Source Oriented	Microscale	Rural	critical
Central Texas	Waco	Waco Mazanec	483091037	4472 Mazanec Rd, Waco	CO	active	4/16/2007	SLAMS	Continuous	Upwind Background	Urban Scale	Rural	medium
Central Texas	Waco	Waco Mazanec	483091037	4472 Mazanec Rd, Waco	O3	active	4/16/2007	SLAMS	Continuous	Upwind Background	Regional Scale	Rural	critical
Central Texas	Waco	Waco Mazanec	483091037	4472 Mazanec Rd, Waco	PM2.5 (TEOM)	active	4/16/2007	SPM	Continuous	Regional Transport	Regional Scale	Rural	medium
Central Texas	Waco	Waco Mazanec	483091037	4472 Mazanec Rd, Waco	SO2	active	4/16/2007	SLAMS	Continuous	Upwind Background	Urban Scale	Rural	medium
Far West Texas	El Paso	Ascarate Park SE	481410055	650 R E Thomason Loop, El Paso	NO, NO2, and NOx	active	9/24/1999	PAMS, SLAMS	Continuous	Highest Concentration; Upwind Background	Neighborhood, Urban Scale	Suburban	critical

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Far West Texas	El Paso	Ascarate Park SE	481410055	650 R E Thomason Loop, El Paso	O3	active	9/24/1999	PAMS, SLAMS	Continuous	Max Ozone Concentration; Upwind Background	Neighborhood	Suburban	medium
Far West Texas	El Paso	Ascarate Park SE	481410055	650 R E Thomason Loop, El Paso	PM2.5 FRM	active	5/9/2024	QA Collocated, SPM	24 Hours; 1/12 Days	Quality Assurance	Neighborhood	Suburban	QA collocated monitors not assessed in the FYA
Far West Texas	El Paso	Ascarate Park SE	481410055	650 R E Thomason Loop, El Paso	PM2.5 (TEOM)	inactive	5/2/2024	SPM	Continuous	Population Exposure	Neighborhood	Suburban	inactive, replaced by FEM
Far West Texas	El Paso	Ascarate Park SE	481410055	650 R E Thomason Loop, El Paso	PM2.5 FEM (Beta)	active	5/9/2024	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	CO high sensitivity	active	11/16/2010	NCORE, SLAMS	Continuous	Highest Concentration	Neighborhood	Urban and Center City	critical
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	NO, NO2, and NOx	active	6/24/1998	PAMS, SLAMS	Continuous	Highest Concentration; Max Precursor Emissions Impact	Neighborhood	Urban and Center City	medium
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	NOy high sensitivity	active	11/18/2010	NCORE, SLAMS	Continuous	Highest Concentration	Neighborhood	Urban and Center City	critical
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	O3	active	6/24/1998	NCORE, PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	critical
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	PM10 FEM	active	7/12/2023	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	PM10-2.5	active	7/12/2023	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	PM2.5 FRM	active	1/1/1999	NCORE, QA Collocated, SLAMS	24 Hours; 1/3 Days	Highest Concentration; Population Exposure	Neighborhood	Urban and Center City	critical
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	PM2.5 FEM	active	7/12/2023	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	PM2.5 Speciation	active	10/1/2000	CSN CTN, NCORE, SLAMS	24 Hours; 1/3 Days	Highest Concentration	Neighborhood	Urban and Center City	critical

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Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	SO2 high sensitivity	active	11/18/2010	NCORE, SLAMS	Continuous	Highest Concentration	Neighborhood	Urban and Center City	critical
Far West Texas	El Paso	El Paso Chamizal	481410044	800 S San Marcial Street, El Paso	VOCs by AutoGC	active	7/1/1995	PAMS, SLAMS	Continuous	Highest Concentration; Max Precursor Emissions Impact	Neighborhood	Urban and Center City	medium
Far West Texas	El Paso	El Paso Mimosa (previously Riverside)	481410038	7501 Mimosa Avenue, El Paso	PM10 (FRM)	active	10/12/1988	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Suburban	critical
Far West Texas	El Paso	El Paso UTEP (temporarily inactive for relocation)	481410037	250 Rim Rd, El Paso	CO	inactive	11/16/2021	SPM	Continuous	Highest Concentration	Neighborhood	Urban and Center City	inactive
Far West Texas	El Paso	El Paso UTEP (temporarily inactive for relocation)	481410037	250 Rim Rd, El Paso	NO, NO2, and NOx	inactive	11/16/2021	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighborhood	Urban and Center City	inactive
Far West Texas	El Paso	El Paso UTEP (temporarily inactive for relocation)	481410037	250 Rim Rd, El Paso	O3	inactive	11/16/2021	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighborhood	Urban and Center City	inactive
Far West Texas	El Paso	El Paso UTEP (temporarily inactive for relocation)	481410037	250 Rim Rd, El Paso	PM2.5 FRM	inactive	11/16/2021	SLAMS	24 Hours; 1/6 Days	General Background; Population Exposure	Neighborhood	Urban and Center City	inactive
Far West Texas	El Paso	El Paso UTEP (temporarily inactive for relocation)	481410037	250 Rim Rd, El Paso	PM2.5 (TEOM)	inactive	11/16/2021	SPM	Continuous	Highest Concentration	Neighborhood	Urban and Center City	inactive
Far West Texas	El Paso	El Paso UTEP (temporarily inactive for relocation)	481410037	250 Rim Rd, El Paso	TSP (Pb)	inactive	10/31/2020	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Urban and Center City	inactive
Far West Texas	El Paso	Ivanhoe	481410029	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	O3	active	3/29/2000	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
Far West Texas	El Paso	Ivanhoe	481410029	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	PM10 (FRM)	active	10/1/1988	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Suburban	critical
Far West Texas	El Paso	Ojo De Agua	481411021	6767 Ojo De Agua, El Paso	CO	active	6/6/2013	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	low
Far West Texas	El Paso	Ojo De Agua	481411021	6767 Ojo De Agua, El Paso	O3	active	3/24/2021	SPM	Continuous	General, Background	Neighborhood	Suburban	critical

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Far West Texas	El Paso	Ojo De Agua	481411021	6767 Ojo De Agua, El Paso	PM10 (FRM)	active	4/15/2013	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Suburban	medium
Far West Texas	El Paso	Ojo De Agua	481411021	6767 Ojo De Agua, El Paso	PM10 (FRM)	active	4/15/2013	QA Collocated, SLAMS	24 Hours; 1/12 Days	Population Exposure	Neighborhood	Suburban	QA collocated monitors not assessed in the FYA
Far West Texas	El Paso	Ojo De Agua	481411021	6767 Ojo De Agua, El Paso	TSP (Pb)	inactive	10/31/2020	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Suburban	inactive
Far West Texas	El Paso	Skyline Park	481410058	5050A Yvette Drive, El Paso	O3	active	7/11/2000	Border Grant, SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Far West Texas	El Paso	Socorro Hueco	481410057	320 Old Hueco Tanks Road, El Paso	O3	active	12/5/2012	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Far West Texas	El Paso	Socorro Hueco	481410057	320 Old Hueco Tanks Road, El Paso	PM10 (FRM)	inactive	5/7/2024	Border Grant, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Suburban	inactive, replaced by FEM
Far West Texas	El Paso	Socorro Hueco	481410057	320 Old Hueco Tanks Road, El Paso	PM10 (FRM)	inactive	5/7/2024	Border Grant, QA Collocated, SLAMS	24 Hours; 1/12 Days	Population Exposure	Neighborhood	Suburban	inactive
Far West Texas	El Paso	Socorro Hueco	481410057	320 Old Hueco Tanks Road, El Paso	PM10 FEM	active	5/8/2024	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Far West Texas	El Paso	Socorro Hueco	481410057	320 Old Hueco Tanks Road, El Paso	PM2.5 (TEOM)	inactive	5/1/2024	SPM	Continuous	Population Exposure	Neighborhood	Suburban	inactive, replaced by FEM
Far West Texas	El Paso	Socorro Hueco	481410057	320 Old Hueco Tanks Road, El Paso	PM2.5 FEM	active	5/7/2024	QA Collocated, SLAMS	Continuous	Quality Assurance	Neighborhood	Suburban	QA collocated monitors not assessed in the FYA
Far West Texas	El Paso	Socorro Hueco	481410057	320 Old Hueco Tanks Road, El Paso	PM2.5 FEM	active	5/8/2024	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Far West Texas	El Paso	Van Buren	481410693	2700 Harrison Avenue, El Paso	PM10 (FRM)	active	8/6/2010	SPM	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Urban and Center City	medium
Far West Texas	none	Bravo Big Bend	480430101	Big Bend National Park, Big Bend Nat Park	PM2.5 FEM (Beta)	active	5/5/2017	SPM	Continuous	General, Background	Regional Scale	Rural	medium
Lower Rio Grande Valley Texas	Brownsville-Harlingen	Brownsville East 6th Street (previously Brownsville)	480611098 (previously 480610006)	85 East 6th Street, Brownsville (relocated from 344 Porter Drive)	PM2.5 FEM (Beta)	active	4/5/2023	SLAMS	Continuous	Population Exposure	Regional Scale	Urban and Center City	critical

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Lower Rio Grande Valley Texas	Brownsville-Harlingen	Harlingen Teege	480611023	1602 W Teege Avenue, Harlingen	O3	active	10/9/2012	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
Lower Rio Grande Valley Texas	Brownsville-Harlingen	Isla Blanca State Park Road	480612004	33174 State Park Road 100, South Padre Island	PM2.5 FEM (Beta)	active	10/7/2019	SPM	Continuous	Regional Transport	Urban Scale	Rural	critical
Lower Rio Grande Valley Texas	Eagle Pass	Eagle Pass	483230004	265 Foster Maldonado, Eagle Pass	PM2.5 FEM (Beta)	active	3/28/2018	SPM	Continuous	Regional Transport	Regional Scale	Urban and Center City	critical
Lower Rio Grande Valley Texas	Laredo	Laredo Bridge	484790017	700 Zaragosa St, Laredo	PM10 (FRM)	active	10/3/1999	Border Grant, SLAMS	24 Hours; 1/6 Days	Highest Concentration	Microscale	Urban and Center City	medium
Lower Rio Grande Valley Texas	Laredo	Laredo Bridge	484790017	700 Zaragosa St, Laredo	VOCs by canister	active	12/20/2000	Border Grant, SLAMS, SPM	24 Hours; 1/6 Days	Highest Concentration	Neighborhood	Urban and Center City	medium
Lower Rio Grande Valley Texas	Laredo	Laredo College (previously Laredo Vidaurri)	484790016	West End Washington Street, (corner of Taylor and Crawford Roads), Laredo (relocated from 2020 Vidaurri Ave)	CO	active	11/8/2022	Border Grant, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	medium
Lower Rio Grande Valley Texas	Laredo	Laredo College (previously Laredo Vidaurri)	484790016	West End Washington Street, (corner of Taylor and Crawford Roads), Laredo (relocated from 2020 Vidaurri Ave)	O3	active	11/8/2022	Border Grant, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	medium
Lower Rio Grande Valley Texas	Laredo	Laredo College (previously Laredo Vidaurri)	484790016	West End Washington Street, (corner of Taylor and Crawford Roads), Laredo (relocated from 2020 Vidaurri Ave)	PM10 (FRM)	active	11/8/2022	Border Grant, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Urban and Center City	medium
Lower Rio Grande Valley Texas	Laredo	World Trade Bridge	484790313	Mines Road 11601 FM 1472, Laredo	PM2.5 FEM (Beta)	active	3/28/2018	SLAMS	Continuous	Source Oriented	Microscale	Suburban	critical
Lower Rio Grande Valley Texas	McAllen-Edinburg-Mission	Edinburg East Freddy Gonzalez Drive	482151046	1491 East Freddy Gonzalez Drive, Edinburg	PM10 (FRM)	inactive	10/31/2020	SLAMS	24 Hours; 1/6 Days	Population Exposure	Regional Scale	Urban and Center City	inactive
Lower Rio Grande Valley Texas	McAllen-Edinburg-Mission	Edinburg East Freddy Gonzalez Drive	482151046	1491 East Freddy Gonzalez Drive, Edinburg	PM2.5 FRM	inactive	6/6/2022	SLAMS	24 Hours; 1/3 Days	Population Exposure	Regional Scale	Urban and Center City	inactive, replaced by FEM
Lower Rio Grande Valley Texas	McAllen-Edinburg-Mission	Edinburg East Freddy Gonzalez Drive	482151046	1491 East Freddy Gonzalez Drive, Edinburg	PM2.5 FEM (Beta)	active	6/6/2022	SLAMS	Continuous	Population Exposure	Regional Scale	Urban and Center City	critical
Lower Rio Grande Valley Texas	McAllen-Edinburg-Mission	Mission	482150043	2300 North Glasscock, Mission	O3	active	4/6/1998	SLAMS	Continuous	General, Background	Neighborhood	Suburban	critical

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Lower Rio Grande Valley Texas	McAllen-Edinburg-Mission	Mission	482150043	2300 North Glasscock, Mission	PM10 (FRM)	inactive	12/1/2022	SLAMS	24 Hours; 1/6 Days	Population Exposure	Urban Scale	Suburban	inactive, replaced by FEM
Lower Rio Grande Valley Texas	McAllen-Edinburg-Mission	Mission	482150043	2300 North Glasscock, Mission	PM10 FEM	active	10/11/2023	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
Lower Rio Grande Valley Texas	McAllen-Edinburg-Mission	Mission	482150043	2300 North Glasscock, Mission	PM2.5 FEM	active	1/24/2018	SPM	Continuous	Population Exposure	Neighborhood	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Arlington Municipal Airport	484393011	5504 South Collins Street, Arlington	NO, NO2, and NOx	active	1/17/2002	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Arlington Municipal Airport	484393011	5504 South Collins Street, Arlington	O3	active	1/17/2002	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Cleburne Airport	482510003	1650 Airport Drive, Cleburne	O3	active	5/10/2000	PAMS, SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Convention Center	481130050	717 South Akard, Dallas	PM10 (FRM)	active	8/1/1988	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Convention Center	481130050	717 South Akard, Dallas	PM10 (FRM)	active	1/1/2011	QA Collocated, SLAMS	24 Hours; 1/12 Days	Population Exposure	Neighborhood	Urban and Center City	QA collocated monitors not assessed in the FYA
North and Northeast Texas	Dallas-Fort Worth-Arlington	Convention Center	481130050	717 South Akard, Dallas	PM2.5 FRM	inactive	4/25/2022	SLAMS	24 Hours; 1/3 Days	Highest Concentration; Population Exposure	Neighborhood	Urban and Center City	inactive, replaced by FEM
North and Northeast Texas	Dallas-Fort Worth-Arlington	Convention Center	481130050	717 South Akard, Dallas	PM2.5 FEM (Beta)	active	4/29/2022	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Mount Pleasant	Cookville FM 4855	484491078	385 CR 4855, Not In A City	SO2	active	12/7/2016	SLAMS	Continuous	Source Oriented	Neighborhood	Rural	critical
North and Northeast Texas	Corsicana	Corsicana Airport	483491051	Corsicana Airport, Corsicana	NO, NO2, and NOx	active	6/16/2009	SPM	Continuous	General Background; Max Precursor Emissions Impact	Urban Scale	Rural	medium
North and Northeast Texas	Corsicana	Corsicana Airport	483491051	Corsicana Airport, Corsicana	O3	active	6/16/2009	SPM	Continuous	General Background; Max Ozone Concentration	Urban Scale	Rural	critical
North and Northeast Texas	Corsicana	Corsicana Airport	483491051	Corsicana Airport, Corsicana	PM2.5 (TEOM)	inactive	4/25/2022	SPM	Continuous	Source Oriented	Neighborhood	Rural	inactive, replaced by FEM

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North and Northeast Texas	Corsicana	Corsicana Airport	483491051	Corsicana Airport, Corsicana	PM2.5 FEM (Beta)	active	4/25/2022	SPM	Continuous	Source Oriented	Neighborhood	Rural	medium
North and Northeast Texas	Corsicana	Corsicana Airport	483491051	Corsicana Airport, Corsicana	SO2	active	6/16/2009	SPM	Continuous	Source Oriented	Urban Scale	Rural	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Bexar Street	481131096	5800 Bexar Street, Dallas	PM10 (FRM)	active	9/7/2021	SPM	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Bexar Street	481131096	5800 Bexar Street, Dallas	PM2.5 (TEOM)	active	2/1/2022	SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	low
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	Carbonyl	active	6/29/1999	PAMS, SLAMS	24 Hours; Seasonal, 8 Hour; Seasonal	Max Precursor Emissions Impact	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	CO high sensitivity	active	1/1/2011	NCORE, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	NO2 (Direct)	active	5/30/2019	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	NOy high sensitivity	active	3/2/2011	NCORE, PAMS, SLAMS	Continuous	Highest Concentration	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	O3	active	4/4/1995	NCORE, PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	PM10 FEM	active	6/27/2023	NCORE, SLAMS, SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	PM10-2.5	active	6/27/2023	NCORE, SLAMS, SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical

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Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	PM2.5 FRM	active	3/31/1999	QA Collocated, SLAMS, SPM	24 Hours; 1/12 Days	Population Exposure	Neighborhood	Urban and Center City	QA collocated monitors not assessed in the FYA
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	PM2.5 FEM	active	6/27/2023	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	PM2.5 Speciation	active	10/1/2000	CSN CTN, NCORE, SLAMS	24 Hours; 1/3 Days	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	SO2 high sensitivity	active	1/1/2011	NCORE, SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Hinton (temporarily inactive for relocation)	481130069	1415 Hinton Street, Dallas	VOCs by AutoGC	active	6/4/1996	PAMS, SLAMS	Continuous	Highest Concentration; Max Precursor Emissions Impact	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas LBJ Freeway	481131067	8652 LBJ Freeway, Dallas	NO, NO2, and NOx	active	4/2/2014	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas North #2	481130075	12532 1/2 Nuestra Drive, Dallas	NO, NO2, and NOx	active	11/3/1998	PAMS, SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas North #2	481130075	12532 1/2 Nuestra Drive, Dallas	O3	active	11/3/1998	PAMS, SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Redbird Airport Executive	481130087	3277 W Redbird Lane, Dallas	NO, NO2, and NOx	active	4/1/1995	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Dallas Redbird Airport Executive	481130087	3277 W Redbird Lane, Dallas	O3	active	12/13/1999	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Denton Airport South, Denton	NO, NO2, and NOx	active	3/20/1998	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Urban Scale	Rural	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Denton Airport South, Denton	NOy high sensitivity	active	5/9/2008	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Urban Scale	Rural	medium

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Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
North and Northeast Texas	Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Denton Airport South, Denton	O3	active	3/20/1998	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Urban Scale	Rural	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Denton Airport South, Denton	PM2.5 FEM (Beta)	active	7/30/2019	SPM	Continuous	Population Exposure	Urban Scale	Rural	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Denton Airport South, Denton	VOCs by canister	active	6/11/2000	PAMS, SLAMS	24 Hours; 1/6 Days	Max Ozone Concentration; Population Exposure	Urban Scale	Rural	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Eagle Mountain Lake	484390075	14290 Morris Dido Newark Rd, Eagle Mountain	NO, NO2, and NOx	active	4/10/2010	SPM	Continuous	Max Precursor Emissions Impact	Urban Scale	Rural	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Eagle Mountain Lake	484390075	14290 Morris Dido Newark Rd, Eagle Mountain	O3	active	6/1/2000	SLAMS	Continuous	Max Ozone Concentration	Neighborhood	Rural	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Earhart	481130061	3434 Bickers (Earhart Elem School), Dallas	PM10 (FRM)	active	4/1/2009	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Fort Worth California Parkway North	484391053	1198 California Parkway North, Fort Worth	CO	active	3/12/2015	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Fort Worth California Parkway North	484391053	1198 California Parkway North, Fort Worth	NO, NO2, and NOx	active	3/12/2015	Near Road, SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Fort Worth California Parkway North	484391053	1198 California Parkway North, Fort Worth	PM2.5 FEM (Beta)	active	7/31/2019	Near Road, SLAMS	Continuous	Population Exposure	Microscale	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Fort Worth California Parkway North	484391053	1198 California Parkway North, Fort Worth	PM2.5 FEM (Beta)	active	7/31/2019	QA Collocated, SLAMS	Continuous	Quality Assurance	Microscale	Urban and Center City	QA collocated monitors not assessed in the FYA
North and Northeast Texas	Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	3317 Ross Ave, Fort Worth	Carbonyl	active	5/27/2003	PAMS, SLAMS	24 Hours; Seasonal	Max Precursor Emissions Impact	Neighborhood	Urban and Center City	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	3317 Ross Ave, Fort Worth	NO, NO2, and NOx	active	1/1/1976	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	3317 Ross Ave, Fort Worth	O3	active	8/12/1997	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	critical

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Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
North and Northeast Texas	Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	3317 Ross Ave, Fort Worth	PM2.5 FEM (Beta)	active	7/31/2019	SLAMS	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	3317 Ross Ave, Fort Worth	VOCs by AutoGC	active	5/6/2003	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighborhood	Urban and Center City	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Frisco	480850005	6590 Hillcrest Road, Frisco	O3	active	7/29/1997	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Frisco Eubanks	480850009	6601 Eubanks, Frisco	TSP (Pb)	active	1/15/1995	SLAMS	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighborhood	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Frisco Eubanks	480850009	6601 Eubanks, Frisco	TSP (Pb)	active	11/17/2011	QA Collocated, SLAMS	24 Hours; 1/12 Days	Population Exposure; Source Oriented	Neighborhood	Suburban	QA collocated monitors not assessed in the FYA
North and Northeast Texas	Dallas-Fort Worth-Arlington	Frisco Stonebrook	480850029	7202 Stonebrook Parkway, Frisco	TSP (Pb)	active	1/7/2011	SPM	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighborhood	Suburban	critical
North and Northeast Texas	Granbury	Granbury	482210001	200 N Gordon Street, Granbury	O3	active	5/9/2000	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	4100 Fairway Dr, Grapevine	NO, NO2, and NOx	active	9/12/2000	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighborhood	Suburban	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	4100 Fairway Dr, Grapevine	O3	active	8/4/2000	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighborhood	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	4100 Fairway Dr, Grapevine	VOCs by canister	active	10/30/2003	PAMS, SLAMS	24 Hours; 1/6 Days	Max Ozone Concentration; Population Exposure	Neighborhood	Suburban	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Greenville	482311006	824 Sayle Street, Greenville	NO, NO2, and NOx	active	3/20/2003	SLAMS	Continuous	Population Exposure; Upwind Background	Neighborhood	Suburban	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Greenville	482311006	824 Sayle Street, Greenville	O3	active	3/20/2003	SLAMS	Continuous	Population Exposure; Upwind Background	Neighborhood	Suburban	critical
North and Northeast Texas	Longview	Hallsville Red Oak Road	482031079	9206 Red Oak Road, Hallsville	SO2	active	12/6/2016	SLAMS	Continuous	Source Oriented	Neighborhood	Rural	critical

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North and Northeast Texas	Dallas-Fort Worth-Arlington	Haws Athletic Center	484391006	600 1/2 Congress St, Fort Worth	PM2.5 FEM (Beta)	active	12/4/2019	SPM	Continuous	Population Exposure	Neighborhood	Urban and Center City	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Italy	481391044	900 FM 667 Ellis County, Italy	NO, NO2, and NOx	active	8/31/2007	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Rural	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Italy	481391044	900 FM 667 Ellis County, Italy	O3	active	8/31/2007	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Rural	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Italy	481391044	900 FM 667 Ellis County, Italy	VOCs by canister	active	9/3/2007	PAMS, SLAMS	24 Hours; 1/6 Days	Upwind Background	Urban Scale	Rural	medium
North and Northeast Texas	Longview	Karnack	482030002	Hwy 134 & Spur 449, Not In A City	NO, NO2, and NOx	active	8/28/2001	SLAMS	Continuous	General, Background	Regional Scale, Urban Scale	Rural	medium
North and Northeast Texas	Longview	Karnack	482030002	Hwy 134 & Spur 449, Not In A City	O3	active	8/28/2001	SLAMS	Continuous	General, Background	Regional Scale	Rural	critical
North and Northeast Texas	Longview	Karnack	482030002	Hwy 134 & Spur 449, Not In A City	PM2.5 FRM	inactive	5/23/2021	SPM	24 Hours; 1/6 Days	General, Background	Regional Scale	Rural	inactive, replaced by FEM
North and Northeast Texas	Longview	Karnack	482030002	Hwy 134 & Spur 449, Not In A City	PM2.5 (TEOM)	inactive	5/24/2021	SPM	Continuous	General, Background	Regional Scale	Rural	inactive, replaced by FEM
North and Northeast Texas	Longview	Karnack	482030002	Hwy 134 & Spur 449, Not In A City	PM2.5 FEM (Beta)	active	5/24/2021	SPM	Continuous	General, Background	Regional Scale	Rural	critical
North and Northeast Texas	Longview	Karnack	482030002	Hwy 134 & Spur 449, Not In A City	PM2.5 Speciation	active	8/17/2009	CSN Supplemental, SLAMS	24 Hours; 1/3 Days	General Background; Regional Transport	Regional Scale	Rural	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Kaufman	482570005	3790 S Houston St, Kaufman	NO, NO2, and NOx	active	10/2/2000	PAMS, SLAMS	Continuous	Population Exposure; Upwind Background	Neighborhood, Urban Scale	Suburban	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Kaufman	482570005	3790 S Houston St, Kaufman	O3	active	9/10/2000	PAMS, SLAMS	Continuous	Population Exposure; Upwind Background	Urban Scale	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Kaufman	482570005	3790 S Houston St, Kaufman	PM2.5 (TEOM)	inactive	4/25/2022	SPM	Continuous	Upwind Background	Regional Scale	Suburban	inactive, replaced by FEM
North and Northeast Texas	Dallas-Fort Worth-Arlington	Kaufman	482570005	3790 S Houston St, Kaufman	PM2.5 FEM (Beta)	active	4/25/2022	SPM	Continuous	Upwind Background	Urban Scale	Suburban	medium

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Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
North and Northeast Texas	Dallas-Fort Worth-Arlington	Kaufman	482570005	3790 S Houston St, Kaufman	SO2	active	9/10/2000	SLAMS	Continuous	Population Exposure; Upwind Background	Neighborhood	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Keller	484392003	FAA Site off Alta Vista Road, Fort Worth	NO, NO2, and NOx	active	4/10/2010	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Urban Scale	Suburban	medium
North and Northeast Texas	Dallas-Fort Worth-Arlington	Keller	484392003	FAA Site off Alta Vista Road, Fort Worth	O3	active	7/16/1997	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighborhood	Suburban	critical
North and Northeast Texas	Longview	Longview	481830001	Gregg Co Airport near Longview, Longview	NO, NO2, and NOx	active	6/17/1998	SPM	Continuous	Population Exposure	Neighborhood	Rural	medium
North and Northeast Texas	Longview	Longview	481830001	Gregg Co Airport near Longview, Longview	O3	active	1/1/1983	SLAMS	Continuous	Population Exposure	Neighborhood	Rural	critical
North and Northeast Texas	Longview	Longview	481830001	Gregg Co Airport near Longview, Longview	SO2	active	5/26/1999	SLAMS	Continuous	General Background; Population Exposure	Neighborhood	Rural	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Midlothian OFW (temporarily deactivated for relocation)	481390016	2725 Old Fort Worth Road, Midlothian	NO, NO2, and NOx	inactive	4/26/2022	SLAMS	Continuous	Source Oriented	Neighborhood	Suburban	inactive
North and Northeast Texas	Dallas-Fort Worth-Arlington	Midlothian OFW (temporarily deactivated for relocation)	481390016	2725 Old Fort Worth Road, Midlothian	O3	inactive	4/26/2022	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Midlothian OFW (temporarily deactivated for relocation)	481390016	2725 Old Fort Worth Road, Midlothian	PM2.5 (TEOM)	inactive	4/26/2022	SPM	Continuous	Regional Transport	Regional Scale	Suburban	inactive
North and Northeast Texas	Dallas-Fort Worth-Arlington	Midlothian OFW (temporarily deactivated for relocation)	481390016	2725 Old Fort Worth Road, Midlothian	PM2.5 FRM	inactive	4/26/2022	SPM	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Regional Scale	Suburban	inactive
North and Northeast Texas	Dallas-Fort Worth-Arlington	Midlothian OFW (temporarily deactivated for relocation)	481390016	2725 Old Fort Worth Road, Midlothian	PM2.5 Speciation	inactive	4/26/2022	SPM	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighborhood, Regional Scale	Suburban	inactive

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Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
North and Northeast Texas	Dallas-Fort Worth-Arlington	Midlothian OFW (temporarily deactivated for relocation)	481390016	2725 Old Fort Worth Road, Midlothian	SO2	inactive	4/26/2022	SLAMS	Continuous	Source Oriented	Neighborhood	Suburban	inactive
North and Northeast Texas	Dallas-Fort Worth-Arlington	Parker County	483670081	3033 New Authon Rd, Weatherford	O3	active	7/26/2000	SLAMS	Continuous	Population Exposure	Urban Scale	Rural	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Pilot Point	481211032	792 E Northside Dr, Pilot Point	O3	active	5/3/2006	SLAMS	Continuous	Population Exposure	Regional Scale	Suburban	critical
North and Northeast Texas	Corsicana	Richland Southeast 1220 Road	483491081	Southeast 1220 Road, Richland	SO2	active	11/16/2016	SLAMS	Continuous	Source Oriented	Neighborhood	Rural	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Rockwall Heath	483970001	100 E Heath St, Rockwall	O3	active	8/8/2000	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	critical
North and Northeast Texas	Longview	Tatum CR 2181d Martin Creek Lake	484011082	9515 County Road 2181d, Tatum	SO2	active	11/1/2017	SPM	Continuous	Source Oriented	Neighborhood	Rural	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Terrell Jamison Court (previously Terrell Temtex)	482570020	8 Jamison Ct, Terrell (relocated from 2988 Temtex Blvd)	TSP (Pb)	active	10/17/2024	SLAMS	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighborhood	Suburban	critical
North and Northeast Texas	Dallas-Fort Worth-Arlington	Terrell Jamison Court (previously Terrell Temtex)	482570020	8 Jamison Ct, Terrell (relocated from 2988 Temtex Blvd)	TSP (Pb)	active	10/17/2024	QA Collocated, SLAMS	24 Hours; 1/12 Days	Quality Assurance; Source Oriented	Neighborhood	Suburban	QA collocated monitors not assessed in the FYA
North and Northeast Texas	Texarkana-Texarkana	Texarkana New Boston	480371031	2700 New Boston Rd, Texarkana	PM2.5 FEM (Beta)	active	1/9/2019	SLAMS	Continuous	Population Exposure	Urban Scale	Urban and Center City	critical
North and Northeast Texas	Tyler	Tyler Airport Relocated	484230007	14790 County Road 1145, Tyler	NO, NO2, and NOx	active	5/25/2000	SPM	Continuous	General, Background	Urban Scale	Rural	medium
North and Northeast Texas	Tyler	Tyler Airport Relocated	484230007	14790 County Road 1145, Tyler	O3	active	5/25/2000	SLAMS	Continuous	General, Background	Urban Scale	Rural	critical
Panhandle and West Texas	Amarillo	Amarillo 24th Avenue	483751025	4205 NE 24th Avenue, Amarillo	PM2.5 FEM (Beta) (relocated from Amarillo A&M)	active	12/10/2024	SPM	Continuous	Population Exposure	Urban Scale	Suburban	low
Panhandle and West Texas	Amarillo	Amarillo 24th Avenue	483751025	4205 NE 24th Avenue, Amarillo	SO2	active	10/16/2013	SLAMS	Continuous	Population Exposure	Neighborhood	Suburban	medium

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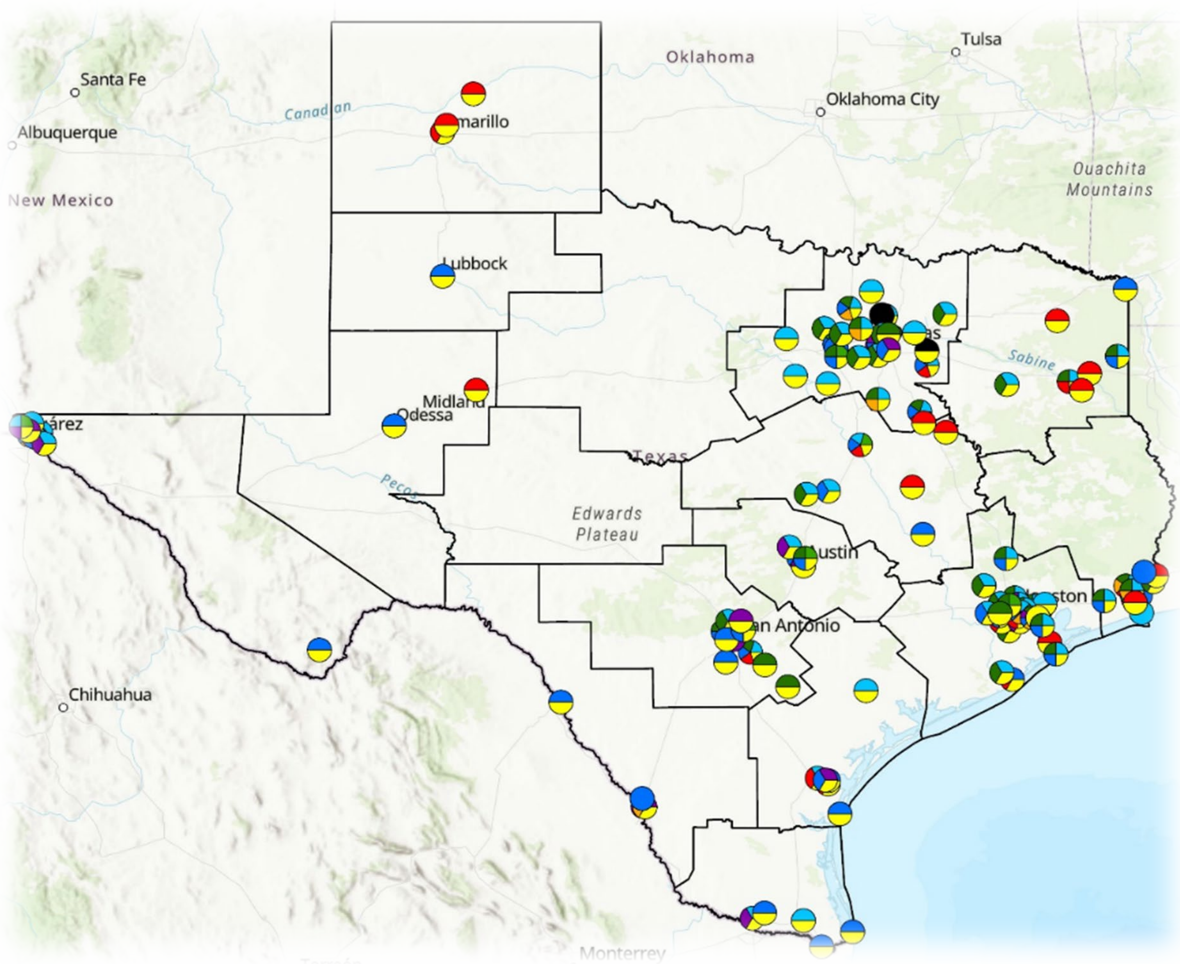
Section	CBSA	Site Name	Site Number	Address	Monitor Type	Status	Status Date	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Monitor Assessment Value or Status
Panhandle and West Texas	Amarillo	Amarillo A&M	483750320	6500 Amarillo Blvd West, Amarillo	PM2.5 FEM (Beta)	inactive	12/9/2024	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	inactive (relocated to Amarillo 24th Avenue)
Panhandle and West Texas	Amarillo	Amarillo Xcel El Rancho	483751077	Folsom Rd. & El Rancho Rd., Amarillo	SO2	active	12/16/2016	SLAMS	Continuous	Source Oriented	Neighborhood	Rural	critical
Panhandle and West Texas	Big Spring	Big Spring Midway	482271072	1218 N. Midway Rd, Big Spring	SO2	active	12/3/2016	SLAMS	Continuous	Source Oriented	Neighborhood	Rural	critical
Panhandle and West Texas	Borger	Borger FM 1559	482331073	19440 FM 1559, Borger	SO2	active	11/2/2016	SLAMS	Continuous	Source Oriented	Neighborhood	Rural	critical
Panhandle and West Texas	Lubbock	Lubbock 12th Street	483031028	3901 East 12th Street, Lubbock	PM2.5 FEM (Beta)	active	7/11/2018	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	medium
Panhandle and West Texas	Odessa	Odessa Gonzales	481351014	2700 Disney, Odessa	PM2.5 FEM (Beta)	active	7/10/2018	SPM	Continuous	Highest Concentration	Regional Scale	Suburban	critical

Abbreviation	Description
24 Hours; 1/12 Days	1 24-hour sample, once every twelfth day
24 Hours; 1/3 Days	1 24-hour sample, once every third day
24 Hours; 1/6 Days	1 24-hour sample, once every sixth day
24 Hours; 1/6 Days, 24 Hours; 1/12 Days	1 24-hour sample, once every sixth day, 1 24-hour sample, once every twelfth day
24 Hours; 1/6 Days, 24 Hours; 1/3 Days	1 24-hour sample, once every sixth day, 1 24-hour sample, once every third day
24 Hours; Seasonal	1 24-hour sample every sixth day seasonal
24 Hours; Seasonal, 8 Hour; Seasonal	1 24-hour sample every sixth day seasonal, three eight-hour samples seasonal
8 Hour; Seasonal, 24 Hours; Seasonal	1 24-hour sample every sixth day seasonal, three eight-hour samples seasonal
AutoGC	automated gas chromatograph
Ave	avenue
Blvd	boulevard
Co	county
CO	carbon monoxide
CR	county road
CSN STN	Chemical Speciation Network Speciation Trends Network site (includes NCore monitors/requirements, samples analyzed by EPA contracted laboratory)
Ct	court
Dr	drive
E	east
Elem	elementary
FEM	federal equivalent method
FM	farm to market
FRM	federal reference method
Hwy	highway
IH	interstate highway
LBJ	Lyndon B Johnson
max	maximum
N	north
Nat	national
NCORE	National Core Multipollutant Monitoring Stations
NE	northeast
NO/NO2/NOx	nitrogen oxides
NOy	total reactive nitrogen
O3	ozone
PAMS	Photochemical Assessment Monitoring Stations
Pkwy	parkway
PM10	particulate matter of 10 micrometers or less in diameter
PM10-2.5	coarse particulate matter
PM2.5	particulate matter of 2.5 micrometers or less in diameter
QA	quality assurance
Rd	road
SLAMS	State or Local Air Monitoring Stations
SO2	sulfur dioxide
SPM	special purpose monitor
St	street
SVRD SB	service road southbound
TEOM	tapered element oscillating microbalance (not NAAQS comparable)
TSP (Pb)	total suspended particulate (lead)
VOC	volatile organic compound
W	west
Yd	yard

Appendix B

2025 Texas Metropolitan, Micropolitan, and County Area Details

Texas Commission on Environmental Quality
Texas 2025 Five-Year Ambient Air Monitoring Network Assessment



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Five-Year Assessment Section	Texas Commission on Environmental Quality Region	Texas Core Based Statistical Area Title	Statistical Area Type	County Name
Coastal	R10-Beaumont	Beaumont-Port Arthur	Metropolitan Statistical Area	Hardin County
Coastal	R10-Beaumont	Beaumont-Port Arthur	Metropolitan Statistical Area	Jefferson County
Coastal	R10-Beaumont	Beaumont-Port Arthur	Metropolitan Statistical Area	Orange County
Coastal	R10-Beaumont	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	San Jacinto County
Coastal	R10-Beaumont	Lufkin	Micropolitan Statistical Area	Angelina County
Coastal	R10-Beaumont	Nacogdoches	Micropolitan Statistical Area	Nacogdoches County
Coastal	R10-Beaumont	none	none	Houston County
Coastal	R10-Beaumont	none	none	Jasper County
Coastal	R10-Beaumont	none	none	Newton County
Coastal	R10-Beaumont	none	none	Polk County
Coastal	R10-Beaumont	none	none	Sabine County
Coastal	R10-Beaumont	none	none	San Augustine County
Coastal	R10-Beaumont	none	none	Shelby County
Coastal	R10-Beaumont	none	none	Trinity County
Coastal	R10-Beaumont	none	none	Tyler County
Coastal	R12-Houston	Bay City	Micropolitan Statistical Area	Matagorda County
Coastal	R12-Houston	El Campo	Micropolitan Statistical Area	Wharton County
Coastal	R12-Houston	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	Austin County
Coastal	R12-Houston	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	Brazoria County
Coastal	R12-Houston	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	Chambers County
Coastal	R12-Houston	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	Fort Bend County
Coastal	R12-Houston	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	Galveston County
Coastal	R12-Houston	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	Harris County
Coastal	R12-Houston	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	Liberty County
Coastal	R12-Houston	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	Montgomery County
Coastal	R12-Houston	Houston-Pasadena-The Woodlands	Metropolitan Statistical Area	Waller County
Coastal	R12-Houston	Huntsville	Micropolitan Statistical Area	Walker County
Coastal	R12-Houston	none	none	Colorado County
Coastal	R14-Corpus Christi	Alice	Micropolitan Statistical Area	Jim Wells County
Coastal	R14-Corpus Christi	Beeville	Micropolitan Statistical Area	Bee County
Coastal	R14-Corpus Christi	Corpus Christi	Metropolitan Statistical Area	Aransas County
Coastal	R14-Corpus Christi	Corpus Christi	Metropolitan Statistical Area	Nueces County

Appendix B: 2025 Texas Metropolitan, Micropolitan, and County Area Details

Five-Year Assessment Section	Texas Commission on Environmental Quality Region	Texas Core Based Statistical Area Title	Statistical Area Type	County Name
Coastal	R14-Corpus Christi	Corpus Christi	Metropolitan Statistical Area	San Patricio County
Coastal	R14-Corpus Christi	Kingsville	Micropolitan Statistical Area	Kleberg County
Coastal	R14-Corpus Christi	none	none	DeWitt County
Coastal	R14-Corpus Christi	none	none	Gonzales County
Coastal	R14-Corpus Christi	none	none	Jackson County
Coastal	R14-Corpus Christi	none	none	Lavaca County
Coastal	R14-Corpus Christi	none	none	Live Oak County
Coastal	R14-Corpus Christi	none	none	Refugio County
Coastal	R14-Corpus Christi	Port Lavaca	Micropolitan Statistical Area	Calhoun County
Coastal	R14-Corpus Christi	Victoria	Metropolitan Statistical Area	Goliad County
Coastal	R14-Corpus Christi	Victoria	Metropolitan Statistical Area	Victoria County
Central	R11-Austin	Austin-Round Rock-San Marcos	Metropolitan Statistical Area	Bastrop County
Central	R11-Austin	Austin-Round Rock-San Marcos	Metropolitan Statistical Area	Caldwell County
Central	R11-Austin	Austin-Round Rock-San Marcos	Metropolitan Statistical Area	Hays County
Central	R11-Austin	Austin-Round Rock-San Marcos	Metropolitan Statistical Area	Travis County
Central	R11-Austin	Austin-Round Rock-San Marcos	Metropolitan Statistical Area	Williamson County
Central	R11-Austin	none	none	Blanco County
Central	R11-Austin	none	none	Burnet County
Central	R11-Austin	none	none	Fayette County
Central	R11-Austin	none	none	Lee County
Central	R11-Austin	none	none	Llano county
Central	R13-San Antonio	Fredericksburg	Micropolitan Statistical Area	Gillespie County
Central	R13-San Antonio	Kerrville	Micropolitan Statistical Area	Kerr County
Central	R13-San Antonio	none	none	Edwards County
Central	R13-San Antonio	none	none	Frio County
Central	R13-San Antonio	none	none	Karnes County
Central	R13-San Antonio	none	none	Real County
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Atascosa County
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Bandera County
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Bexar County
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Comal County
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Guadalupe County

Five-Year Assessment Section	Texas Commission on Environmental Quality Region	Texas Core Based Statistical Area Title	Statistical Area Type	County Name
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Kendall County
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Medina County
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Wilson County
Central	R13-San Antonio	Uvalde	Micropolitan Statistical Area	Uvalde County
Central	R9-Waco	Brenham	Micropolitan Statistical Area	Washington County
Central	R9-Waco	College Station-Bryan	Metropolitan Statistical Area	Brazos County
Central	R9-Waco	College Station-Bryan	Metropolitan Statistical Area	Burleson County
Central	R9-Waco	College Station-Bryan	Metropolitan Statistical Area	Robertson County
Central	R9-Waco	Killeen-Temple	Metropolitan Statistical Area	Bell County
Central	R9-Waco	Killeen-Temple	Metropolitan Statistical Area	Coryell County
Central	R9-Waco	Killeen-Temple	Metropolitan Statistical Area	Lampasas County
Central	R9-Waco	none	none	Freestone County
Central	R9-Waco	none	none	Grimes County
Central	R9-Waco	none	none	Hamilton County
Central	R9-Waco	none	none	Hill County
Central	R9-Waco	none	none	Leon County
Central	R9-Waco	none	none	Limestone County
Central	R9-Waco	none	none	Madison County
Central	R9-Waco	none	none	Milam County
Central	R9-Waco	none	none	Mills County
Central	R9-Waco	none	none	San Saba County
Central	R9-Waco	Waco	Metropolitan Statistical Area	Bosque County
Central	R9-Waco	Waco	Metropolitan Statistical Area	Falls County
Central	R9-Waco	Waco	Metropolitan Statistical Area	McLennan County
Far West	R6-El Paso	El Paso	Metropolitan Statistical Area	El Paso County
Far West	R6-El Paso	El Paso	Metropolitan Statistical Area	Hudspeth County
Far West	R6-El Paso	none	none	Brewster County
Far West	R6-El Paso	none	none	Culberson County
Far West	R6-El Paso	none	none	Jeff Davis County
Far West	R6-El Paso	none	none	Presidio County
Lower Rio Grande Valley	R15-Harlingen	Alice	Micropolitan Statistical Area	Brooks County
Lower Rio Grande Valley	R15-Harlingen	Brownsville-Harlingen	Metropolitan Statistical Area	Cameron County

Five-Year Assessment Section	Texas Commission on Environmental Quality Region	Texas Core Based Statistical Area Title	Statistical Area Type	County Name
Lower Rio Grande Valley	R15-Harlingen	McAllen-Edinburg-Mission	Metropolitan Statistical Area	Hidalgo County
Lower Rio Grande Valley	R15-Harlingen	none	none	Jim Hogg County
Lower Rio Grande Valley	R15-Harlingen	none	none	Kenedy County
Lower Rio Grande Valley	R15-Harlingen	Raymondville	Micropolitan Statistical Area	Willacy County
Lower Rio Grande Valley	R15-Harlingen	Rio Grande City-Roma	Micropolitan Statistical Area	Starr County
Lower Rio Grande Valley	R16-Laredo	Del Rio	Micropolitan Statistical Area	Val Verde County
Lower Rio Grande Valley	R16-Laredo	Eagle Pass	Metropolitan Statistical Area	Maverick County
Lower Rio Grande Valley	R16-Laredo	Laredo	Metropolitan Statistical Area	Webb County
Lower Rio Grande Valley	R16-Laredo	none	none	Dimmit County
Lower Rio Grande Valley	R16-Laredo	none	none	Duval County
Lower Rio Grande Valley	R16-Laredo	none	none	Kinney County
Lower Rio Grande Valley	R16-Laredo	none	none	La Salle County
Lower Rio Grande Valley	R16-Laredo	none	none	McMullen County
Lower Rio Grande Valley	R16-Laredo	none	none	Zavala County
Lower Rio Grande Valley	R16-Laredo	Zapata	Micropolitan Statistical Area	Zapata County
North and Northeast	R4-Dallas Fort Worth	Bonham	Micropolitan Statistical Area	Fannin County
North and Northeast	R4-Dallas Fort Worth	Corsicana	Micropolitan Statistical Area	Navarro County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Collin County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Dallas County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Denton County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Ellis County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Hunt County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Johnson County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Kaufman County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Parker County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Rockwall County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Tarrant County
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Wise County
North and Northeast	R4-Dallas Fort Worth	Gainesville	Micropolitan Statistical Area	Cooke County
North and Northeast	R4-Dallas Fort Worth	Granbury	Micropolitan Statistical Area	Hood County
North and Northeast	R4-Dallas Fort Worth	Mineral Wells	Micropolitan Statistical Area	Palo Pinto County
North and Northeast	R4-Dallas Fort Worth	Sherman-Denison	Metropolitan Statistical Area	Grayson County

Appendix B: 2025 Texas Metropolitan, Micropolitan, and County Area Details

Five-Year Assessment Section	Texas Commission on Environmental Quality Region	Texas Core Based Statistical Area Title	Statistical Area Type	County Name
North and Northeast	R4-Dallas Fort Worth	Stephenville	Micropolitan Statistical Area	Erath County
North and Northeast	R4-Dallas Fort Worth	none	none	Somervell County
North and Northeast	R5-Tyler	Athens	Micropolitan Statistical Area	Henderson County
North and Northeast	R5-Tyler	Jacksonville	Micropolitan Statistical Area	Cherokee County
North and Northeast	R5-Tyler	Longview	Metropolitan Statistical Area	Gregg County
North and Northeast	R5-Tyler	Longview	Metropolitan Statistical Area	Harrison County
North and Northeast	R5-Tyler	Longview	Metropolitan Statistical Area	Rusk County
North and Northeast	R5-Tyler	Longview	Metropolitan Statistical Area	Upshur County
North and Northeast	R5-Tyler	Mount Pleasant	Micropolitan Statistical Area	Camp County
North and Northeast	R5-Tyler	Mount Pleasant	Micropolitan Statistical Area	Morris County
North and Northeast	R5-Tyler	Mount Pleasant	Micropolitan Statistical Area	Titus County
North and Northeast	R5-Tyler	none	none	Cass County
North and Northeast	R5-Tyler	none	none	Delta County
North and Northeast	R5-Tyler	none	none	Franklin County
North and Northeast	R5-Tyler	none	none	Marion County
North and Northeast	R5-Tyler	none	none	Panola County
North and Northeast	R5-Tyler	none	none	Rains County
North and Northeast	R5-Tyler	none	none	Van Zandt County
North and Northeast	R5-Tyler	none	none	Wood County
North and Northeast	R5-Tyler	Palestine	Micropolitan Statistical Area	Anderson County
North and Northeast	R5-Tyler	Paris	Micropolitan Statistical Area	Lamar County
North and Northeast	R5-Tyler	Paris	Micropolitan Statistical Area	Red River County
North and Northeast	R5-Tyler	Sulphur Springs	Micropolitan Statistical Area	Hopkins County
North and Northeast	R5-Tyler	Texarkana	Metropolitan Statistical Area	Bowie County
North and Northeast	R5-Tyler	Tyler	Metropolitan Statistical Area	Smith County
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Armstrong County
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Carson County
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Oldham County
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Potter County
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Randall County
Panhandle and West	R1-Amarillo	Borger	Micropolitan Statistical Area	Hutchinson County
Panhandle and West	R1-Amarillo	Dumas	Micropolitan Statistical Area	Moore County

Five-Year Assessment Section	Texas Commission on Environmental Quality Region	Texas Core Based Statistical Area Title	Statistical Area Type	County Name
Panhandle and West	R1-Amarillo	Hereford	Micropolitan Statistical Area	Deaf Smith County
Panhandle and West	R1-Amarillo	none	none	Briscoe County
Panhandle and West	R1-Amarillo	none	none	Castro County
Panhandle and West	R1-Amarillo	none	none	Childress County
Panhandle and West	R1-Amarillo	none	none	Collingsworth County
Panhandle and West	R1-Amarillo	none	none	Dallam County
Panhandle and West	R1-Amarillo	none	none	Donley County
Panhandle and West	R1-Amarillo	none	none	Hall County
Panhandle and West	R1-Amarillo	none	none	Hansford County
Panhandle and West	R1-Amarillo	none	none	Hartley County
Panhandle and West	R1-Amarillo	none	none	Hemphill County
Panhandle and West	R1-Amarillo	none	none	Lipscomb County
Panhandle and West	R1-Amarillo	none	none	Ochiltree County
Panhandle and West	R1-Amarillo	none	none	Parmer County
Panhandle and West	R1-Amarillo	none	none	Sherman County
Panhandle and West	R1-Amarillo	none	none	Swisher County
Panhandle and West	R1-Amarillo	none	none	Wheeler County
Panhandle and West	R1-Amarillo	Pampa	Micropolitan Statistical Area	Gray County
Panhandle and West	R1-Amarillo	Pampa	Micropolitan Statistical Area	Roberts County
Panhandle and West	R2-Lubbock	Lubbock	Metropolitan Statistical Area	Cochran County
Panhandle and West	R2-Lubbock	Lubbock	Metropolitan Statistical Area	Crosby County
Panhandle and West	R2-Lubbock	Lubbock	Metropolitan Statistical Area	Garza County
Panhandle and West	R2-Lubbock	Lubbock	Metropolitan Statistical Area	Hockley County
Panhandle and West	R2-Lubbock	Lubbock	Metropolitan Statistical Area	Lubbock County
Panhandle and West	R2-Lubbock	Lubbock	Metropolitan Statistical Area	Lynn County
Panhandle and West	R2-Lubbock	none	none	Bailey County
Panhandle and West	R2-Lubbock	none	none	Dickens County
Panhandle and West	R2-Lubbock	none	none	King County
Panhandle and West	R2-Lubbock	none	none	Lamb County
Panhandle and West	R2-Lubbock	none	none	Motley County
Panhandle and West	R2-Lubbock	none	none	Terry County
Panhandle and West	R2-Lubbock	none	none	Yoakum County

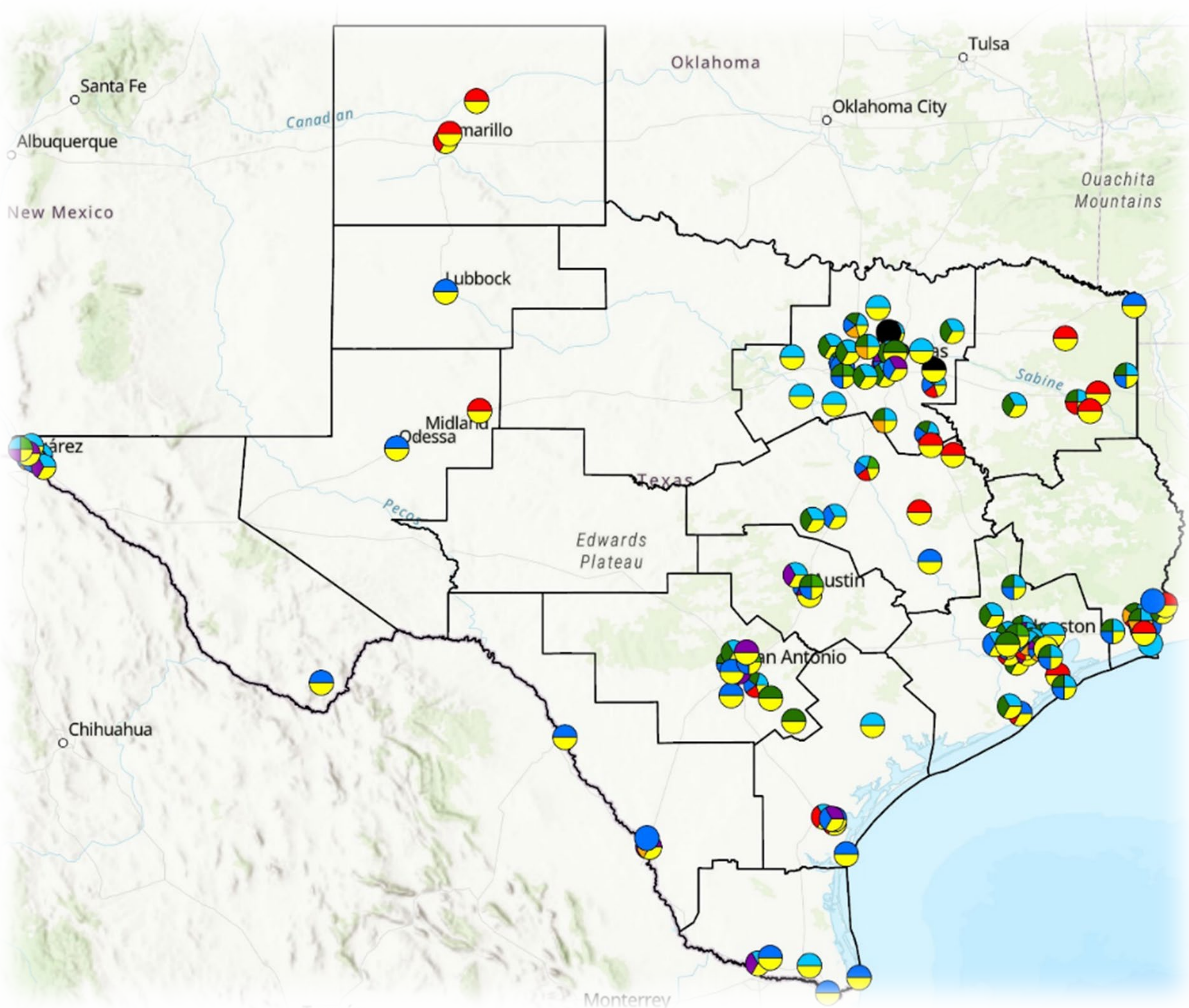
Five-Year Assessment Section	Texas Commission on Environmental Quality Region	Texas Core Based Statistical Area Title	Statistical Area Type	County Name
Panhandle and West	R2-Lubbock	Plainview	Micropolitan Statistical Area	Floyd County
Panhandle and West	R2-Lubbock	Plainview	Micropolitan Statistical Area	Hale County
Panhandle and West	R3-Abilene	Abilene	Metropolitan Statistical Area	Callahan County
Panhandle and West	R3-Abilene	Abilene	Metropolitan Statistical Area	Jones County
Panhandle and West	R3-Abilene	Abilene	Metropolitan Statistical Area	Taylor County
Panhandle and West	R3-Abilene	Brownwood	Micropolitan Statistical Area	Brown County
Panhandle and West	R3-Abilene	none	none	Baylor County
Panhandle and West	R3-Abilene	none	none	Coleman County
Panhandle and West	R3-Abilene	none	none	Comanche County
Panhandle and West	R3-Abilene	none	none	Cottle County
Panhandle and West	R3-Abilene	none	none	Eastland County
Panhandle and West	R3-Abilene	none	none	Fisher County
Panhandle and West	R3-Abilene	none	none	Foard County
Panhandle and West	R3-Abilene	none	none	Hardeman County
Panhandle and West	R3-Abilene	none	none	Haskell County
Panhandle and West	R3-Abilene	none	none	Jack County
Panhandle and West	R3-Abilene	none	none	Kent County
Panhandle and West	R3-Abilene	none	none	Knox County
Panhandle and West	R3-Abilene	none	none	Mitchell County
Panhandle and West	R3-Abilene	none	none	Montague County
Panhandle and West	R3-Abilene	none	none	Runnels County
Panhandle and West	R3-Abilene	none	none	Shackelford County
Panhandle and West	R3-Abilene	none	none	Stephens County
Panhandle and West	R3-Abilene	none	none	Stonewall County
Panhandle and West	R3-Abilene	none	none	Throckmorton County
Panhandle and West	R3-Abilene	none	none	Young County
Panhandle and West	R3-Abilene	Snyder	Micropolitan Statistical Area	Scurry County
Panhandle and West	R3-Abilene	Sweetwater	Micropolitan Statistical Area	Nolan County
Panhandle and West	R3-Abilene	Vernon	Micropolitan Statistical Area	Wilbarger County
Panhandle and West	R3-Abilene	Wichita Falls	Metropolitan Statistical Area	Archer County
Panhandle and West	R3-Abilene	Wichita Falls	Metropolitan Statistical Area	Clay County
Panhandle and West	R3-Abilene	Wichita Falls	Metropolitan Statistical Area	Wichita County

Five-Year Assessment Section	Texas Commission on Environmental Quality Region	Texas Core Based Statistical Area Title	Statistical Area Type	County Name
Panhandle and West	R7-Midland	Andrews	Micropolitan Statistical Area	Andrews County
Panhandle and West	R7-Midland	Big Spring	Micropolitan Statistical Area	Howard County
Panhandle and West	R7-Midland	Midland	Metropolitan Statistical Area	Martin County
Panhandle and West	R7-Midland	Midland	Metropolitan Statistical Area	Midland County
Panhandle and West	R7-Midland	none	none	Borden County
Panhandle and West	R7-Midland	none	none	Crane County
Panhandle and West	R7-Midland	none	none	Dawson County
Panhandle and West	R7-Midland	none	none	Gaines County
Panhandle and West	R7-Midland	none	none	Glasscock County
Panhandle and West	R7-Midland	none	none	Loving County
Panhandle and West	R7-Midland	none	none	Pecos County
Panhandle and West	R7-Midland	none	none	Terrel County
Panhandle and West	R7-Midland	none	none	Upton County
Panhandle and West	R7-Midland	none	none	Ward County
Panhandle and West	R7-Midland	none	none	Winkler County
Panhandle and West	R7-Midland	Odessa	Metropolitan Statistical Area	Ector County
Panhandle and West	R7-Midland	Town of Pecos	Micropolitan Statistical Area	Reeves County
Panhandle and West	R8-San Angelo	none	none	Coke County
Panhandle and West	R8-San Angelo	none	none	Concho County
Panhandle and West	R8-San Angelo	none	none	Crockett County
Panhandle and West	R8-San Angelo	none	none	Kimble County
Panhandle and West	R8-San Angelo	none	none	Mason County
Panhandle and West	R8-San Angelo	none	none	McColloch County
Panhandle and West	R8-San Angelo	none	none	Menard County
Panhandle and West	R8-San Angelo	none	none	Reagan County
Panhandle and West	R8-San Angelo	none	none	Schleicher County
Panhandle and West	R8-San Angelo	none	none	Sterling County
Panhandle and West	R8-San Angelo	none	none	Sutton County
Panhandle and West	R8-San Angelo	San Angelo	Metropolitan Statistical Area	Irion County
Panhandle and West	R8-San Angelo	San Angelo	Metropolitan Statistical Area	Tom Green County

Appendix C

References

Texas Commission on Environmental Quality
Texas 2025 Five-Year Ambient Air Monitoring Network Assessment



References

1. Electronic Code of Federal Regulations, Title 40, Part 50, National Primary and Secondary Ambient Air Quality Standards, 2025. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-50?toc=1
2. Electronic Code of Federal Regulations, Title 40, Part 51, Requirements for Preparation, Adoption, and Submittal of Implementation Plans, 2025. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-51?toc=1
3. Electronic Code of Federal Regulations, Title 40, Part 53, Procedures for Testing Performance Characteristics of Automated Methods for SO2, CO, O3, and NO2, 2025. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-53?toc=1
4. Electronic Code of Federal Regulations, Title 40, Part 58, Ambient Air Quality Surveillance, 2025. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-58?toc=1
5. Federal Register, *Revisions to Ambient Air Monitoring Regulations*, 71 FR 61238, 2006. https://www.govinfo.gov/content/pkg/FR-2006-10-17/pdf/06-8478.pdf
6. Federal Register, *Revisions to Ambient Air Monitoring Regulations*, 86 FR 26401, 2021. https://www.govinfo.gov/content/pkg/FR-2021-05-14/pdf/2021-10140.pdf#page=1
7. Federal Register, Revisions to the *Ambient Monitoring Quality Assurance and Other Requirements; Final Rule,* 81 FR 17248, 2016. https://www.federalregister.gov/documents/2016/03/28/2016-06226/revisions-to-ambient-monitoring-quality-assurance-and-other-requirements
8. Iowa State University, *Iowa Environmental Mesonet*, Custom Wind Rose Plots, 2025. https://mesonet.agron.iastate.edu/sites/dyn_windrose.phtml?station=MSN&network=WI_ASOS
9. Texas Administrative Code, Title 30, Part 1, Chapter 101, Subchapter 10, *Emissions Inventory Requirements*, 2023. https://texas-sos.appianportalsgov.com/rules-and-meetings?chapter=101&interface=VIEW_TAC&part=1&title=30
10. Texas Commission on Environmental Quality, *2017 and 2018 El Paso Exceptional Events Demonstration*, 2019. https://www.tceq.texas.gov/downloads/air-quality/air-monitoring/pm/pm10-event-2017-2019-elpaso.pdf
11. Texas Commission on Environmental Quality, *2017 Annual Monitoring Network Plan*, 2017. Available upon request.
12. Texas Commission on Environmental Quality, *2019 Annual Monitoring Network Plan*, 2019. Available upon request.
13. Texas Commission on Environmental Quality, *2020 Annual Monitoring Network Plan,* 2020. https://www.tceq.texas.gov/airquality/monops/past_network_reviews
14. Texas Commission on Environmental Quality, *2024 Annual Monitoring Network Plan*, 2024. https://www.tceq.texas.gov/airquality/monops/past_network_reviews
15. Texas Commission on Environmental Quality, *2025 Annual Monitoring Network Plan*, 2025. https://www.tceq.texas.gov/airquality/monops/past_network_reviews

16. Texas Commission on Environmental Quality, *About the Air Pollutant Watch List*, 2025. https://www.tceq.texas.gov/toxicology/apwl
17. Texas Commission on Environmental Quality, *Air Toxics Homepage*, 2025. https://www.tceq.texas.gov/toxicology/AirToxics.html
18. Texas Commission on Environmental Quality, *Collin County Second 10-Year Maintenance Plan State Implementation Plan Revision for the 2008 Lead National Ambient Air Quality Standard*, 2025. https://www.tceq.texas.gov/downloads/air-quality/sip/lead/collin/24042sip_collin_pb_2ndmaintenance.pdf
19. Texas Commission on Environmental Quality, *Dallas-Fort Worth: Lead History*, 2025. https://www.tceq.texas.gov/airquality/sip/dfw/dfw-lead-history
20. Texas Commission on Environmental Quality*, Exceptional Event Demonstrations for Particulate Matter*, 2025. https://www.tceq.texas.gov/airquality/monops/pm_flags.html
21. Texas Commission on Environmental Quality, *Howard County Attainment Demonstration SIP Revision for the 2010 One-Hour SO2 NAAQS*, 2022. https://www.tceq.texas.gov/downloads/air-quality/sip/so2/howard/21010sip_howard_adsip_adopkg_web.pdf
22. Texas Commission on Environmental Quality, *Hutchinson County Attainment Demonstration SIP Revision for the 2010 One- Hour SO2 NAAQS*, 2022. https://www.tceq.texas.gov/airquality/sip/criteria-pollutants/sip-so2#hutchinson-AD-ado
23. Texas Commission on Environmental Quality, *List of Monitoring Sites*, 2025. https://www17.tceq.texas.gov/tamis/index.cfm?fuseaction=report.site_list
24. Texas Commission on Environmental Quality, *Navarro County Attainment Demonstration SIP Revision for the 2010 One-Hour SO2 NAAQS*, 2022. https://www.tceq.texas.gov/downloads/air-quality/sip/so2/navarro/21012sip_navarro_adsip_adopkg_web.pdf
25. Texas Commission on Environmental Quality, *Protocol for Evaluating Potential and Active APWL Areas*, 2020. https://www.tceq.texas.gov/downloads/toxicology/air-pollutant-watch-list/protocol2020.pdf
26. Texas Commission on Environmental Quality, *Redesignation Request and Maintenance Plan SIP Revision for the Freestone-Anderson and Titus 2010 SO2 NAAQS Nonattainment Areas*, 2022. https://www.tceq.texas.gov/airquality/sip/criteria-pollutants/sip-so2#freestone-titus-RRMP-ado
27. Texas Commission on Environmental Quality, *Rusk-Panola Attainment Designation SIP Revision for the 2010 SO2 NAAQS*, 2022. https://www.tceq.texas.gov/downloads/air-quality/sip/archive/20057_rusk-panola_so2_archive.pdf
28. Texas Commission on Environmental Quality, *Sources of Air Emissions*, 2023. https://www.tceq.texas.gov/airquality/areasource
29. Texas Commission on Environmental Quality, *State Implementation Plan*, 2025. https://www.tceq.texas.gov/airquality/sip/texas-sip

30. Texas Commission on Environmental Quality, *Texas Air Monitoring Information System*, 2025. https://www17.tceq.texas.gov/tamis/index.cfm?fuseaction=home.welcome

31. Texas Commission on Environmental Quality, *Toxicological Evaluations of Ambient Air Monitoring Data*, 2025. https://www.tceq.texas.gov/toxicology/regmemo

32. Texas Commission on Environmental Quality, *Volatile Organic Compound Data*, 2025. https://www.tceq.texas.gov/airquality/monops/agc/auto-gc

33. Texas Commission on Environmental Quality, *Xcel Energy Agreed Order*, 2020. https://www.tceq.texas.gov/airquality/sip/criteria-pollutants/sip-so2#xcel-agreed-order

34. Texas Demographic Center, Interactive Maps & Tools, 2025. https://demographics.texas.gov/Interactive/

35. Texas Demographic Center, *Texas Population Estimates and Projections*, 2020-2040. https://www.demographics.texas.gov/Projections/2022/

36. Texas Government Code, Title 4, Subtitle E, Chapter 468, 2025. https://statutes.capitol.texas.gov/Docs/GV/htm/GV.468.htm

37. United States Census Bureau, *U.S. Office of Management and Budget, Core based statistical areas (CBSAs), metropolitan divisions, and combined statistical areas (CSAs)*, 2023. https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html

38. United States Environmental Protection Agency, *Air Monitoring Methods – Criteria Pollutants*, 2025. https://www.epa.gov/amtic/air-monitoring-methods-criteria-pollutants

39. United States Environmental Protection Agency, *Air Quality Design Values*, 2025. https://www.epa.gov/air-trends/air-quality-design-values

40. United States Environmental Protection Agency, *Air Quality System*, 2025. https://www.epa.gov/aqs

41. United States Environmental Protection Agency, *Final Rule: Revisions to Ambient Monitoring Quality Assurance and Other Requirements*, 2019. https://www.epa.gov/sites/default/files/2019-07/documents/20160316factsheet.pdf

42. United States Environmental Protection Agency, *NAAQS Table*, 2025. https://www.epa.gov/criteria-air-pollutants/naaqs-table

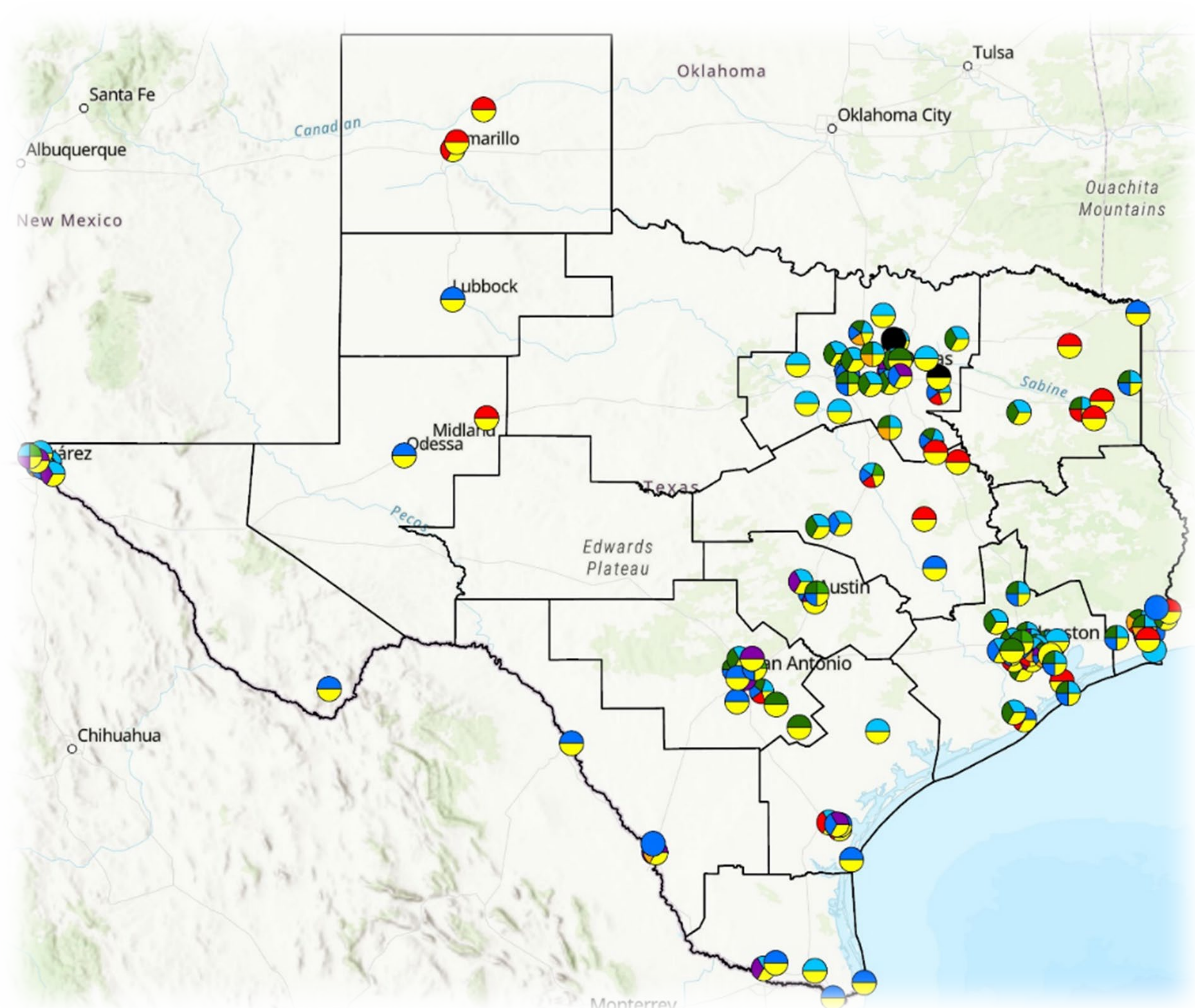
43. United States Environmental Protection Agency, *Near-Road NO_2 Technical Assistance Document*, 2020. https://www.epa.gov/sites/default/files/2020-09/documents/nearroadtad.pdf

44. United States Environmental Protection Agency, *Treatment of Air Quality Monitoring Data Influenced by Exceptional Events*, 2025. https://www.epa.gov/air-quality-analysis/treatment-air-quality-monitoring-data-influenced-exceptional-events

Appendix D

2025 Enhanced Monitoring Plan for Ozone

Texas Commission on Environmental Quality
Texas 2025 Five-Year Ambient Air Monitoring Network Assessment



Introduction

Title 40 Code of Federal Regulations (CFR) Section (§) 58.10 (a)(11) and Appendix D 5(h) require states with moderate or above eight-hour ozone (O_3) nonattainment areas to submit an Enhanced Monitoring Plan (EMP). At a minimum, the EMP must be assessed and approved at least every five-years as part of the five-year network assessment (FYA) and/or within two years following the effective date of a designation to a classification of moderate or above O_3 nonattainment. The EMP must detail enhanced O_3 and O_3 precursor monitoring activities deemed important to understanding the state's O_3 challenges. Such activities can include, but are not limited to, the following:

- additional O_3 monitors beyond minimally required,
- additional oxides of nitrogen (NO_x) or total reactive nitrogen compounds (NO_y) monitors beyond those required,
- additional volatile organic compound (VOC) or carbonyl measurements beyond those required, and
- enhanced upper air measurements of meteorology.

Currently, three areas in Texas are designated moderate or above nonattainment for the 2008 and/or the 2015 eight-hour O_3 standard. The Dallas Fort Worth (DFW) area counties of Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise are designated as serious nonattainment for the 2015 eight-hour O_3 NAAQS of 0.070 parts per million (ppm). The same DFW area counties, plus Rockwall County, are designated as severe nonattainment for the 2008 eight-hour O_3 NAAQS of 0.075 ppm. The Houston area counties of Harris, Galveston, Brazoria, Chambers, Fort Bend, and Montgomery are designated as serious nonattainment for the 2015 eight-hour O_3 NAAQS. The same Houston area counties plus Liberty and Waller Counties are designated as severe nonattainment for the 2008 eight-hour O_3 NAAQS. Additionally, Bexar County in the San Antonio area was recently designated as serious nonattainment for the 2015 eight-hour O_3 NAAQS, effective July 22, 2024. The Texas metropolitan, micropolitan, and county area details are listed in the *2025 Texas Five-Year Ambient Air Monitoring Network Assessment* (FYA) Appendix B. Figure 1 illustrates the counties designated nonattainment for the 2008 and/or the 2015 eight-hour O_3 standard.

This EMP provides information on Texas Commission on Environmental Quality's (TCEQ) O_3 and O_3 precursor monitoring efforts in each of the affected nonattainment areas. TCEQ and its monitoring partners (city, county, private, and industry) operate an additional robust network of non-federal state-initiative monitors that support a variety of purposes, including O_3 and O_3 precursor monitoring activities; however, these monitors are outside the scope of this document and are not included. The latest information regarding the entire Texas air monitoring network of federal and state-initiative monitors for Texas' metropolitan areas is featured on TCEQ's webpage [Air Monitoring - www.tceq.texas.gov.](http://www.tceq.texas.gov) TCEQ's enhanced monitoring efforts are currently in place and discussed below.

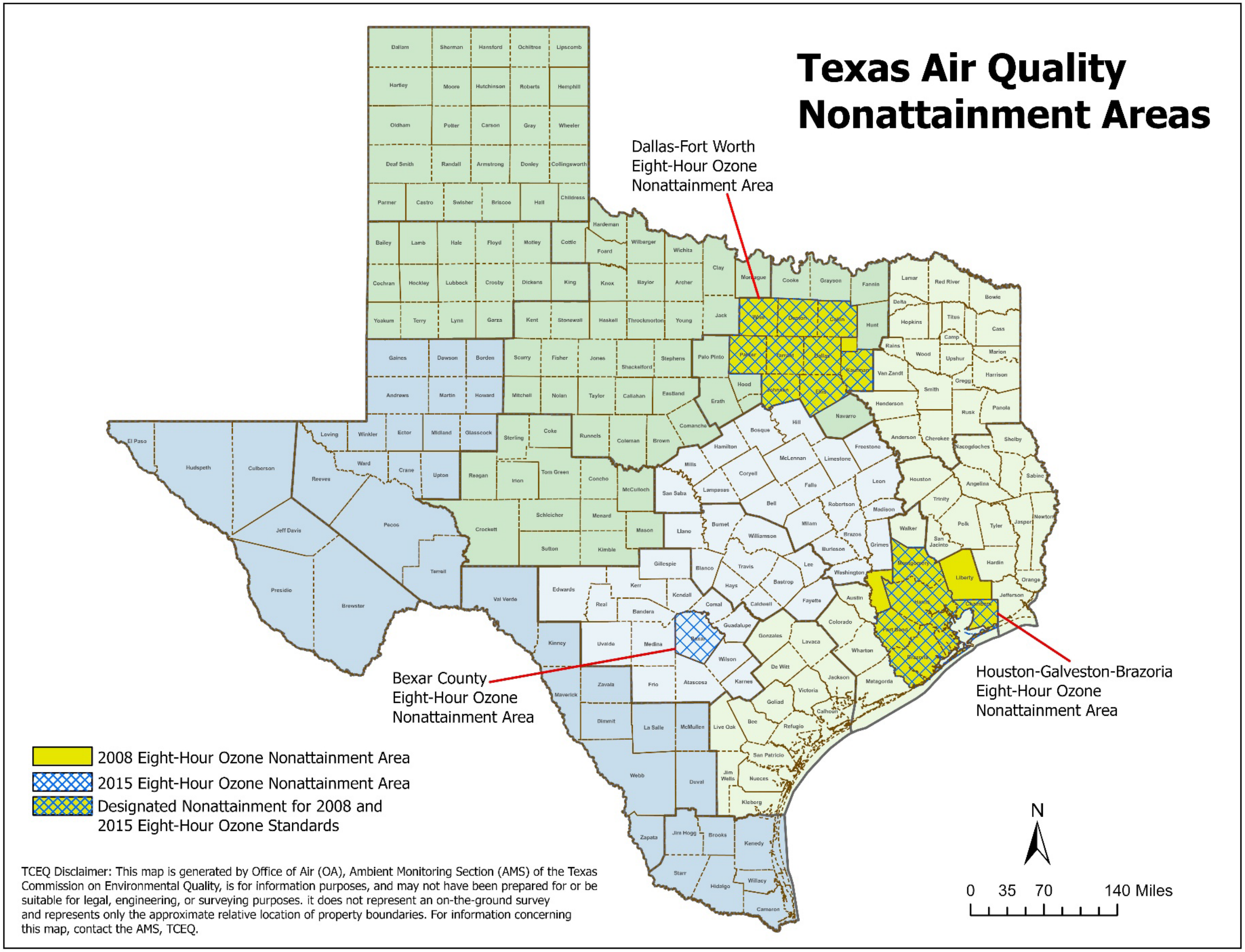


Figure 1: Texas Air Quality Nonattainment Areas for Ozone

Enhanced Monitoring for Ozone, Ozone Precursors, and Meteorology

TCEQ's Photochemical Assessment Monitoring Stations (PAMS) network monitors are located to meet PAMS requirements and support enhanced O_3 and O_3 precursor monitoring activities. The PAMS network includes monitoring in currently designated O_3 nonattainment areas in addition to areas with previous O_3 nonattainment designations. Additional monitors supporting ongoing enhanced O_3, O_3 precursor, and meteorological monitoring measurements include State or Local Air Monitoring Stations (SLAMS) and/or special purpose monitors (SPMs) located upwind, downwind, and in and around these areas.

PAMS Network

The PAMS network is an O_3 precursor monitoring network operated by state and local agencies that measures O_3, its precursors, and meteorological variables at National Core Multipollutant Monitoring Stations (NCore) sites in metropolitan areas with a Core Based Statistical Area (CBSA) population of 1,000,000 or more persons. The main objective of the required PAMS sites is to develop a database of O_3 precursors and meteorological measurements to support O_3 model development and track trends of important O_3 precursor concentrations. TCEQ's PAMS network also includes enhanced O_3 monitoring in currently designated O_3 nonattainment areas and areas with previous O_3 nonattainment designations.

The minimum PAMS measurements include the following:

- speciated VOCs;
- carbonyl compounds, three eight-hour samples every third day for June, July, and August;
- O_3;
- true (direct-read) nitrogen dioxide (NO_2);
- nitrogen oxide (NO) and NO_y;
- outdoor temperature;
- wind direction and wind speed;
- atmospheric pressure;
- relative humidity;
- precipitation;
- mixing-height;
- solar radiation; and
- ultraviolet radiation.

Monitoring Requirements

State monitoring agencies are required to measure and report PAMS measurements at each required NCore site located in CBSAs with populations greater than 1,000,000, based on the latest available census figures. TCEQ meets PAMS monitoring requirements listed in 40 CFR Part 58, Appendix D, Section 5(b) with the measurements at the two NCore/PAMS sites listed below in Table 1.

Table 1: Required Photochemical Assessment Monitoring Stations and Parameters

Core Based Statistical Area	Site Name	VOCs	Carbonyl compounds	O_3	True NO_2	NO_y and NO	Ambient Temperature	Wind Direction and Speed	Atmospheric Pressure	Relative Humidity	Precipitation	Mixing-Height*	Solar Radiation	Ultraviolet Radiation
Dallas-Fort Worth-Arlington	Dallas Hinton	√	√	√	√	√	√	√	√	√	√	√	√	√
Houston-Pasadena-The Woodlands	Houston Deer Park #2	√	√	√	√	√	√	√	√	√	√	√	√	√

*Mixing height requirement for the Houston-Pasadena-The Woodlands core based statistical area is met at the La Porte Airport site
- number sign
VOCs – volatile organic compounds speciated
O_3 – ozone
NO_2 – nitrogen dioxide
NO_y – total reactive nitrogen compounds
NO – nitrogen oxide

Dallas-Fort Worth Area Ozone, Ozone Precursor, and Meteorological Monitoring Activities

DFW area counties designated as nonattainment for O_3 are illustrated in Figure 2. Figure 3 illustrates the active sites and monitors in the DFW area along with population densities and wind roses. The active sites and monitors supporting the DFW area enhanced ozone, ozone precursor, and meteorological monitoring activities are listed in Table 2 and identified geographically in Figure 3. The DFW O_3 design values from 1991 to 2023 with corresponding annual population estimates in Figure 4 illustrate that even though the population has almost doubled in size, DFW air quality has greatly improved though recent years show a small uptick in concentrations. TCEQ greatly exceeds PAMS requirements and has a robust array of monitors supporting the area's enhanced monitoring needs.

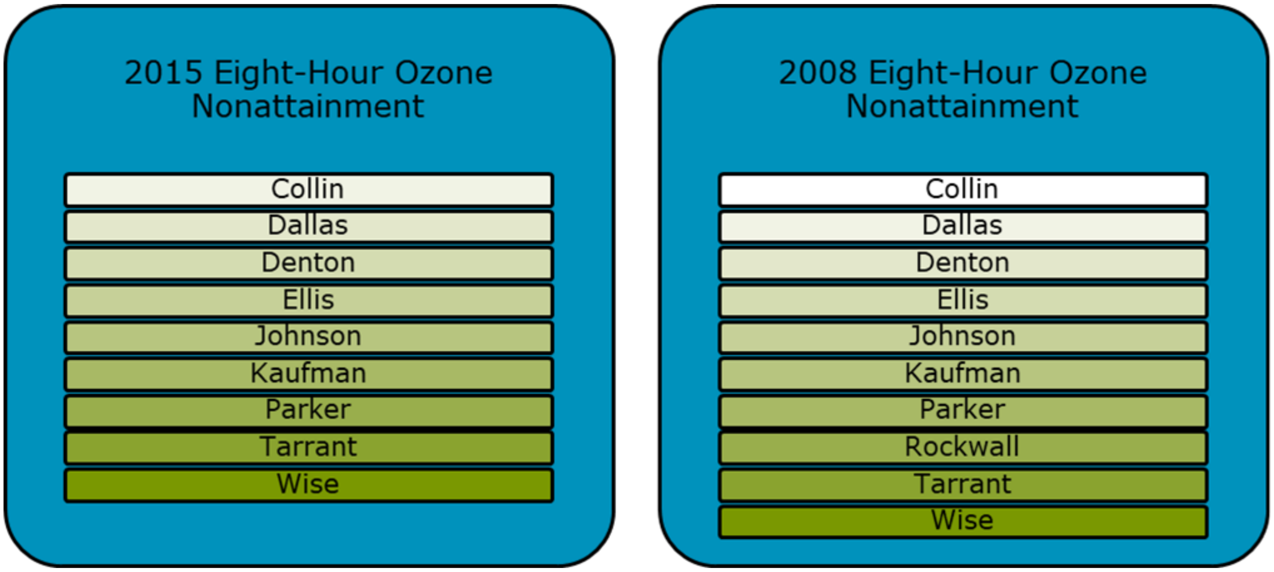


Figure 2: Dallas-Fort Worth Area Counties Designated Nonattainment for Ozone

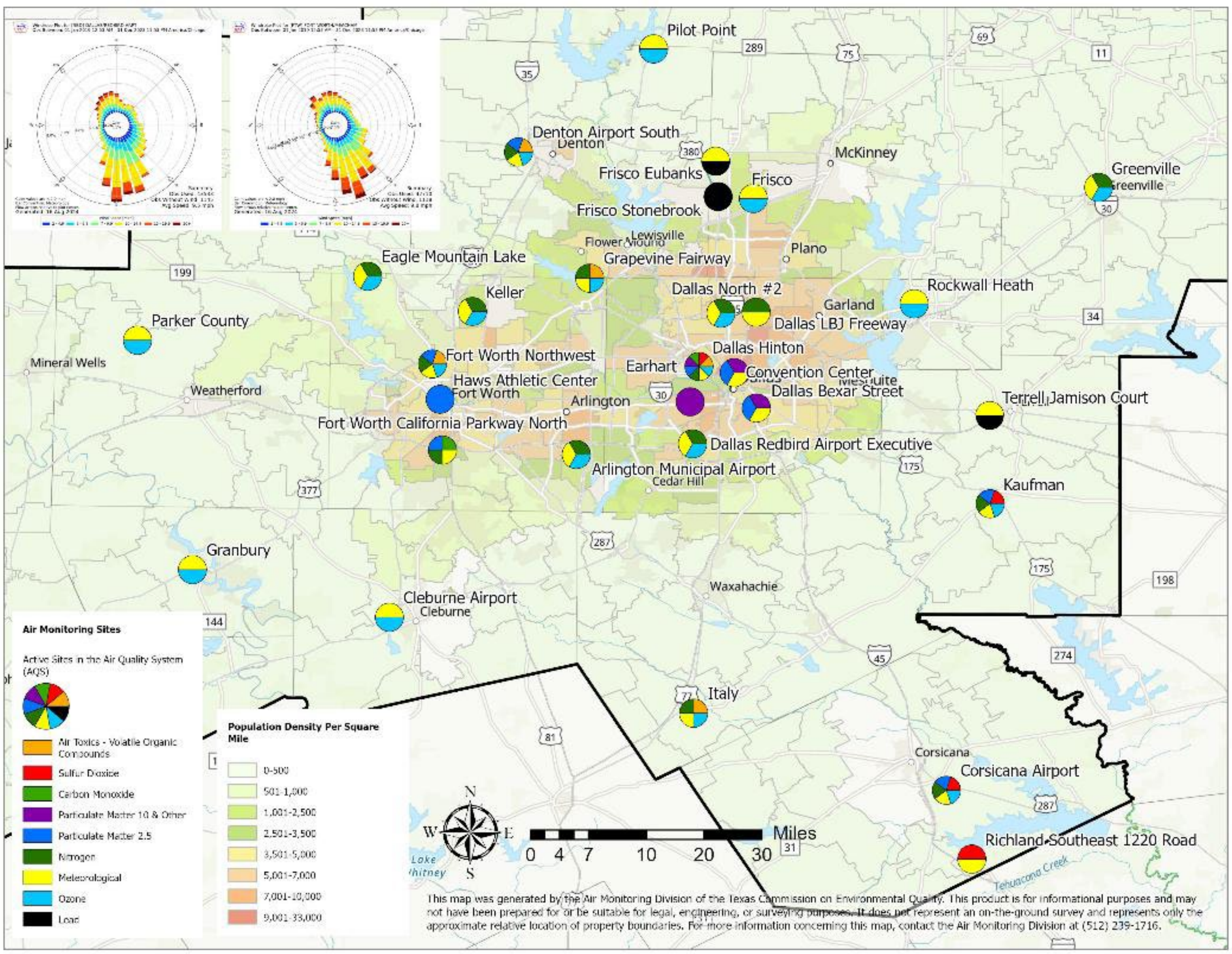
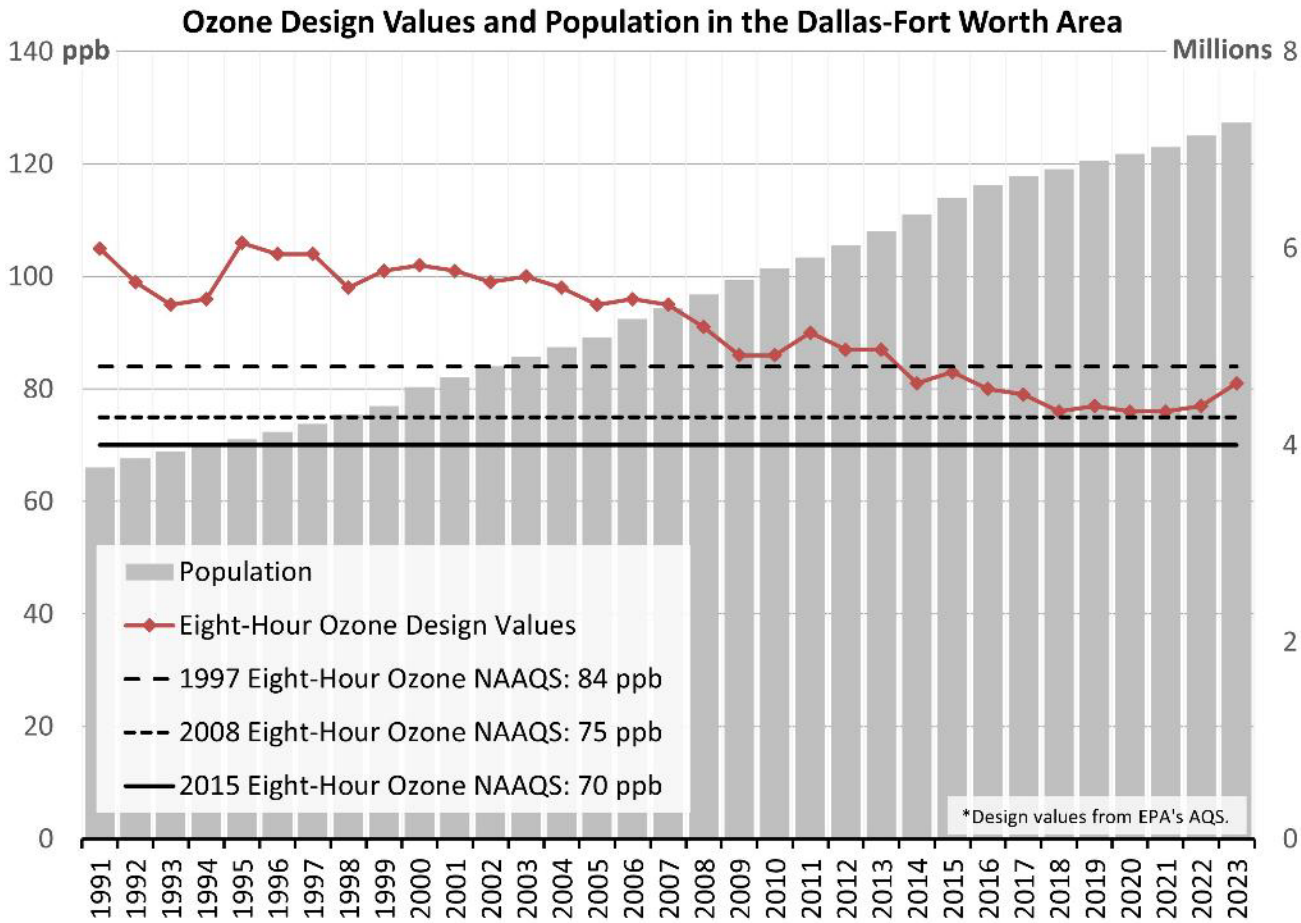


Figure 3: Dallas-Fort Worth Active Sites and Monitors, Population Density, and Wind Roses



EPA AQS – United States Environmental Protection Agency Air Quality Database
NAAQS – National Ambient Air Quality Standards
ppb – parts per billion
US - United States

Figure 4: Dallas-Fort Worth Area Ozone Design Values and Population

Table 2: Dallas-Fort Worth Area Enhanced Monitoring Plan Measurements

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Barometric Pressure	PAMS, SLAMS	Barometric pressure transducer
Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	Barometric Pressure	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Carbonyl	PAMS, SLAMS	DNPH Silica HPLC
Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	Carbonyl	PAMS, SLAMS	DNPH Silica HPLC
Corsicana*	Corsicana Airport	483491051	Dew Point	SPM	Derived at site
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Dew Point	SPM	Derived at site
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Dew Point	SPM	Derived at site
Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	Dew Point	SPM	Derived at site

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	Dew Point	SPM	Derived at site
Dallas-Fort Worth-Arlington	Italy	481391044	Dew Point	SPM	Derived at site
Dallas-Fort Worth-Arlington	Kaufman	482570005	Dew Point	SPM	Derived at site
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Mixing height	PAMS, SLAMS	Ceilometer
Corsicana*	Corsicana Airport	483491051	$NO/NO_2/NO_x$	SPM	Chemiluminescence
Dallas-Fort Worth-Arlington	Arlington Municipal Airport	484393011	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Dallas North #2	481130075	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Dallas Redbird Airport Executive	481130087	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Eagle Mountain Lake	484390075	$NO/NO_2/NO_x$	SPM	Chemiluminescence
Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Greenville	482311006	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Italy	481391044	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Kaufman	482570005	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Keller	484392003	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	NO_2 (Direct)	PAMS, SLAMS	Direct-Read NO_2
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	NO_y (High Sensitivity)	NCORE, PAMS, SLAMS	Chemiluminescence
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	NO_y (High Sensitivity)	PAMS, SLAMS	Chemiluminescence
Corsicana*	Corsicana Airport	483491051	O_3	SPM	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Arlington Municipal Airport	484393011	O_3	SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Cleburne Airport	482510003	O_3	PAMS, SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	O_3	NCORE, PAMS, SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Dallas North #2	481130075	O_3	PAMS, SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Dallas Redbird Airport Executive	481130087	O_3	SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	O_3	PAMS, SLAMS	Ultraviolet Photometric

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Dallas-Fort Worth-Arlington	Eagle Mountain Lake	484390075	O_3	SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	O_3	PAMS, SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Frisco	480850005	O_3	SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	O_3	PAMS, SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Greenville	482311006	O_3	SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Italy	481391044	O_3	PAMS, SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Kaufman	482570005	O_3	PAMS, SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Keller	484392003	O_3	PAMS, SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Parker County	483670081	O_3	SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Pilot Point	481211032	O_3	SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Rockwall Heath	483970001	O_3	SLAMS	Ultraviolet Photometric
Granbury	Granbury	482210001	O_3	SLAMS	Ultraviolet Photometric
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Precipitation	PAMS, SLAMS	Rain Gauge
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Precipitation	PAMS, SLAMS	Rain Gauge
Corsicana*	Corsicana Airport	483491051	Relative Humidity	SPM	Sonic weather sensor
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Relative Humidity	NCORE, PAMS, SLAMS	Humidity Sensor
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Relative Humidity	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	Relative Humidity	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	Relative Humidity	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Italy	481391044	Relative Humidity	PAMS, SLAMS	Humidity Sensor
Dallas-Fort Worth-Arlington	Kaufman	482570005	Relative Humidity	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Arlington Municipal Airport	484393011	Solar Radiation	SPM	Photovoltaic
Dallas-Fort Worth-Arlington	Cleburne Airport	482510003	Solar Radiation	PAMS, SLAMS	Photovoltaic
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Solar Radiation	PAMS, SLAMS	Photovoltaic
Dallas-Fort Worth-Arlington	Dallas North #2	481130075	Solar Radiation	PAMS, SLAMS	Photovoltaic
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Solar Radiation	PAMS, SLAMS	Photovoltaic

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Dallas-Fort Worth-Arlington	Eagle Mountain Lake	484390075	Solar Radiation	SPM	Photovoltaic
Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	Solar Radiation	PAMS, SLAMS	Photovoltaic
Dallas-Fort Worth-Arlington	Frisco	480850005	Solar Radiation	SPM	Photovoltaic
Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	Solar Radiation	PAMS, SLAMS	Photovoltaic
Dallas-Fort Worth-Arlington	Greenville	482311006	Solar Radiation	SPM	Photovoltaic
Dallas-Fort Worth-Arlington	Italy	481391044	Solar Radiation	PAMS, SLAMS	Photovoltaic
Dallas-Fort Worth-Arlington	Kaufman	482570005	Solar Radiation	PAMS, SLAMS	Photovoltaic
Dallas-Fort Worth-Arlington	Keller	484392003	Solar Radiation	PAMS, SLAMS	Photovoltaic
Dallas-Fort Worth-Arlington	Parker County	483670081	Solar Radiation	SPM	Photovoltaic
Dallas-Fort Worth-Arlington	Pilot Point	481211032	Solar Radiation	SPM	Photovoltaic
Dallas-Fort Worth-Arlington	Rockwall Heath	483970001	Solar Radiation	SPM	Photovoltaic
Granbury*	Granbury	482210001	Solar Radiation	SPM	Photovoltaic
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Speciated VOC (AutoGC)	PAMS, SLAMS	GC
Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	Speciated VOC (AutoGC)	PAMS, SLAMS	GC
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Speciated VOC (Canister)	PAMS, SLAMS	Canister GC-MS
Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	Speciated VOC (Canister)	PAMS, SLAMS	Canister GC-MS
Dallas-Fort Worth-Arlington	Italy	481391044	Speciated VOC (Canister)	PAMS, SLAMS	Canister GC-MS
Corsicana*	Corsicana Airport	483491051	Temperature (Outdoor)	SPM	Sonic weather sensor
Dallas-Fort Worth-Arlington	Arlington Municipal Airport	484393011	Temperature (Outdoor)	SPM	Aspirated Thermister
Dallas-Fort Worth-Arlington	Cleburne Airport	482510003	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Temperature (Outdoor)	PAMS, SLAMS	Aspirated Thermister
Dallas-Fort Worth-Arlington	Dallas North #2	481130075	Temperature (Outdoor)	PAMS, SLAMS	Aspirated Thermister
Dallas-Fort Worth-Arlington	Dallas Redbird Airport Executive	481130087	Temperature (Outdoor)	SPM	Aspirated Thermister
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Eagle Mountain Lake	484390075	Temperature (Outdoor)	SPM	Aspirated Thermister
Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Frisco	480850005	Temperature (Outdoor)	SPM	Aspirated Thermister

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Greenville	482311006	Temperature (Outdoor)	SPM	Aspirated Thermister
Dallas-Fort Worth-Arlington	Italy	481391044	Temperature (Outdoor)	PAMS, SLAMS	Aspirated Thermister
Dallas-Fort Worth-Arlington	Kaufman	482570005	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Keller	484392003	Temperature (Outdoor)	PAMS, SLAMS	Aspirated Thermister
Dallas-Fort Worth-Arlington	Parker County	483670081	Temperature (Outdoor)	SPM	Aspirated Thermister
Dallas-Fort Worth-Arlington	Pilot Point	481211032	Temperature (Outdoor)	SPM	Sonic weather sensor
Dallas-Fort Worth-Arlington	Rockwall Heath	483970001	Temperature (Outdoor)	SPM	Aspirated Thermister
Granbury*	Granbury	482210001	Temperature (Outdoor)	SPM	Aspirated Thermister
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Ultraviolet Radiation	PAMS, SLAMS	Photovoltaic
Dallas-Fort Worth-Arlington	Italy	481391044	Ultraviolet Radiation	PAMS, SLAMS	Photovoltaic
Corsicana*	Corsicana Airport	483491051	Wind	SPM	Sonic weather sensor
Dallas-Fort Worth-Arlington	Arlington Municipal Airport	484393011	Wind	SPM	Potentiometer Cup Anemometer
Dallas-Fort Worth-Arlington	Cleburne Airport	482510003	Wind	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Dallas Hinton	481130069	Wind	PAMS, SLAMS	Potentiometer Cup Anemometer
Dallas-Fort Worth-Arlington	Dallas North #2	481130075	Wind	PAMS, SPM	Potentiometer Cup Anemometer
Dallas-Fort Worth-Arlington	Dallas Redbird Airport Executive	481130087	Wind	SPM	Potentiometer Cup Anemometer
Dallas-Fort Worth-Arlington	Denton Airport South	481210034	Wind	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Eagle Mountain Lake	484390075	Wind	SPM	Potentiometer Cup Anemometer
Dallas-Fort Worth-Arlington	Fort Worth Northwest	484391002	Wind	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Frisco	480850005	Wind	SPM	Potentiometer Cup Anemometer
Dallas-Fort Worth-Arlington	Grapevine Fairway	484393009	Wind	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Greenville	482311006	Wind	SPM	Potentiometer Cup Anemometer
Dallas-Fort Worth-Arlington	Italy	481391044	Wind	PAMS, SLAMS	Potentiometer Cup Anemometer
Dallas-Fort Worth-Arlington	Kaufman	482570005	Wind	PAMS, SLAMS	Sonic weather sensor
Dallas-Fort Worth-Arlington	Keller	484392003	Wind	PAMS, SLAMS	Potentiometer Cup Anemometer
Dallas-Fort Worth-Arlington	Parker County	483670081	Wind	SPM	Potentiometer Cup Anemometer

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Dallas-Fort Worth-Arlington	Pilot Point	481211032	Wind	SPM	Sonic weather sensor
Dallas-Fort Worth-Arlington	Rockwall Heath	483970001	Wind	SPM	Potentiometer Cup Anemometer
Granbury*	Granbury	482210001	Wind	SPM	Potentiometer Cup Anemometer

*Micropolitan statistical area
- number
autoGC – automated gas chromatograph
DNPH - dinitrophenylhydrazine
GC - gas chromatograph
GC-MS - gas chromatograph mass spectrometry
HPLC - high performance liquid chromatography
NCore – National Core Multipollutant Monitoring Stations
NO – nitrogen oxide
NO_2 – nitrogen dioxide
NO_x – oxides of nitrogen
NO_y – total reactive nitrogen compounds
O_3 – ozone
PAMS – Photochemical Assessment Monitoring Stations
SLAMS – State or Local Air Monitoring Stations
SPM - special purpose monitor
VOC – volatile organic compound

Houston Area Ozone, Ozone Precursor, and Meteorological Monitoring Activities

Houston area counties designated nonattainment for O_3 are illustrated in Figure 5. Figure 6 illustrates the active sites and monitors in the Houston area along with population densities and wind roses. The active sites and monitors supporting the Houston area enhanced ozone, ozone precursor, and meteorological monitoring activities are listed in Table 3 and identified geographically in Figure 6. The Houston O_3 design values from 1991 to 2023 with corresponding annual population estimates in Figure 7 illustrate that even though the population has almost doubled in size, Houston air quality has greatly improved though recent years show a small uptick in concentrations. TCEQ greatly exceeds PAMS requirements and has a robust array of monitors supporting the area's enhanced monitoring needs.

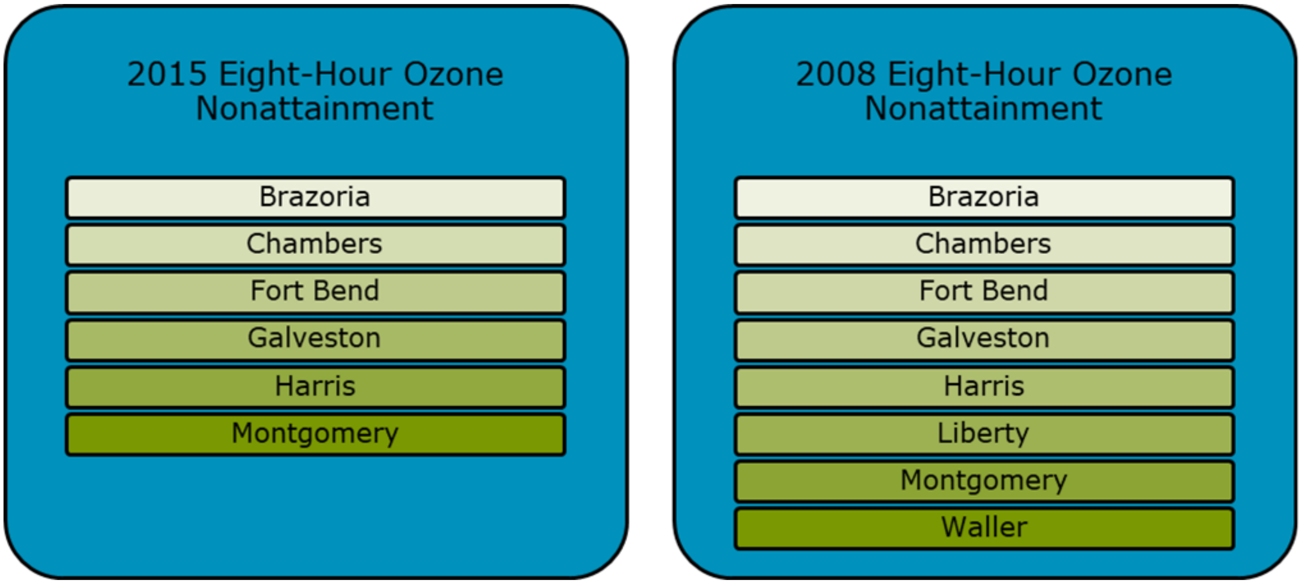


Figure 5: Houston Area Counties Designated Nonattainment for Ozone

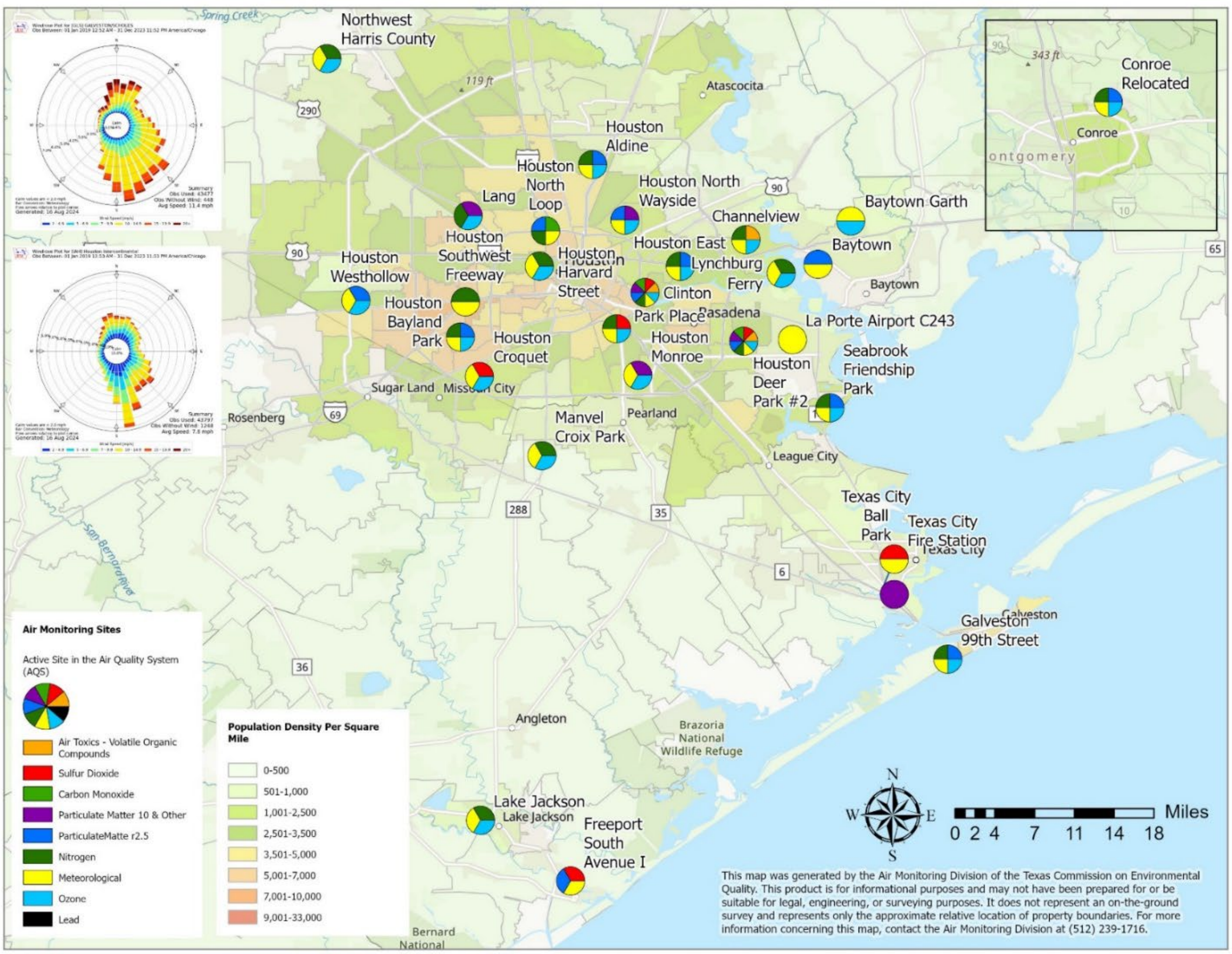
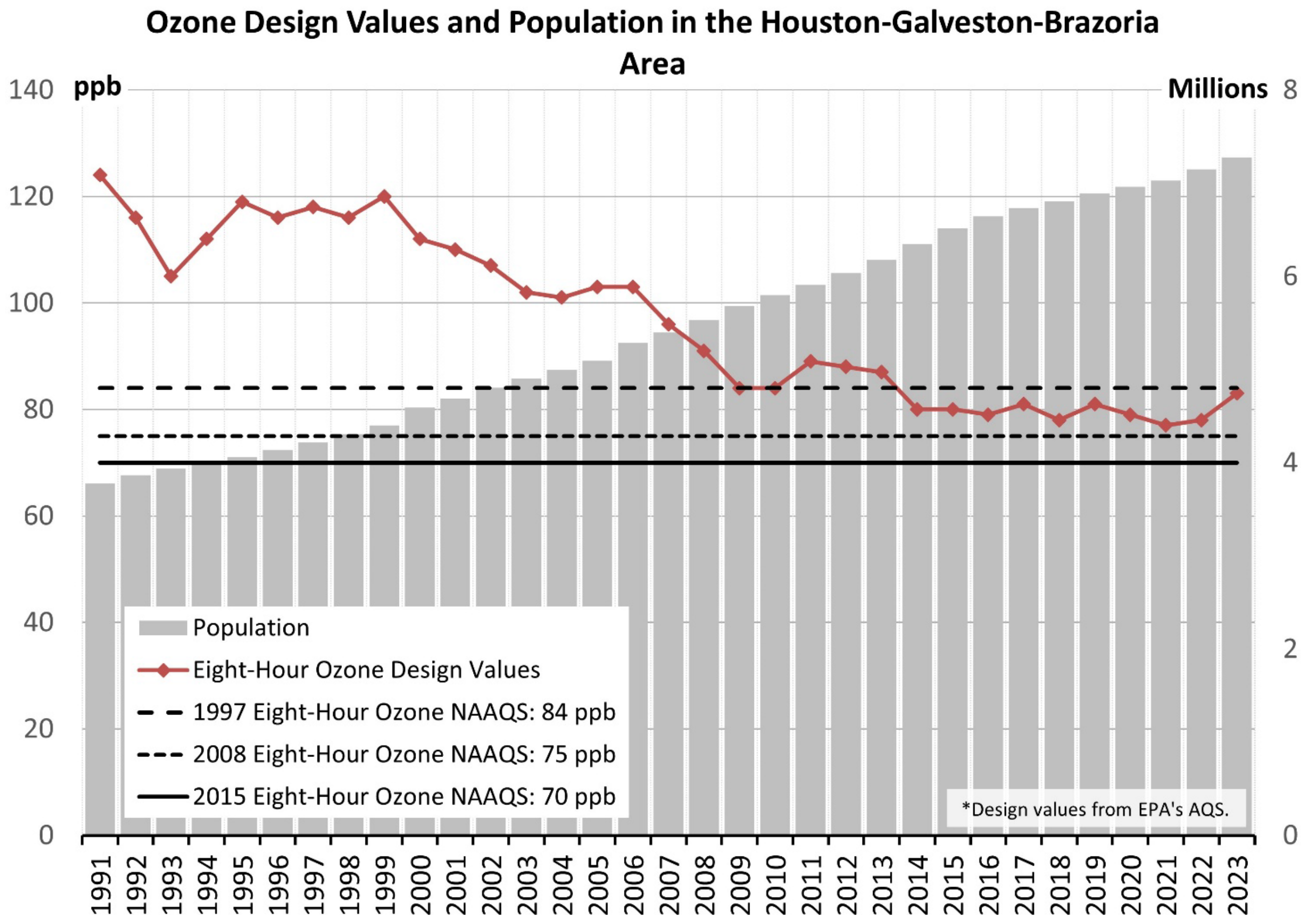


Figure 6: Houston Area Active Sites and Monitors, Population Density, and Wind Roses



EPA AQS – United States Environmental Protection Agency Air Quality Database
NAAQS – National Ambient Air Quality Standards
ppb – parts per billion
US - United States

Figure 7: Houston Area Ozone Design Values and Population

Table 3: Houston Area Enhanced Monitoring Plan Measurements

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Houston-Pasadena-The Woodlands	Clinton	482011035	Barometric Pressure	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Aldine	482010024	Barometric Pressure	PAMS, SLAMS	Barometric pressure transducer
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Barometric Pressure	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Park Place	482010416	Barometric Pressure	SPM	Barometric pressure transducer
Houston-Pasadena-The Woodlands	Clinton	482011035	Carbonyl	PAMS, SLAMS	DNPH Silica HPLC
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Carbonyl	PAMS, SLAMS	DNPH Silica HPLC
Houston-Pasadena-The Woodlands	Channelview	482010026	Dew Point	SPM	Derived at site
Houston-Pasadena-The Woodlands	Clinton	482011035	Dew Point	SPM	Derived at site
Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	Dew Point	SPM	Derived at site
Houston-Pasadena-The Woodlands	Houston Aldine	482010024	Dew Point	SPM	Derived at site
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Dew Point	SPM	Derived at site
Houston-Pasadena-The Woodlands	Northwest Harris County	482010029	Dew Point	SPM	Derived at site
Houston-Pasadena-The Woodlands	Park Place	482010416	Dew Point	SPM	Derived at site
Houston-Pasadena-The Woodlands	La Porte Airport C243	482011043	Mixing height	SPM	Ceilometer
Houston-Pasadena-The Woodlands	Channelview	482010026	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Clinton	482011035	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Conroe Relocated	483390078	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Houston Aldine	482010024	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Houston Bayland Park	482010055	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Houston East	482011034	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Houston Harvard Street	482010417	$NO/NO_2/NO_x$	SPM	Chemiluminescence
Houston-Pasadena-The Woodlands	Lake Jackson	480391016	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Lang	482010047	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Lynchburg Ferry	482011015	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Manvel Croix Park	480391004	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Northwest Harris County	482010029	$NO/NO_2/NO_x$	PAMS, SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Park Place	482010416	$NO/NO_2/NO_x$	SPM	Chemiluminescence
Houston-Pasadena-The Woodlands	Seabrook Friendship Park	482011050	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	NO_2 (Direct)	PAMS, SLAMS	Direct-Read NO_2
Houston-Pasadena-The Woodlands	Houston Aldine	482010024	NO_y (High Sensitivity)	PAMS, SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	NOy (High Sensitivity)	NCORE, PAMS, SLAMS	Chemiluminescence
Houston-Pasadena-The Woodlands	Baytown Garth	482011017	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Channelview	482010026	O_3	PAMS, SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Clinton	482011035	O_3	PAMS, SLAMS	Ultraviolet Photometric

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Houston-Pasadena-The Woodlands	Conroe Relocated	483390078	O_3	PAMS, SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	O_3	PAMS, SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Houston Aldine	482010024	O_3	PAMS, SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Houston Bayland Park	482010055	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Houston Croquet	482010051	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	O_3	NCORE, PAMS, SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Houston East	482011034	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Houston Harvard Street	482010417	O_3	SPM	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Houston Monroe	482010062	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Houston North Wayside	482010046	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Houston Westhollow	482010066	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Lake Jackson	480391016	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Lang	482010047	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Lynchburg Ferry	482011015	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Manvel Croix Park	480391004	O_3	SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Northwest Harris County	482010029	O_3	PAMS, SLAMS	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Park Place	482010416	O_3	SPM	Ultraviolet Photometric
Houston-Pasadena-The Woodlands	Seabrook Friendship Park	482011050	O_3	SLAMS	Ultraviolet Photometric

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Houston-Pasadena-The Woodlands	Clinton	482011035	Precipitation	SPM	Continuous
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Precipitation	PAMS, SLAMS	Rain Gauge
Houston-Pasadena-The Woodlands	Houston Monroe	482010062	Precipitation	SPM	Continuous
Houston-Pasadena-The Woodlands	La Porte Airport C243	482011043	Precipitation	PAMS, SLAMS	Rain Gauge
Houston-Pasadena-The Woodlands	Park Place	482010416	Precipitation	SPM	Continuous
Houston-Pasadena-The Woodlands	Channelview	482010026	Relative Humidity	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Clinton	482011035	Relative Humidity	PAMS, SLAMS	Humidity Sensor
Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	Relative Humidity	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Aldine	482010024	Relative Humidity	PAMS, SLAMS	Humidity Sensor
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Relative Humidity	NCORE, PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Northwest Harris County	482010029	Relative Humidity	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Park Place	482010416	Relative Humidity	SPM	Humidity Sensor
Houston-Pasadena-The Woodlands	Baytown Garth	482011017	Solar Radiation	SPM	Photovoltaic
Houston-Pasadena-The Woodlands	Channelview	482010026	Solar Radiation	PAMS, SLAMS	Photovoltaic
Houston-Pasadena-The Woodlands	Clinton	482011035	Solar Radiation	PAMS, SLAMS	Photovoltaic
Houston-Pasadena-The Woodlands	Conroe Relocated	483390078	Solar Radiation	PAMS, SLAMS	Photovoltaic
Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	Solar Radiation	PAMS, SLAMS	Photovoltaic
Houston-Pasadena-The Woodlands	Houston Aldine	482010024	Solar Radiation	PAMS, SLAMS	Photovoltaic

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Houston-Pasadena-The Woodlands	Houston Bayland Park	482010055	Solar Radiation	SPM	Photovoltaic
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Solar Radiation	PAMS, SLAMS	Photovoltaic
Houston-Pasadena-The Woodlands	Lake Jackson	480391016	Solar Radiation	SPM	Photovoltaic
Houston-Pasadena-The Woodlands	Lynchburg Ferry	482011015	Solar Radiation	SPM	Photovoltaic
Houston-Pasadena-The Woodlands	Northwest Harris County	482010029	Solar Radiation	PAMS, SLAMS	Photovoltaic
Houston-Pasadena-The Woodlands	Park Place	482010416	Solar Radiation	SPM	Photovoltaic
Houston-Pasadena-The Woodlands	Seabrook Friendship Park	482011050	Solar Radiation	SPM	Photovoltaic
Houston-Pasadena-The Woodlands	Channelview	482010026	Speciated VOC (AutoGC)	PAMS, SLAMS	GC
Houston-Pasadena-The Woodlands	Clinton	482011035	Speciated VOC (AutoGC)	PAMS, SLAMS	GC
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Speciated VOC (AutoGC)	PAMS, SLAMS	GC
Houston-Pasadena-The Woodlands	Baytown Garth	482011017	Temperature (Outdoor)	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Channelview	482010026	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Clinton	482011035	Temperature (Outdoor)	PAMS, SLAMS	Aspirated Thermister
Houston-Pasadena-The Woodlands	Conroe Relocated	483390078	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Aldine	482010024	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Bayland Park	482010055	Temperature (Outdoor)	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Croquet	482010051	Temperature (Outdoor)	SPM	Aspirated Thermister

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Temperature (Outdoor)	NCORE, PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston East	482011034	Temperature (Outdoor)	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Harvard Street	482010417	Temperature (Outdoor)	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston North Wayside	482010046	Temperature (Outdoor)	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Westhollow	482010066	Temperature (Outdoor)	SPM	Aspirated Thermister
Houston-Pasadena-The Woodlands	La Porte Airport C243	482011043	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Lake Jackson	480391016	Temperature (Outdoor)	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Lynchburg Ferry	482011015	Temperature (Outdoor)	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Manvel Croix Park	480391004	Temperature (Outdoor)	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Northwest Harris County	482010029	Temperature (Outdoor)	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Park Place	482010416	Temperature (Outdoor)	SPM	Aspirated Thermister
Houston-Pasadena-The Woodlands	Seabrook Friendship Park	482011050	Temperature (Outdoor)	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Texas City Ball Park	481670005	Temperature (Outdoor)	SPM	Aspirated Thermister
Houston-Pasadena-The Woodlands	Clinton	482011035	Ultraviolet Radiation	PAMS, SLAMS	Photovoltaic
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Ultraviolet Radiation	PAMS, SLAMS	Photovoltaic
Houston-Pasadena-The Woodlands	Park Place	482010416	Ultraviolet Radiation	SPM	Photovoltaic
Houston-Pasadena-The Woodlands	Baytown Garth	482011017	Wind	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Channelview	482010026	Wind	PAMS, SLAMS	Sonic weather sensor

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Houston-Pasadena-The Woodlands	Clinton	482011035	Wind	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Conroe Relocated	483390078	Wind	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Galveston 99th Street	481671034	Wind	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Aldine	482010024	Wind	Other, PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Bayland Park	482010055	Wind	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Croquet	482010051	Wind	SPM	Potentiometer Cup Anemometer
Houston-Pasadena-The Woodlands	Houston Deer Park #2	482011039	Wind	NCORE, PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston East	482011034	Wind	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Harvard Street	482010417	Wind	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston North Wayside	482010046	Wind	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Houston Westhollow	482010066	Wind	SPM	Potentiometer Cup Anemometer
Houston-Pasadena-The Woodlands	La Porte Airport C243	482011043	Wind	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Lake Jackson	480391016	Wind	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Lynchburg Ferry	482011015	Wind	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Manvel Croix Park	480391004	Wind	SPM	Sonic weather sensor
Houston-Pasadena-The Woodlands	Northwest Harris County	482010029	Wind	PAMS, SLAMS	Sonic weather sensor
Houston-Pasadena-The Woodlands	Park Place	482010416	Wind	SPM	Potentiometer Cup Anemometer
Houston-Pasadena-The Woodlands	Seabrook Friendship Park	482011050	Wind	SPM	Sonic weather sensor

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
Houston-Pasadena-The Woodlands	Texas City Ball Park	481670005	Wind	SPM	Sonic weather sensor

- number
autoGC – automated gas chromatograph
DNPH - dinitrophenylhydrazine
GC - gas chromatograph
HPLC - high performance liquid chromatography
NCORE – National Core Multipollutant Monitoring Stations
NO – nitrogen oxide
NO_2 – nitrogen dioxide
NO_x – oxides of nitrogen
NO_y – total reactive nitrogen compounds
O_3 – ozone
PAMS – Photochemical Assessment Monitoring Stations
SLAMS – State or Local Air Monitoring Stations
SPM - special purpose monitor
VOC – volatile organic compound

San Antonio Area Ozone, Ozone Precursor, and Meteorological Monitoring Activities

The San Antonio area county designated nonattainment for O_3 is illustrated in Figure 8. Figure 9 illustrates the active sites and monitors in the San Antonio area along with population densities and wind roses. The active sites and monitors supporting the San Antonio area enhanced ozone, ozone precursor, and meteorological monitoring activities are listed in Table 4 and identified geographically in Figure 9. The San Antonio O_3 design values from 1991 to 2023 with corresponding annual population estimates in Figure 10 illustrates that even though the population has almost doubled in size, San Antonio air quality has significantly improved though recent years show a small uptick in concentrations. TCEQ exceeds requirements and has an array of monitors supporting the area’s enhanced monitoring needs.

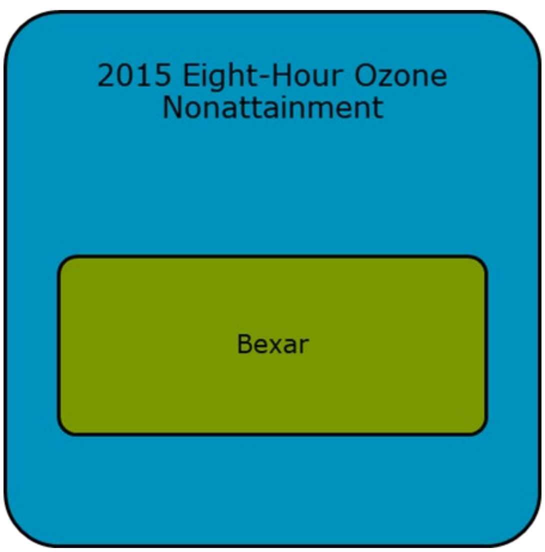


Figure 8: San Antonio Area County Designated Nonattainment for Ozone

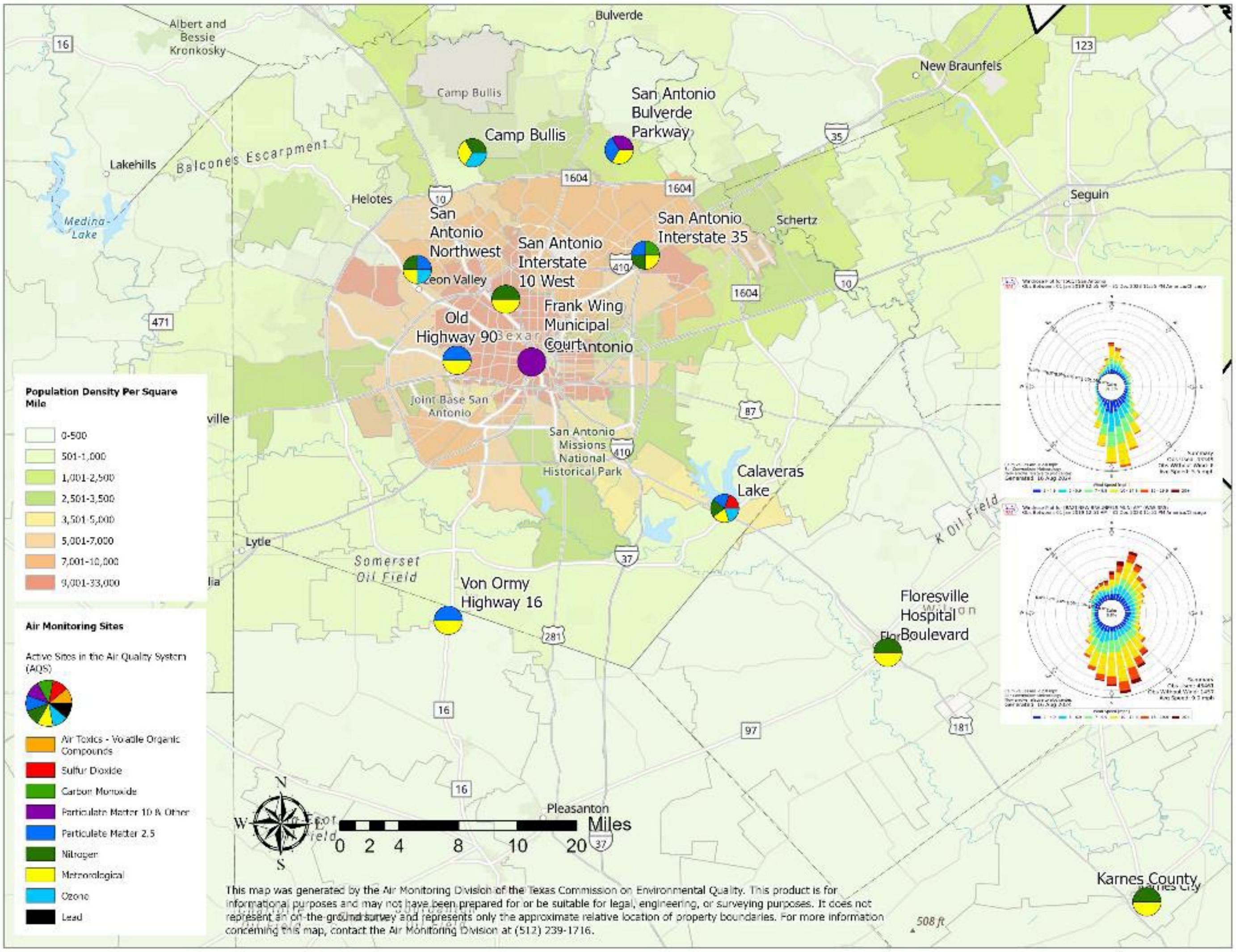
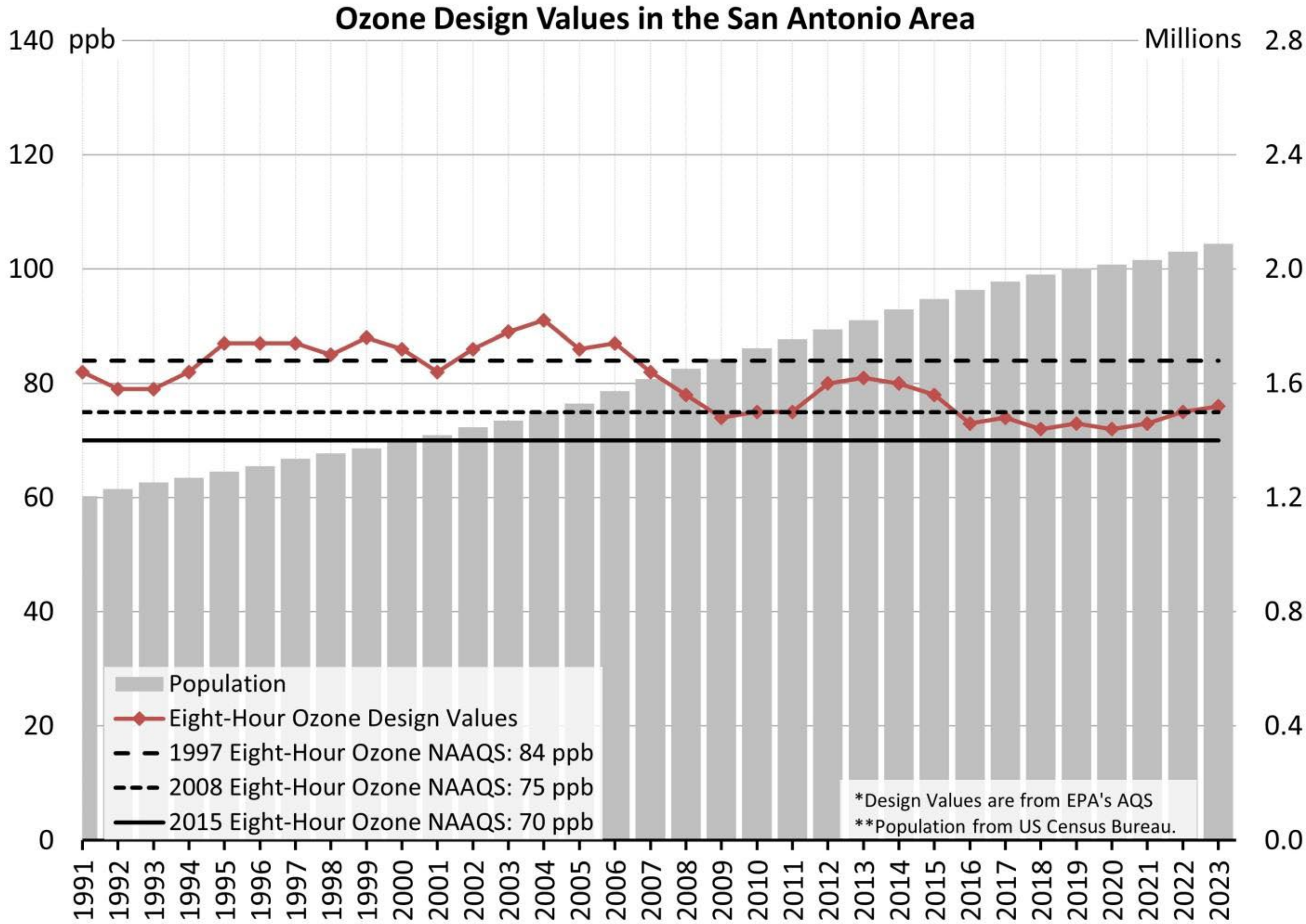


Figure 9: San Antonio Area Active Sites and Monitors, Population Density, and Wind Roses



EPA AQS – United States Environmental Protection Agency Air Quality Database
NAAQS – National Ambient Air Quality Standards
ppb – parts per billion
US - United States

Figure 10: San Antonio Area Ozone Design Values and Population

Table 4: San Antonio Area Enhanced Monitoring Plan Measurements

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
None	Karnes County	482551070	$NO/NO_2/NO_x$	SPM	Chemiluminescence
San Antonio-New Braunfels	Calaveras Lake	480290059	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence
San Antonio-New Braunfels	Camp Bullis	480290052	$NO/NO_2/NO_x$	SPM	Chemiluminescence
San Antonio-New Braunfels	Floresville Hospital Boulevard	484931038	$NO/NO_2/NO_x$	SPM	Chemiluminescence
San Antonio-New Braunfels	San Antonio Northwest	480290032	$NO/NO_2/NO_x$	SLAMS	Chemiluminescence

Metropolitan Statistical Area	Site Name	Site Number	Monitor Type	Network	Methods
San Antonio-New Braunfels	Calaveras Lake	480290059	O_3	SLAMS	Ultraviolet Photometric
San Antonio-New Braunfels	Camp Bullis	480290052	O_3	SLAMS	Ultraviolet Photometric
San Antonio-New Braunfels	San Antonio Northwest	480290032	O_3	SLAMS	Ultraviolet Photometric
San Antonio-New Braunfels	Camp Bullis	480290052	Solar Radiation	SPM	Photovoltaic
None	Karnes County	482551070	Temperature (Outdoor)	SPM	Aspirated Thermister
San Antonio-New Braunfels	Calaveras Lake	480290059	Temperature (Outdoor)	SPM	Aspirated Thermister
San Antonio-New Braunfels	Camp Bullis	480290052	Temperature (Outdoor)	SPM	Sonic Weather Sensor
San Antonio-New Braunfels	Floresville Hospital Boulevard	484931038	Temperature (Outdoor)	SPM	Aspirated Thermister
San Antonio-New Braunfels	Old Hwy 90	480290677	Temperature (Outdoor)	SPM	Aspirated Thermister
San Antonio-New Braunfels	San Antonio Northwest	480290032	Temperature (Outdoor)	SPM	Sonic Weather Sensor
None	Karnes County	482551070	Wind	SPM	Potentiometer Cup Anemometer
San Antonio-New Braunfels	Calaveras Lake	480290059	Wind	SPM	Potentiometer Cup Anemometer
San Antonio-New Braunfels	Camp Bullis	480290052	Wind	SPM	Sonic Weather Sensor
San Antonio-New Braunfels	Floresville Hospital Boulevard	484931038	Wind	SPM	Potentiometer Cup Anemometer
San Antonio-New Braunfels	Old Hwy 90	480290677	Wind	SPM	Potentiometer Cup Anemometer
San Antonio-New Braunfels	San Antonio Northwest	480290032	Wind	SPM	Sonic Weather Sensor

Hwy - highway
NO – nitrogen oxide
NO_2 – nitrogen dioxide
NO_x – oxides of nitrogen
NO_y – total reactive nitrogen compounds
O_3 – ozone
SLAMS – State or Local Air Monitoring Stations
SPM - special purpose monitor

Summary

The TCEQ exceeds PAMS monitoring requirements with enhanced monitoring at numerous sites, beyond those minimally required, throughout Texas, as discussed in the sections above and summarized in Table 5 below. After consideration of federal regulations and current enhanced O_3 and O_3 precursor monitoring activities, TCEQ's PAMS, SLAMS, and SPM monitoring network will continue to provide the necessary information to understand O_3 concentrations in areas designated nonattainment.

Table 5: Summary of Ambient Air Monitors Supporting Enhanced Monitoring for Ozone

Enhanced Ozone Measurement Type	Dallas Fort Worth Area Required Monitors	Dallas Fort Worth Area Existing Monitors	Houston Area Required Monitors	Houston Area Existing Monitors	San Antonio Area Required Monitors	San Antonio Area Existing Monitors
Barometric Pressure	1	2	1	4	0	0
Carbonyl	1	2	1	2	0	0
Mixing Height	1	1	1	1	0	0
Dew Point	0	7	0	7	0	0
$NO/NO_2/NO_x$	2	12	2	15	1	5
NO_2 (Direct)	1	1	1	1	0	0
NO_y (High-Sensitivity)	1	2	1	2	0	0
Ozone	4	19	4	21	2	3
Precipitation	1	2	1	5	0	0
Relative Humidity	1	7	1	7	0	0
Solar Radiation	1	17	1	13	0	1
Speciated VOC (AutoGC)	1	2	1	3	0	0
Speciated VOC (Canister)	0	3	0	0	0	0
Temperature (Outdoor)	1	19	1	21	0	6
Ultraviolet radiation	1	2	1	3	0	0
Wind speed and direction	1	19	1	21	0	6

autoGC – automated gas chromatograph
NO_2 – nitrogen dioxide
NO – nitrogen oxide
NO_x – oxides of nitrogen
NO_y – total reactive nitrogen compounds
VOC – volatile organic compound