GILA RIVER INDIAN COMMUNITY

DEPARTMENT OF ENVIRONMENTAL QUALITY

June 30, 2023

Dena Vallano
USEPA Region 9
Manager, Monitoring and Analysis Section (Air 2-3)
75 Hawthorne St.
San Francisco, CA 94105-3901

Submitted via Email to *Vallano.Dena@epa.gov*

Re: Gila River Indian Community 2022 Air Monitoring Network Review and 2023 Plan

Dear Ms Vallano:

The Gila River Indian Community (GRIC) Department of Environmental Quality (DEQ) has developed an Ambient Air Monitoring Network Plan document from the 2022 air monitoring network evaluation.

The *Gila River Indian Community 2022 Ambient Air Monitoring Network Review and 2023 Plan* is attached for your review and approval of the requested recommendations within the document.

Thank you. If you have any questions please contact me at Leroy.WilliamsJR@gric.nsn.us or (520) 796-3782.

Sincerely,

Leroy Williams,
Environmental Engineer, GRIC DEQ Air Quality Program

Electronic copy: Lisa Gover, GRIC DEQ Director
Ryan Eberle, GRIC DEQ Air Program
Shaye Hong, USEPA R9

Gila River Indian Community
2022 AMBIENT AIR MONITORING NETWORK REVIEW AND 2023 PLAN

Gila River Indian Community – Gila Buttes in the foreground view to the west; Estrella Mountain and South Mountain in the background.

Gila River Indian Community
Department of Environmental Quality

Air Quality Air Monitoring Program
June 2023

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DEFINITION OF TERMS

AMNR:	Air Quality Monitoring Network Review.
AMNRP:	Air Quality Monitoring Network Review and Plan.
AQMP:	Air Quality Management Plan. The AQMP is a collection of tribal regulations and plans to achieve healthy air quality under the Clean Air Act. For GRIC, the AQMP is synonymous with the Tribal Implementation Plan (TIP).
AQP:	Air Quality Program within the Gila River Indian Community's Department of Environmental Quality.
AQS:	Environmental Protection Agency's Air Quality System
Attainment:	This refers to the NAAQS used to comply with the federal Clean Air Act. After several years of no violations of the NAAQS, the EPA can classify the area as in attainment for that pollutant.
CFR:	Code of Federal Regulations.
Community:	Gila River Indian Community
Continuous monitoring:	A method of monitoring air pollutants that is continually measuring the quantity of the pollutant, either gaseous or particulate. Continuous monitors can be used to obtain real-time or short-term averages of pollutants.
Criteria Pollutants:	Six pollutants (Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone, Particulates, and Sulfur Dioxide) that have NAAQS established by the US EPA.
DEQ:	Gila River Indian Community's Department of Environmental Quality
Design Value:	A design value is a statistic that describes the air quality status of a given area relative to the level of the NAAQS. For a concentration-based standard, the air quality design value is simply the standard-related test statistic. The design value of a pollutant monitoring network is the highest sample value in the network used to compare to the NAAQS; e.g. the 8-hour ozone design value for the network is the monitor with the highest 3-year average of the 4th highest concentrations each year.
EPA:	U. S. Environmental Protection Agency.
Exceptional Events:	An uncontrollable event caused by natural sources of pollution or an event that is not expected to recur at a given location. The AQP makes the determination of which events to classify as exceptional and those events are then flagged in the AQS. If the EPA concurs with the AQP's determination, the measured pollution event will not be used in determination of compliance with the NAAQS.

FEM:	Federal Equivalency Method. An official method, i.e. equipment and procedure, of monitoring air pollution that has been determined to produce results similar to the Federal Reference Method (FRM).
Filter-based Monitor:	A method of monitoring particulate pollution that involves exposing a pre- weighed filter to a specific flow volume of air to capture the particulates in the air. The filters are then post-weighed to determine the weight of particulates per volume, e.g. $\mu g/m^3$. Filter-based monitors used by GRIC are all FRM monitors.
FRM:	Federal Reference Method. An official method (i.e. equipment and procedure) of monitoring air pollution that has been tested and determined to produce results that accurately measure air pollution with acceptable precision. These methods are the baseline that all other methods (i.e., FEMs) refer to.
GRIC:	Gila River Indian Community
$\mu g/m^3$:	Microgram per cubic meter.
MSA:	Metropolitan Statistical Area. A geographical area designated by the federal government based on the concept of a core area with a large population nucleus, plus adjacent communities having a high degree of economic and social integration with that core. It is unclear in Appendix D 40 CFR 58 how MSAs apply to sovereign tribes. Although the areas within the Community are *geographically* part of the Phoenix-Mesa-Scottsdale MSA, for purposes of the administration of Section 107 of the Clean Air Act (42 U.S.C. § 7407), except where a specific designation has been otherwise made by the Administrator, the air quality control region for the Community is all land within the exterior boundaries of the Community. Therefore, for the purposes of this document, the MSA principle does not apply to the GRIC Air Monitoring Network.
NAAQS:	National Ambient Air Quality Standards. A health and welfare-based standard that is set by the US EPA to qualify allowable levels of criteria pollutants.
NO_2:	Nitrogen dioxide.
NO_X:	Nitrogen oxides. Sum of nitric oxide (NO), NO_2, and other nitrogen-containing compounds.
PM:	Particulate matter. Material suspended in the air in the form of minute solid particles or liquid droplets.
PM_{10}:	Particulate matter of 10 microns in diameter or smaller.
PMA:	Phoenix Metropolitan Area.
NPAP-TTP:	National Performance Audit Program – Through the Probe
POC:	Parameter Occurrence Code is an identification number distinguishing multiple instruments that may measure the same pollutant.

PPM:	Parts per million.
Primary Standard:	One portion of the NAAQS. These standards are designed to protect the public health.
Secondary Standard:	One portion of the NAAQS. These standards are designed to protect the environment.
SIP:	State Implementation Plan. SIPs are a collection of state and local regulations and plans to achieve healthy air quality under the Clean Air Act.
SLAMS:	State and Local Air Monitoring Station. The SLAMS consist of a network of approximately 5,000 monitoring stations nationwide whose size and distribution is largely determined by the needs of State, and local air pollution control agencies to meet their respective SIP requirements. The GRIC monitors operated by the AQP are not part of the SLAMS network, but the AQP operates the monitors in accordance with the requirements for SLAMS.
TAR:	Tribal Authority Rule.
TEOM:	Tapered Element Oscillating Microbalance. A continuous particulate measuring instrument used by the AQP to measure PM10.
TIP:	Tribal Implementation Plan. The TIP is a collection of tribal regulations and plans to achieve healthy air quality under the Clean Air Act. For GRIC, the TIP is incorporated into and synonymous with the Air Quality Management Plan (AQMP).
VOC:	Volatile organic compounds. VOCs are chemical compounds that can easily vaporize and enter the atmosphere. There are many natural and artificial sources of VOCs; solvents and gasoline make up some of the largest artificial sources. VOCs will react with NO_x in the presence of sunlight to create ground-level ozone pollution.

ABSTRACT

In 2022, Gila River Indian Community (GRIC) Department of Environmental Quality (DEQ) Air Quality Program (AQP) successfully continued to operate an air quality surveillance system that monitored for regulated ambient air pollutants as per 40 CFR Parts 50 and 58. This Annual Monitoring Network Review and Plan (AMNRP) documents how the system performed during 2022. The air monitoring data produced are intended for regulatory compliance determinations regarding regulated ambient air pollutants.

In addition, this document describes the changes that are planned to occur within the next 18 months. The AQP informs personnel at the Environmental Protection Agency's Region 9 (EPA R9) office of any significant data collection interruptions immediately.

During 2022, there were no significant changes to the GRIC air monitoring network; however, some notable accomplishments are as follows:

- GRIC successfully completed and certified 2022 air monitoring data with 92-100% data completeness reporting to EPA's AQS data repository.
- USEPA Region 9, Air Quality Analysis Office provided GRIC the final Technical Systems Audit (TSA) Report on May 31, 2022. The TSA was conducted on March 23-25, 2021. GRIC submitted a draft proposed Corrective Action Plans (CAPs) to EPA R9 on January 31, 2023 for approval. In addition, GRIC has resolved majority of the corrective action items in 2022.
- GRIC's ozone monitoring QA/QC concentration check levels were revised to the *40 CFR Part 58 Appendix A, Section 3* standards and implemented within the 2022 monitoring season.
- Ozone sampling designs with a "through the probe" inlet were constructed on all ozone monitoring sample inlets. All QA/QC concentration gases and the ambient air samples are now introduced at the "through the probe" inlet rather than the back of the ozone analyzer.
- All GRIC air monitoring site's camera software systems were upgraded with newer applications and versatile features for website illustration.
- GRIC Air Quality Program staff successfully received training on the AirVision and AV Trend data management software and applications.
- USEPA Region 9 QA Division conditionally approved the GRIC PM10 Air Monitoring Quality Assurance Project Plan (QAPP). EPA provided GRIC with comments and recommendations to complete final approval.
- All of GRIC air monitoring site's data acquisition system were upgraded to the ESC 8872 data loggers.

In 2023, there are no significant changes planned for the air monitoring network. Some notable activities that have occurred or are planned in 2023 are as follows:

- GRIC is transitioning to an All-In-One (AIO2) Meteorological sensors at all 3 monitoring sites and will verify and decommission existing analog met sensors.
- GRIC will replace existing non-working cameras at each site with new cameras so that each site will have two working cameras taking still images every ten minutes.

- GRIC will replace existing meteorological tower at the Casa Blanca site with new tower that will reduce maintenance time on meteorological sensors and cameras.
- GRIC will submit letter to EPA R9 requesting a seasonal waiver for 2024 calendar year, requesting GRIC will monitor ozone from April 1st through October 31st in 2024.
- GRIC received approval for a seasonal ozone waiver from EPA for 2023 calendar year. GRIC will monitor ozone from April 1st through October 31st in 2023.
- GRIC will continue the QAPP approval process and work with EPA R9 until the QAPP (one document split into four volumes) is approved.
- GRIC will continue to work closely with the auditors and Region 9 Air Quality Analysis Office management staff to address all comments and recommendations from the 2021 TSA.

The GRIC air monitoring network and tools operated in 2022 meets the necessary requirements as mandated by Federal regulations. Except where otherwise noted, each monitor meets the requirements of 40 CFR 58 Appendices A, C, D, and E, where applicable. This Annual Network Plan documents the details of the regulatory ambient air quality monitors.

1 INTRODUCTION

The Code of Federal Regulations (CFR) Title 40 Part 58.10 (40 CFR 58.10) requires an annual monitoring network plan to summarize the air quality surveillance system consisting of State and Local Air Monitoring Stations (SLAMS) and Special Purpose Monitors (SPM) operated under state and local authorities. The annual monitoring network plan must identify the purpose of each monitor and provide evidence that both the siting and the operation of each monitor meet the requirements in 40 CFR Part 58 Appendices A, C, D, and E below:

- Appendix A Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards
- Appendix C Ambient Air Quality Monitoring Methodology
- Appendix D Network Design Criteria for Ambient Air Quality Monitoring
- Appendix E Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring

This AMNRP meets the federal regulatory requirements set forth in 40 CFR 58.10 and Appendices A, C, D, and E.

The Gila River Indian Community (GRIC or Community) Department of Environmental Quality (DEQ) Air Quality Program (AQP) operates air quality monitors that record ambient concentrations of two criteria pollutants - particulate matter less than or equal to 10 microns (PM_{10}) and ozone (O_3). Criteria pollutants are those that the United States Environmental Protection Agency (EPA) has defined as a potential risk to health, and correspondingly defined a National Ambient Air Quality Standard (NAAQS). The NAAQS are intended to protect public health and welfare by setting limits on the allowable level of each pollutant in the ambient air. The other criteria pollutants with established NAAQS that are not monitored by the AQP are particulate matter less than or equal to 2.5 microns ($PM_{2.5}$), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). GRIC does not monitor for these pollutants because they have been found, through discrete sampling and emission inventory, to be at background ambient air quality concentrations. Additionally, GRIC does not have major stationary pollution sources that emit these particular criteria pollutants that may affect the NAAQS within GRIC jurisdictions.

The GRIC air quality monitors are Tribal Monitors and are most closely related to SLAMS monitors. The United States Environmental Protection Agency (EPA) works closely with GRIC to adhere to the requirements for SLAMS networks with appropriate flexibility as stated in the Tribal Authority Rule (TAR).

The purpose of this document is to fulfill the requirements of 40 CFR 58.10, and has been prepared in accordance with *Annual Monitoring Network Plan* checklists and guidance documents provided by EPA. Therefore, this document contains the following sections:

- **Air Monitoring Network Design** – Describes the design requirements for an air monitoring network in accordance with Appendix D of 40 CFR 58.
- **GRIC Air Monitoring Network** – Describes the air monitoring network for the Community including monitor types, background information, summary of 2022 monitoring results, changes to the monitoring network in 2022, and proposed changes to the monitoring network.

- **Compliance Discussion** – Includes a discussion of compliance with 40 CFR 58, including a table of requirements for Network Review, minimum monitoring requirements, precision and accuracy certifications, data submittals, and audits.
- **Public Notice** – Includes information on public notices and community outreach for review and presentation of this document.
- **Appendices** – Contains the detailed monitoring site information and photographs, and a copy of the presentation that was prepared for the public outreach.

2 AIR MONITORING NETWORK DESIGN

2.1 Monitoring Objectives

Appendix D of 40 CFR 58 states that monitoring networks must be designed to meet three basic monitoring objectives:

1. Provide air pollution data to the general public in a timely manner;
2. Support compliance with ambient air quality standards and emissions strategy development; and
3. Support air pollution research studies.

Furthermore, Appendix D states that in order to support air quality management work indicated in the three basic objectives above, monitoring networks must be designed with a variety of the following types of monitoring sites:

- Highest Concentration – Sites to determine the highest concentration expected to occur in the area covered by the network;
- Population Exposure – Sites to determine representative concentrations in areas of high population density;
- Source Impacts – Sites to determine the impact on ambient pollution levels of significant sources or source categories;
- Background Concentrations – Sites to determine general background concentration levels;
- Regional Transport – Sites to determine the extent of regional pollutant transport among populated areas, and in support of secondary standards; and
- Welfare Impacts – Sites to determine the welfare-related impacts in more rural and remote areas (such as visibility impairment and effects on vegetation).

2.2 Spatial Scales

The goal in designing a monitoring network is to establish monitoring stations that will provide data to meet the above monitoring objectives. The physical siting of the air monitoring station must achieve a spatial scale of representativeness that is consistent with the monitoring site type, air pollutant to be measured, and the monitoring objective. The spatial scale results from the physical location of the site with respect to the pollutant sources and categories by estimating the size of the area surrounding the monitoring site that experiences uniform pollutant concentrations. The categories of spatial scale are:

- Micro Scale - Defines the concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- Middle Scale – Defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometer.

- Neighborhood Scale – Defines concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range. The neighborhood and urban scales listed below have the potential to overlap in applications that concern secondarily formed or homogeneously distributed air pollutants.
- Urban Scale – Defines concentrations within an area of city-like dimensions, on the order of 4 to 50 kilometers. Within a city, the geographic placement of sources may result in there being no single site that can be said to represent air quality on an urban scale.
- Regional Scale – Defines usually a rural area of reasonably homogeneous geography without large sources, and extends from tens to hundreds of kilometers.

The appropriate spatial scale for each of the monitoring site types is shown in Table 2-1.

Table 2-1. Relationship Among Monitoring Site Types And Scales of Representativeness.

Monitoring Objective	Appropriate Spatial Scale				
	Micro	**Middle**	**Neighborhood**	**Urban**	**Regional**
Highest concentration	X	X	X	X	
Population Exposure			X	X	
Source Impacts	X	X	X		
Background Concentrations			X	X	X
Regional Transport				X	X
Welfare Impacts				X	X

3 GILA RIVER INDIAN COMMUNITY AMBIENT AIR MONITORING NETWORK

3.1 General

There are currently three permanent ambient air monitoring stations within the Community – Sacaton, Casa Blanca, and St. Johns (see Figure 3-1). All three monitoring stations are Tribal Monitors, but follow the requirements of SLAMS networks with appropriate flexibility as stated in the TAR.

Figure 3-1. Map of Ambient Air Monitoring Stations on Gila River Indian Community

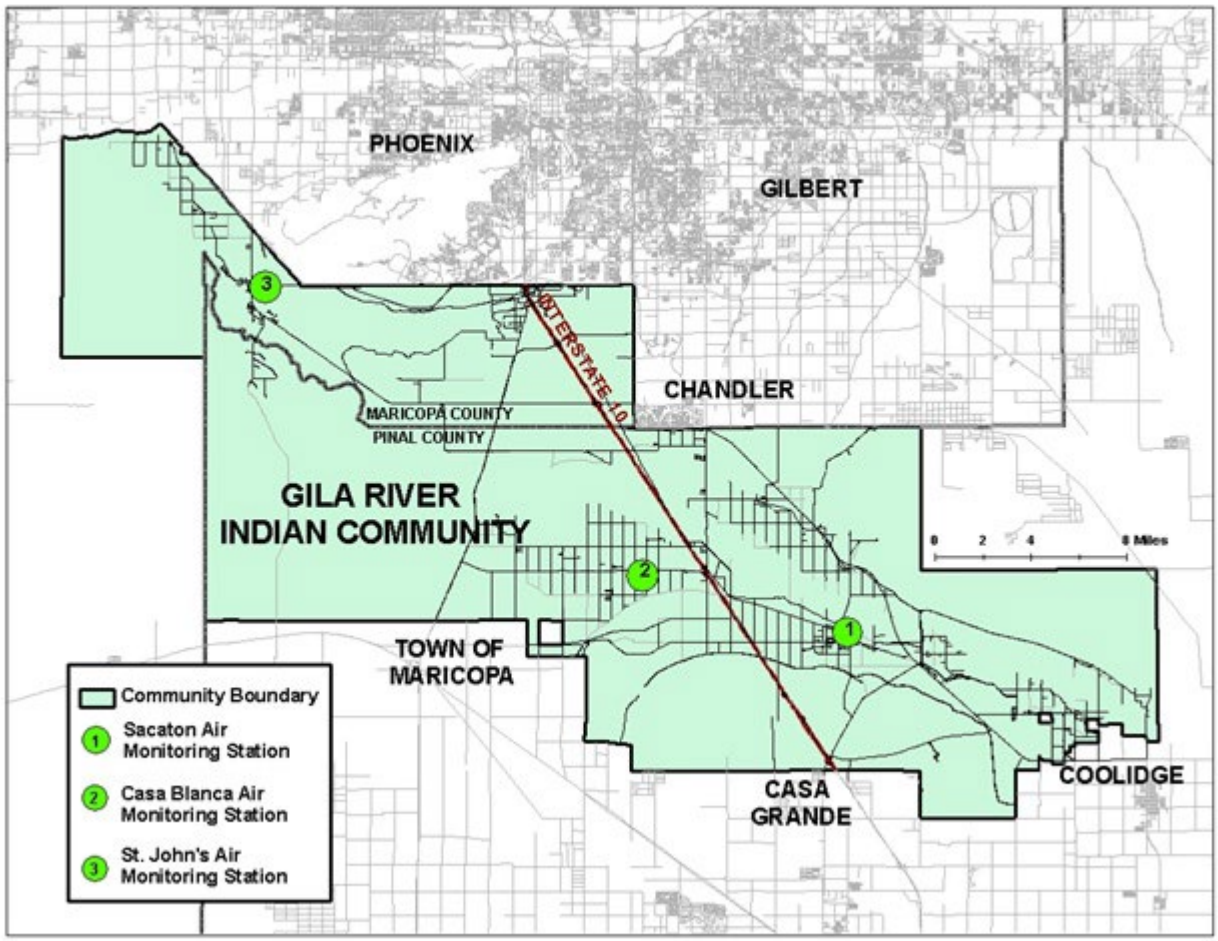


Table 3-1 lists the details regarding each monitoring site's GRIC abbreviation symbol and EPA's AQS identification number. Detailed site information is provided in Appendix A that includes photographs, site type, spatial scale, and population represented. In addition, Appendix B provides detailed monitoring technical specifications.

Table 3-1. GRIC Ambient Air Monitoring Sites for 2022

Name	GRIC Abbreviation	AQS ID
St. Johns	SJ	TT-614-7003 (Tribal Monitor)
Sacaton	Sac	TT-614-7001 (Tribal Monitor)
Casa Blanca	CB	TT-614-7004 (Tribal Monitor)

Table 3-2 lists these stations, the pollutants and meteorological parameters that are monitored at each location.

Table 3-2. Ambient Air Quality Parameters Monitored at Each Station

Parameter	Monitoring Station		
	St. Johns	Casa Blanca	Sacaton
Ozone	X		X
PM_{10} (TEOM)	X	X	X
Wind Speed	X	X	X
Wind Direction	X	X	X
Ambient Temperature	X	X	X
Ambient Barometric Pressure	X	X	X
Precipitation	X	X	X
Relative Humidity	X	X	X
Camera (Visibility)	X	X	X

Table Notes:
PM_{10} - Particulate Matter ≤ 10 microns
TEOM - Tapered Elemental Oscillating Microbalance. Continuous measuring monitor (1 hr averages).

Table 3-3 shows the NAAQS for pollutants that are currently monitored by GRIC, including ozone and PM_{10}. Additional pollutants for which EPA has established NAAQS and that are not currently monitored by GRIC include sulfur dioxide, nitrogen dioxide, carbon monoxide, $PM_{2.5}$, and lead. GRIC continues to not have significant concerns with these additional pollutants as described within the *Introduction* section of this document. EPA periodically reviews and revises these standards based on new public health and scientific information. These revisions often require changes to air monitoring networks and methodologies.

Table 3-3. National Ambient Air Quality Standards Monitored for Pollutants by GRIC

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Ozone	primary and secondary	8-hour	0.070 PPM *	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
PM_{10}	primary and secondary	24-hour	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years

* October 1, 2015, the EPA promulgated revised primary and secondary eight-hour ozone NAAQS from 0.075 to 0.070 PPM.

The site types represented by each GRIC air quality monitor are shown in Table 3-4.

Table 3-4. Site Types for Each Monitoring Station

Site Type	Ozone		Particulate Matter ≤10 Microns (PM_{10})		
	St. Johns	Sacaton	St. Johns	Casa Blanca	Sacaton
Highest Concentration	X			X	
Population Exposure	X	X	X	X	X
Source Impacts				X	
Background Concentrations	X	X	X	X	X
Regional Transport	X	X	X	X	X
Welfare Impacts					

Detailed site information for each of the monitoring locations is presented in Appendix A.

3.2 Ozone Monitoring Network

Beginning in 2002, the Community started monitoring for ozone at two locations - one in Sacaton (District 3) and one in St Johns (District 6); both monitors operated on seasonal schedule from April through October.

The GRIC ozone monitoring network operated a year round schedule from January 1, 2016 through December 31, 2018. Both ozone monitors were reported as operational in AQS from January 1st to December 31st.

GRIC requested and received EPA-approval for a waiver to monitor ozone only on seasonal schedule (April – October) beginning April 1, 2019; GRIC continues to request annually and receive approval for a waiver which currently continues through 2023 calendar year.

3.2.1 Background

The following subsections provide background information on the two ozone monitoring locations. Additional detailed information for each monitor is provided in Appendix B.

3.2.1.1 Sacaton

Operated by the AQP since 2002, this site provides background and regional transport ozone monitoring on an urban scale. This site is located near the central GRIC government and business district of Sacaton, which includes four schools and a community hospital. It also provides a measurement of representative area ozone concentration for the community of Sacaton and surrounding areas. The monitor generally measures background levels of ozone during prevailing West or East winds. However, under the right wind conditions, the monitor can also detect ozone and ozone precursor transport from the Phoenix Metropolitan Area (PMA), north of the Community, in the form of elevated ozone readings. Measured concentrations at this site are often similar to those recorded at Pinal County's Casa Grande monitor (approximately 9 miles south of Sacaton).

3.2.1.2 St. Johns

Initially operated by the AQP at Vee Quiva Casino (AQS Site ID 7002) in 2002 and then relocated 2 miles south to Gila Crossing Community School Administrative Campus (AQS ID TT-614-7003) in September 2004. In July 2018, site was temporarily relocated to the Komatke Health Clinic as the Gila Crossing Community School Administrative Campus was re-constructed as the new Gila Crossing Community School (grades K-8th). The site was then moved permanently onto the new Gila Crossing Community School campus in August 2019. This site is located in District 6 on the southwest side of the South Mountain Range near the City of Phoenix and provides background and regional transport ozone monitoring on an urban scale. Ozone concentrations at this site exhibit strong diurnal fluctuations caused by oxides of nitrogen (NOx) and volatile organic compounds (VOC) from nearby neighboring jurisdictions in the City of Phoenix. The monitor generally measures background levels of ozone during prevailing West or East winds. However, under certain wind conditions, the monitor can also detect ozone and ozone precursor transport from the PMA, north and east of the monitor location, in the form of elevated ozone readings.

3.2.2 2022 Monitoring Results Summary

The 1-hour average ozone standard was revoked by the EPA on June 15, 2005, and has been replaced by the 8-hour average standard for compliance purposes. On March 12, 2008, the EPA lowered the eight-hour ozone NAAQS from 0.080 to 0.075 ppm.

Then again on October 1, 2015, the EPA lowered the eight-hour ozone NAAQS from 0.075 to 0.070 ppm. Compliance with the standard is determined by averaging the 4th highest of the daily maximum eight-hour average over a three-year period. This three-year average must be less than or equal to 0.070 ppm.

In 2022, there were four days where the daily maximum 8-hour ozone average exceeded the NAAQS (0.070 PPM standard) within the GRIC ozone network. The Sacaton site had three exceedance days on 5/12/2022, 7/14/2022, and 7/15/2022. The St Johns site had three exceedance days on 5/12/2022, 7/15/2022, and 8/18/2022. The 2022 fourth highest values for both sites did not exceed the NAAQS in 2022. Table 3-5 presents the four highest 8-hour average ozone readings for each monitor during the 2022 monitoring season (April – October).

The probable cause of exceedances on July 14 and 15th were due to regional air quality events of smoke from wildfires from northern Mexico. Preliminary analysis via AirNow Tech Navigator and from HYSPLIT back-trajectories indicates that regional wildfire smoke plumes were over Maricopa County and Pinal County area during this time. Wildfire smoke includes ozone precursors which eventually contributes to ozone formation in the presence of sunlight and temperatures, resulting in higher ozone concentrations.

Table 3-5. 2022 8-Hour Average Ozone Summary

Site	Max (PPM) Date	2nd High (PPM) Date	3rd High (PPM) Date	4th High (PPM) Date	Number of Days >0.070
St Johns	0.077* 7/15/2022	0.076 8/18/2022	0.071 5/12/2022	0.070 4/25/2022	3
Sacaton	0.084* 7/15/2022	0.076* 7/14/2022	0.074 5/12/2022	0.069 6/30/2022	3

* Data has been flagged as due to an exceptional event (wildfires in Mexico)

Through the end of the 2022 ozone monitoring season, GRIC continues to attain the 8-hour average NAAQS for ozone (the 8-hour average NAAQS for ozone is violated when the three-year average of the fourth highest values for each year is greater than 0.070 PPM); the EPA defines these as the Design Values. The fourth highest 8-hour average ozone reading for each of the past three years and the 3-year average is shown in Table 3-6. The statistical design value for the St. Johns site is 0.070 PPM and the design value for the Sacaton site is 0.068 PPM.

Table 3-6. Three-Year Average of 4th Highest 8-Hour Ozone through 2022

Site	2020 4th High (PPM)	2021 4th High (PPM)	2022 4th High (PPM)	3-Year Average of 4th High (PPM)
St Johns	0.072*	0.068*	0.070*	0.070*
Sacaton	0.071*	0.066	0.069*	0.068*

* Includes data flagged as exceptional events

3.3 PM_{10} Particulate Monitoring Network

Beginning in 2002, the Community started monitoring for PM_{10} at one location (Casa Blanca) using a Federal Reference Method (FRM), filter-based, monitor operating on a 1-in-3 day schedule. In 2013, the Community began continuous monitoring methods for PM_{10} at all three monitoring stations (St. Johns, Casa Blanca, and Sacaton) using Federal Equivalent Method (FEM) Tapered Element Oscillating Microbalance (TEOM) monitors that provide hourly PM_{10} averages. In 2022, all three TEOM FEM monitors were reported as operational in AQS. There are no collocation requirements for EPA-approved PM_{10} FEM continuous monitors.

3.3.1 Background

The following subsections provide background information on the three PM_{10} monitoring locations. Additional detailed information for each monitor is provided in Appendix B of this document.

3.3.1.1 Casa Blanca

This site has been operated by the AQP since 2002. This monitoring site is a neighborhood scale and representative of particulate concentrations in District 5, Casa Blanca. The site consists of one TEOM monitor. Since there are no collocation requirements for EPA-approved PM_{10} FEM monitors, the two collocated FRM samplers (two identical monitors that sample separately) were discontinued on December 31, 2014.

This monitoring site was originally placed in one of the three most populated areas of the Community to measure source impacts from agricultural areas. Although located in a neighborhood of agricultural operations, it can be representative of other areas beyond the local jurisdictions. This monitoring station is located approximately 4 to 5 miles northeast of other PM_{10} sources (e.g., agricultural areas and dairy operations) that are outside of the Community's boundaries and control, and may be influenced by PM_{10} generated from those sources.

3.3.1.2 Sacaton and St. Johns

The Sacaton and St. Johns sites started reporting PM_{10} data to the AQS database beginning January 1, 2013. Both sites are currently set up to monitor PM_{10} concentrations using continuous TEOM monitors. These two sites have been approved for monitoring and reporting as established within the GRIC Quality Assurance Project Plan (QAPP).

3.3.2 2022 PM_{10} Monitoring Results Summary

The 24-hour Primary standard for PM_{10} is 150 $\mu g/m^3$ (155 $\mu g/m^3$ with mathematical rounding). The interpretation of the standard, Appendix K to Part 50, includes rounding to the nearest 10 $\mu g/m^3$ (*i.e.*, values ending in 5 or greater are to be rounded up). This standard is violated when the expected number of exceedances at a monitor is more than one per year on average over three years. A formula, as detailed in 40 CFR 50, is used to determine the expected number of exceedances. The formula takes into account the number of days sampling occurred and the number of valid samples collected. A 3-year average of these estimated days is then used to determine compliance.

In 2022, there were eight exceedances of the 24-hour primary standard (NAAQS) for PM_{10}. The Sacaton and Casa Blanca monitors exceeded the standard on 8/14/2022; only the Casa Blanca monitor exceeded on 6/24/2022; only the St. Johns monitor exceeded on 7/9/2022, 7/23/2022 and 9/1/2022; and the Casa Blanca and St Johns monitors exceeded on 10/3/2022. GRIC has flagged all of these exceedances as *exceptional events* (see Definitions of Terms). In accordance with the EPA's exceptional events policy, once approved, these data are not used in determining compliance with the NAAQS. Table 3-7 presents the summary of the 24-hour average PM_{10} readings for each monitor in 2022.

Exceedances of the 24-hour PM_{10} NAAQS at the GRIC monitors also occurred in 2020 and 2021 which also included some flagged data due to Exceptional Events by GRIC. As of the date of this report, the EPA has not issued an official concurrence with GRIC's 2020 and 2021 flagged data. Therefore, a determination of compliance with the 24-hour PM_{10} NAAQS cannot be made at this time.

Table 3-7. 2022 24-Hour Average PM10 Summary

Site Name (Monitor Type)	24-hr Average Max ($\mu g/m^3$)	24-hr Average 2nd High ($\mu g/m^3$)	Number of 24-hr NAAQS Exceedances	Estimated Exceedances (Including Exceptional Events requested)	Annual Average ($\mu g/m^3$)	No. of Exceptional Events	No. of valid days / days possible
St Johns (TEOM-POC1)	259* 10/3/2022	196* 7/23/2022	4*	4*	27.6†	4*	365 / 365
Sacaton (TEOM-POC1)	524* 8/14/2022	141 10/3/2022	1*	1*	29.8†	1*	365 / 365
Casa Blanca (TEOM-POC3)	774* 8/14/2022	431* 10/3/2022	3*	3*	39.0†	3*	364 / 365
* Data has been flagged by GRIC as an Exceptional Event; RJ flag for high winds. †The annual average values include exceptional events data that has not been concurred by EPA.							

3.4 Meteorological Network

GRIC collects meteorological data at all three air monitoring sites to support the analysis of ambient air quality data and to provide support for exceptional event reporting.

3.5 Changes to the Network in 2022

No changes were made to the monitoring network design or instrument siting in 2022.

3.6 Proposed Network Changes and Improvements

There are no planned changes to siting of the GRIC Air Monitoring Network in 2023. The GRIC Air Monitoring Network is planning or has made the following changes to the air monitoring network in 2023:

- The AQP has implemented the new data acquisition system upgrade with the ESC 8872 system in December 2022. The AQP will change meteorological sensors from separate sensors to the all-in-one AIO2 sensor (except for precipitation) in 2023.
- The GRIC ozone monitors will continue on a seasonal schedule from April 1, 2023 through October 31, 2023. The AQP will continue to request for seasonal ozone monitoring for 2024 calendar year; a formal request with data analysis will be submitted to EPA in September 2023.

4 COMPLIANCE DISCUSSION

In accordance with 40 CFR 58.10(a)(1), the following sections provide information on compliance with the requirements of Appendices A, C, D, and E of 40 CFR 58. A cross-reference of the requirements of Appendices A, C, D, and E of 40 CFR 58 and the section(s) of this report that address those requirements is included in tables provided in Appendix B of this document for all three GRIC air monitoring sites.

4.1 Minimum Monitoring Requirements

Tables D-2 and D-4 in Appendix D of 40 CFR Part 58 define minimum monitoring requirements for ozone and PM_{10}, respectively. Tables D-2 and D-4 are reproduced as Tables 4-1 and 4-2, respectively, below. The minimum monitoring requirements are based on the population of the Metropolitan Statistical Area (MSA) and the design value for each NAAQS. MSA must contain an urbanized area of 50,000 or more populations.

Table 4-1. Ozone Monitoring Requirements for SLAMS (Number of Stations per MSA)

MSA Population	Most recent 3-year design value ≥85% NAAQS	Most recent 3-year design value <85% NAAQS
>10 million	4	2
4-10 million	3	1
350,000-<4 million	2	1
50,000-<350,000	1	0

Table 4-2. PM10 Monitoring Requirements for SLAMS (Number of Stations per MSA)

MSA Population	High concentration Exceeds NAAQS by 20% or more (>180 µg/m^3)	Medium concentration >80% of NAAQS (>120 µg/m^3)	Low concentration < 80% of NAAQS (<120 µg/m^3)
>1,000,000	6-10	4-8	2-4
500,000-1,000,000	4-8	2-4	1-2
250,000-500,000	3-4	1-2	0-1
100,000-250,000	1-2	0-1	0

It is unclear in Appendix D 40 CFR 58 how MSAs and the minimum monitoring requirements in Tables D-2 and D-4 (Tables 4-1 and 4-2) apply to sovereign tribes. Although the areas within the Community are *geographically* part of the Phoenix-Mesa-Scottsdale MSA, for purposes of the administration of Section 107 of the Clean Air Act (42 U.S.C. § 7407), except where a specific designation has been otherwise made by the Administrator, the air quality control region for the Community is all land within the exterior boundaries of the Community. Therefore, for the purposes of this document, the AQP is using the data in Tables D-2 and D-4 as reference only. The design value is a calculated value based upon the highest recorded concentration at a site in the attainment

or nonattainment area. The process for computing the design value for each criteria pollutant is described in the appendices of 40 CFR Part 50. For the purpose of this document, the design values listed are the highest calculated concentrations recorded in the Community.

The minimum monitoring requirements of 40 CFR 58 Appendix D for the ozone and PM_{10} monitors within the Community are presented in Tables 4-3 and 4-4, respectively. The GRIC Air Quality Management Plan (AQMP) does not require a minimum number of monitors for the Community.

Table 4-3. Minimum Monitoring Requirements[1] for GRIC Ozone Monitors, 2020-2022

MSA	Monitor Site: County	Population[2] (GRIC Census)	8-hour Design Value for 2020-2022 (ppm)	Site (AQS ID)	Minimum Monitors Required	Number of Active Monitors	Monitors Needed
NA[1]	St. Johns: Maricopa	13,267	0.070[A] 0.067[B]	St. Johns (TT-614-7003)	0[C]	2	0
	Sacaton: Pinal		0.068[A] 0.065[B]	Sacaton (TT-614-7001)			

Table Notes:

1. It is unclear in Appendix D 40 CFR 58 how MSAs apply to Tribal agencies. Although the areas within the Community are *geographically* part of the Phoenix-Mesa-Scottsdale MSA, for purposes of the administration of Section 107 of the Clean Air Act (42 U.S.C. § 7407), the air quality control region for the Community is all land within the exterior boundaries of the Community. Therefore, for the purposes of this document, the MSA is not applicable to GRIC.
2. Number of members who reside within GRIC, 4/24/2023 (GRIC Enrollment/Census Department).

A. 2021 and 2022 data DV includes exceptional event (regional wildfire smoke event) data requested for regulatory concurrence.

B. 2021 and 2022 data DV excludes exceptional event (regional wildfire smoke event) data requested for regulatory concurrence.

C. A 3-year design value greater than 0.0595 would require one monitor for a population between 50,000 and 350,000 (smallest population group in Table 4-2). Since the GRIC population is below the lowest population range in Table 4-2 and Tribal requirements are unclear, the minimum monitoring requirements was assumed to be zero. For comparison, the population of the Phoenix-Mesa-Scottsdale MSA in 2017 estimate was 4,737,270 residents (Census Bureau), which would require a minimum of 3 monitors.

Table 4-4. Minimum Monitoring Requirements[1] for GRIC PM10 Monitors, 2020-2022

MSA	Monitor Site: County	Population[2] (GRIC Census)	GRIC Max Concentration ($\mu g/m^3$)	Site (AQS ID)	Minimum Monitors Required	Number of Active Monitors	Monitors Needed
NA[1]	St. Johns: Maricopa	13,267	774[A] 147[B]	St Johns (TT-614-7003 POC1)	0[C]	3	0
	Sacaton: Pinal			Sacaton (TT-614-7001 POC1)			
	Casa Blanca: Pinal			Casa Blanca (TT-614-7004 POC3)			

Table Notes:

1. It is unclear in Appendix D 40 CFR 58 how MSAs apply to Tribal agencies. Although the areas within the Community are *geographically* part of the Phoenix-Mesa-Scottsdale MSA, for purposes of the administration of Section 107 of the Clean Air Act (42 U.S.C. § 7407), the air quality control region for the Community is all land within the exterior boundaries of the Community. Therefore, for the purposes of this document, the MSA is not applicable to GRIC.
2. Number of members who reside within GRIC, 4/24/2023 (GRIC Enrollment/Census Department).

A. Max concentration includes data flagged as exceptional events. Casa Blanca site, 8/14/2022.

B. Max concentration excludes data flagged as exceptional events. Casa Blanca site, 8/11/2020.

C. A maximum concentration greater than 180 $\mu g/m^3$ would require 1-2 monitors for a population between 100,000 and 250,000 (smallest population group in Table 4-2). A maximum concentration between 120 and 180 $\mu g/m^3$ would require 0-1 monitors for a population between 100,000 and 250,000. Since the GRIC population is below the lowest population range in Table 4-2 and Tribal requirements are unclear, the minimum monitoring requirements was assumed to be zero. For comparison, the estimated population of the Phoenix-Mesa-Scottsdale MSA in 2017 was 4,737,270 (Census Bureau), which would require a minimum of 6-10 monitors for maximum concentrations >180 $\mu g/m^3$ and 4-8 monitors for maximum concentrations between 120 and 180 $\mu g/m^3$.

Based on the information contained in Tables 4-3 and 4-4, the GRIC monitoring network meets the minimum monitoring requirements for all criteria pollutants measured (i.e., ozone and PM_{10}) as established in 40 CFR 58 Appendix D, Tables D-2 and D-4.

4.2 Data Submission Requirements

Federal regulations (Appendix A of 40 CFR 58 and 40 CFR 58.15) require air monitoring organizations to submit precision and accuracy data for the data reported to the federal database. The air monitoring precision and accuracy data for the GRIC monitors are submitted to the EPA AQS database on a quarterly basis and are up to date as of the publication of this report.

Federal regulations (40 CFR 58.15) also require the air monitoring organization to annually submit a letter certifying that data has been submitted for that year to the EPA AQS database and that the data accurately represents the air quality in the Community. The AQP certified and submitted the 2022 air monitoring data for the Community to EPA Region 9, Air Quality Analysis Office on April 12, 2023 via Email.

4.3 Air Quality Data

All of the GRIC ambient air monitoring stations are registered with the EPA and regularly report NAAQS criteria pollutant data to the EPA's AQS database. The data generated at these stations are public information and are available in various formats from the respective agencies. Table 4-5 below lists some popular sources for air quality data.

Table 4-5. Sources of Ambient Air Quality Data

Agency	Address For Data Requests	Email / Internet address	Data Available
GRIC	P.O. Box 97 Sacaton, AZ 85147 Attn: GRIC DEQ Director	Lisa.Gover.DEQ@gric.nsn.us	GRIC Air Monitoring Data
United States Environmental Protection Agency	Ariel Rios Building 1200 Pennsylvania Avenue, N.W. Washington, DC 20460	www.epa.gov; www.epa.gov/outdoor-air-quality-data; https://aqs.epa.gov/aqsweb/documents/data_mart_welcome.html	National Air Monitoring Data, including GRIC data

4.4 Audits

The AQP performed audits of the monitoring equipment in 2022. The performance audit dates for the ozone monitors are shown in Table 4-6 and the semi-annual audits dates for the continuous TEOM PM_{10} monitors are shown in Table 4-7. In addition, this information is included in Appendix B that provides detailed information of air monitoring specifications.

The GRIC network also participates in the National Performance Audit Program that is conducted

by the EPA. An NPAP was conducted on 8/31/2022 at the St Johns site for ozone and the ozone monitor passed all audit points.

Table 4-6. Performance Audit Dates for GRIC Ozone Monitors

Site	AQS ID	Parameter	2022 Audit Dates
Sacaton	TT-614-7001 (Tribal Monitor)	Ozone (44201)	3/31, 4/22, and 10/18
St Johns	TT-614-7003 (Tribal Monitor)	Ozone (44201)	5/4 and 10/19

Table 4-7. Semi-Annual Flow Rate Audit Dates for GRIC Continuous TEOM PM10 Monitor

Site	AQS ID	Parameter	2022 Audit Dates
Sacaton (TEOM)	TT-614-7001 (Tribal Monitor)	PM_{10} (81102)	3/11, 6/15, and 12/13
St. Johns (TEOM)	TT-614-7003 (Tribal Monitor)	PM_{10} (81102)	3/11, 6/15, and 12/14
Casa Blanca (TEOM)	TT-614-7004 POC3 (Tribal Monitor)	PM_{10} (81102)	3/11, 6/15, and 12/13

5 PUBLIC NOTICE

In accordance with 40 CFR 58.10, the annual monitoring network plan must be made available for public inspection (website, hardcopy posting in libraries and public offices, and/or newspaper listing) for at least 30 days prior to submission to EPA. If an opportunity for public comment had been provided, comments received must be included in the annual network plan submission.

The Gila River Indian Community DEQ presented a summary of this Network Review during District meetings beginning on April 17, 2023. In an effort to notify the public of the Network Review, the AQP published information through the following outlets:

- Public Notice posted on the GRIC DEQ website (www.gricdeq.org/index.php/education--outreach/public-notices).
- Public Notice posted in the Gila River Indian Newspaper, a newspaper of general circulation in Gila River Indian Community.
- Public Notice posted on www.mygilariver.com and the GRIC Government Intranet.

A copy of the public announcement and handouts were posted on the GRIC DEQ website and comments and questions received are included in Appendix D.

5.1 Public Meeting

The AQP presented a summary of the content of this document during the District meetings from April through June 2023. A copy of the public announcement and handouts are included as Appendix D. The comments and questions received are included in Appendix D.

Appendix A 2022 Air Monitoring Data By Site

(Site information includes: photographs, site type and spatial scale, and population represented.)

- St. Johns
- Casa Blanca
- Sacaton

St. Johns (SJ), TT-614-7003 (Tribal Monitor)

Location: 4665 W. Pecos Rd, Laveen Village, AZ 85339

Spatial Scale: Urban (O_3) and Neighborhood (PM_{10})

Monitoring Type: Population Exposure, Highest Concentration (O_3)

Site Description: This site has been operational since 2003. This site is located on the Gila Crossing Community School campus. This Tribal Monitoring location monitors for ozone and PM_{10}. The spatial scale for the St. Johns site is *Neighborhood* for PM_{10} and *Urban Scale* for ozone. It is located in a residential area. This site operates one gaseous ozone analyzer and one continuous PM_{10} monitor that are both FEM instruments. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, wind speed/direction, relative humidity, and precipitation. This site also includes two digital cameras that take 10-minute still images.

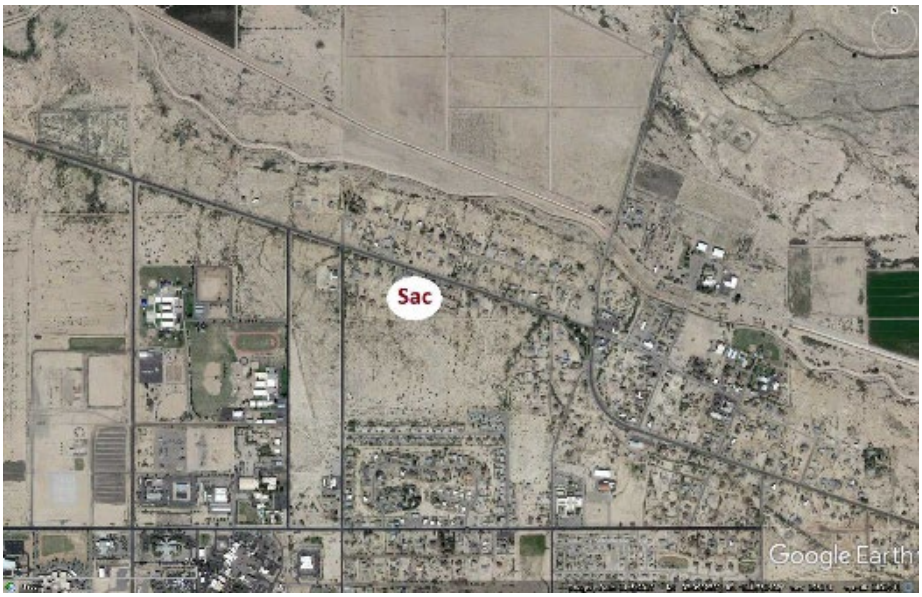
Pollutant	Condition	2020	2021	2022
O_3	Max. 8-hr O_3 Average (PPM)	0.081	0.076	0.077
	O_3 # Daily Exceedances > 0.070 PPM	5	2	3
	O_3 3-year Average of 4th Highest (PPM)	0.068†	0.068†	0.070†
PM_{10}	Max. 24-hr PM_{10} Average (µg/m^3)	195*	223*	259*
	Number of exceedances 24-hr PM_{10}	1†	3†	4†
	Annual PM_{10} Average (µg/m^3)	27.8ǂ	28.4ǂ	27.6ǂ

* Indicates an exceedance of the NAAQS

† Indicates exceptional events concurrence requested at this site and no Regional EPA assessment to date.

ǂ The annual average values include exceptional events data that has not been concurred by EPA.

Sacaton (Sac), TT-614-7001 (Tribal Monitor)



Location: 291 W. Casa Blanca Rd., Sacaton, AZ 85147

Spatial Scale: Urban (O_3) and Neighborhood (PM_{10})

Monitoring Type: Population Exposure

Site Description: This site has been operational since 2002. This Tribal Monitoring location monitors for Ozone and PM_{10}. The spatial scale for the Sacaton site is *Neighborhood* for PM_{10} and *Urban Scale* for Ozone. It is located in a community residential area. This site operates one gaseous ozone analyzer and one continuous PM_{10} monitor that are both FEM instruments. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, wind speed/direction, relative humidity, and precipitation. This site also includes two digital cameras that take 10 minute still images.

Pollutant	Condition	2020	2021	2022
O_3	Max. 8-hr O_3 Average (PPM)	0.078	0.070	0.084
	O_3 # Daily Exceedances > 0.070 PPM	4	0	3
	O_3 3-year Average of 4th Highest (PPM)	0.068†	0.067	0.068†
PM_{10}	Max. 24-hr PM_{10} Average (µg/m^3)	200*	285*	524*
	Number of exceedances 24-hr PM_{10}	1†	1†	1†
	Annual PM_{10} Average (µg/m^3)	31.7ǂ	31.8ǂ	29.8ǂ

* Indicates an exceedance of the NAAQS

† Indicates exceptional events concurrence requested at this site and no Regional EPA assessment to date.

ǂ The annual average values include exceptional events data that has not been concurred by EPA.

Casa Blanca (CB), TT-614-7004 (Tribal Monitor)

Location: 3455 W. Casa Blanca Road Bapchule, AZ 85121

Spatial Scale: Neighborhood

Monitoring Type: Population Exposure, Highest concentration (PM_{10})

Site Description: This site has been operational since 2002. This Tribal Monitoring location monitors for PM_{10}. The spatial scale for the Casa Blanca site is *Neighborhood*. It is located in a residential area and within a community elementary school property. This site operates one continuous PM_{10} monitor that is a FEM instrument. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, wind speed/direction, relative humidity, and precipitation. In addition, this site operates two digital cameras that take images every 10 minutes.

Pollutant	Condition	2020	2021	2022
PM_{10}	Max. 24-hr PM_{10} Average ($\mu g/m^3$)	221*	259*	774*
	Number of exceedances 24-hr PM_{10}	2†	3†	3†
	Annual PM_{10} Average ($\mu g/m^3$)	43.5ǂ	38.1ǂ	39.0ǂ

* Indicates an exceedance of the NAAQS

† Indicates exceptional events concurrence requested at this site and no Regional EPA assessment to date.

ǂ The annual average values include exceptional events data that has not been concurred by EPA.

Appendix B EPA-Required Site Metadata

Detailed information includes: compliance information regarding air monitoring technical specifications found in 40 CFR §58.10 and Appendices A, C, D, and E (QA, monitoring methods, network design, and monitor siting)

Site Schematic Descriptions

Analysis Method (filter samples only) refers to the method used to process and analyze PM and Pb filter samples.

Distance from Supporting Structure refers to those sample probes that are attached to a supporting structure, such as the side of a building. In most cases the sample probe is located above the supporting structure, in which case the entry will show as "N/A", aka not applicable.

Distance from Obstructions refers to those obstructions, both on the roof and off the roof, which are located higher than the probe. In the case of a nearby obstruction being higher than the probe, details of its location will be listed in the entry. If there are no obstructions higher than the probe, then the entry will be N/A.

Date of Annual Performance Evaluation refers to the last 2022 QA audit on the gaseous analyzers. These evaluations are performed by the GRIC's QA personnel. Twenty-five percent of the monitors operating within each gaseous pollutant's network are evaluated quarterly; thereby, each monitor is evaluated at least once per year as per 40 CFR Part 58, Appendix A, §3.2.2.

Date of Semi-Annual Flow Rate Audit refers to the last 2022 QA audit on PM monitors as per 40 CFR Part 58, Appendix A, §§ 3.2.4 and 3.3.4, respectively. These evaluations are performed by the GRIC's QA personnel at least once every six months.

Probe Sample Line Material refers to the material makeup of the intake sample lines.

Pollutant Sample Residence Time refers to the amount of time that it takes a sample of air to travel between the probe inlet and the bulkhead of the analyzer. This residence time is calculated by a formula that is based on the sample line's diameter and length, and the flow rate of the air intake. It is important to keep residence time low to prevent gases in the air sample from reacting with the sample line material or with other gases in the sample; i.e., O_3 could react with nitrogen oxides in the sample if the residence time exceeds 20 seconds.

St. Johns
GRIC ID: SJ
AQS ID: TT-614-7003 (Tribal Monitor Code)
Address: 4665 W. Pecos Rd., Laveen Village, AZ 85339
Coordinates: N 33° 17' 25.05", W 112° 09' 37.74"; (elevation 1057 ft)

- General Information		
Pollutant (parameter code)	O_3 (44201)	PM_{10} (81102)
Parameter Occurrence Code (POC)	1	1
Sampling Schedule	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No
Is site suitable for comparison to $PM_{2.5}$ NAAQS per Part 58.30?	N/A	N/A
-Appendix A Requirements		
# Precision Checks Performed Annually	19	27
# Accuracy Audits Performed Annually & Date of Last 2022 Check on Gaseous Analyzers & Last Two 2022 Checks for PM	2, 10/19/2022	3, 6/15 & 12/14/2022
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes
Annual Data Certification Submitted?	April 12, 2023	April 12, 2023
Frequency of One-Point QC Check	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	Bi-Weekly
-Appendix C Requirements		
Sampler Make & Model (method code)	TAPI T400 (087)	TEOM 1405 (079)
Date Established	03/24/2003	01/01/2013
Monitor Type	Tribal	Tribal
Method (FRM, FEM, ARM)	FEM	FEM
-Appendix D Requirements		
Site Type	Population Exposure	Populations Exposure
Basic Monitoring Objective	NAAQS Comparison	NAAQS Comparison
Monitoring Scale	Urban	Neighborhood
Sampling Season	April - October	January – December
Network Meets Minimum Number of Monitors Required?	Yes	Yes
-Appendix E Requirements		
Distance between collocated samplers	N/A	N/A
Probe Inlet Height	4.7 meters	4.7 meters
Airflow Arc	360 degree	360 Degree
Probe Sample Line Material for reactive gases	Teflon	NA
Pollutant Sample Residence Time	2.5 seconds	NA
Distance from Supporting Structure	NA	NA
Distance from Obstructions	43 meters (building, below probe)	43 meters (building, below probe)
Distance to Furnace Flue	None	None
Spacing from Trees	None	None
Nearest Major Roadway	Pecos Road	Pecos Road
Distance and Direction to Road	17 meters, North	17 meters, North
Traffic Count (ADT)	1440 (2009)	1440 (2009)
Groundcover	Pavement and pea pebble landscape	Pavement and pea pebble landscape

Sacaton
GRIC ID: Sac
AQS ID: TT-614-7001 (Tribal Monitor Code)
Address: 291 W. Casa Blanca Rd., Sacaton, AZ 85147
Coordinates: N 33° 04' 53.82", W 111° 45' 08.02"; (elevation 1289 ft)

- General Information		
Pollutant (parameter code)	O_3 (44201)	PM_{10} (81102)
Parameter Occurrence Code (POC)	1	1
Sampling Schedule	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No
Is site suitable for comparison to $PM_{2.5}$ NAAQS?	N/A	N/A
-Appendix A Requirements		
# Precision Checks Performed Annually	20	27
# Accuracy Audits Performed Annually& Date of Last 2022 Check on Gaseous Analyzers & Last Two 2022 Checks for PM	3, 10/18/2022	3, 6/15/2022 & 12/13/2022
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes
Annual Data Certification Submitted?	April 12, 2023	April 12, 2023
Frequency of One-Point QC Check	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	Bi-Weekly
-Appendix C Requirements		
Sampler Make & Model (method code)	TAPI T400 (087)	TEOM 1405 (079)
Date Established	07/01/2002	01/01/2013
Monitor Type	Tribal	Tribal
Method (FRM, FEM, ARM)	FEM	FEM
-Appendix D Requirements		
Site Type	Population Exposure	Population Exposure
Basic Monitoring Objective	NAAQS Comparison	NAAQS Comparison
Monitoring Scale	Urban	Neighborhood
Sampling Season	April – October	January – December
Network Meets Minimum Number of Monitors Required?	Yes	Yes
-Appendix E Requirements		
Distance between collocated samplers	N/A	N/A
Probe Inlet Height	4.6 meters	4.7 meters
Airflow Arc	360 degree	360 Degree
Probe Sample Line Material for reactive gases	Teflon	NA
Pollutant Sample Residence Time	2.54 seconds	NA
Distance from Supporting Structure	NA	NA
Distance from Obstructions	17 meters (tree to NE, 2 meters above probe)	17 meters (tree to NE, 2 meters above probe)
Distance to Furnace Flue	None	None
Spacing from Trees	17 meters	17 meters
Nearest Major Roadway	Casa Blanca Rd	Casa Blanca Rd
Distance and Direction to Road	153 meters, North	153 meters, North
Traffic Count (ADT)	2,108 (daily average 2008)	2,108 (daily average 2008)
Groundcover	Gravel and natural soil	Gravel and natural soil

Casa Blanca
GRIC ID: CB
AQS ID: TT-614-7004 (Tribal Monitor Code)
Address: Casa Blanca/ Preschool Road, Bapchule, AZ 85221
Coordinates: N 33° 07’ 03.14”, W 111° 53’ 08.93”; (elevation 1209 ft)

- General Information	
Pollutant (parameter code)	PM_{10} (81102)
Parameter Occurrence Code (POC)	3
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to $PM_{2.5}$ NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	31
# Accuracy Audits Performed Annually& Date of Last Two 2022 Checks for PM	3, 6/15 & 12/13/2022
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	April 12, 2023
Frequency of One-Point QC Check	N/A
Frequency of Flow Rate Verification	Bi-Weekly
-Appendix C Requirements	
Sampler Make & Model (method code)	TEOM 1405 (079)
Date Established	July 1, 2002
Monitor Type	Tribal
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Site Type	Population Exposure
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale	Neighborhood
Sampling Season	January - December
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	4.67 meters
Airflow Arc	360 Degree
Probe Sample Line Material for reactive gases	NA
Pollutant Sample Residence Time	NA
Distance from Supporting Structure	NA
Distance from Obstructions	20 meters (canopy/ shade to southeast, 2 meters above probe)
Distance to Furnace Flue	NA
Spacing from Trees	8 meters (tree to East, 2 meters above probe)
Nearest Major Roadway	Casa Blanca Road
Distance and Direction to Road	21 meters, to north
Traffic Count (ADT)	2,400 (daily average 2008)
Groundcover	gravel

Appendix C EPA Approvals

- EPA Letter of Approval for GRIC's 2021 Air Monitoring Network Review and 2022 Plan, includes:
    - EPA Response / Approval Cover Letter dated October 28, 2022.
    - 2021 Annual Monitoring Network Plan Checklist for GRIC Performing Regulatory Monitoring (Not attached).
- Approval of O_3 Seasonal Waiver for St. Johns and Sacaton O_3 Monitors dated January 19, 2023.

Figure C-1. EPA Letter of Approval for GRIC's 2021 Air Monitoring Network Review and 2022 Plan

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

October 28, 2022

Ryan Eberle
Air Quality Program Manager
Department of Environmental Quality/Air Quality Program
Gila River Indian Community
Post Office Box 97
Sacaton, Arizona 85147

Dear Manager Eberle:

Thank you for your submission of the Gila River Indian Community (GRIC) *2021 Ambient Air Monitoring Network Review and 2022 Plan* on June 30, 2022. We have reviewed the submitted document based on the requirements set forth in 40 CFR Part 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below.

Please note that we cannot approve portions of the annual network plan for which the information in the plan is insufficient to judge whether the requirement has been met, or for which the information provided does not meet the requirements as specified in 40 CFR 58.10 and the associated appendices. EPA Region 9 also cannot approve portions of the plan for which the EPA Administrator has not delegated approval authority to the regional offices. Enclosure A (*A. Annual Monitoring Network Plan Checklist for Tribes Performing Regulatory Monitoring*) is the checklist EPA used to review your plan for items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements. Items highlighted in yellow are those EPA Region 9 is not acting on, as we either lack the authority to approve the specific item, or we have determined that a requirement is either not met or information in the plan is insufficient to judge whether the requirement has been met. Items highlighted in green in Enclosure A require attention in order to improve next year's plan. All comments conveyed via this letter and enclosure should be addressed prior to submittal of next year's annual monitoring network plan to EPA.

If you have any questions regarding this letter or the enclosure, please feel free to contact me at (415) 947-4134 or Shaye Hong (415) 947-4104.

Sincerely,

Yoshimura, Gwen
Digitally signed by Yoshimura, Gwen
Date: 2022.10.28 08:44:38 -07'00'

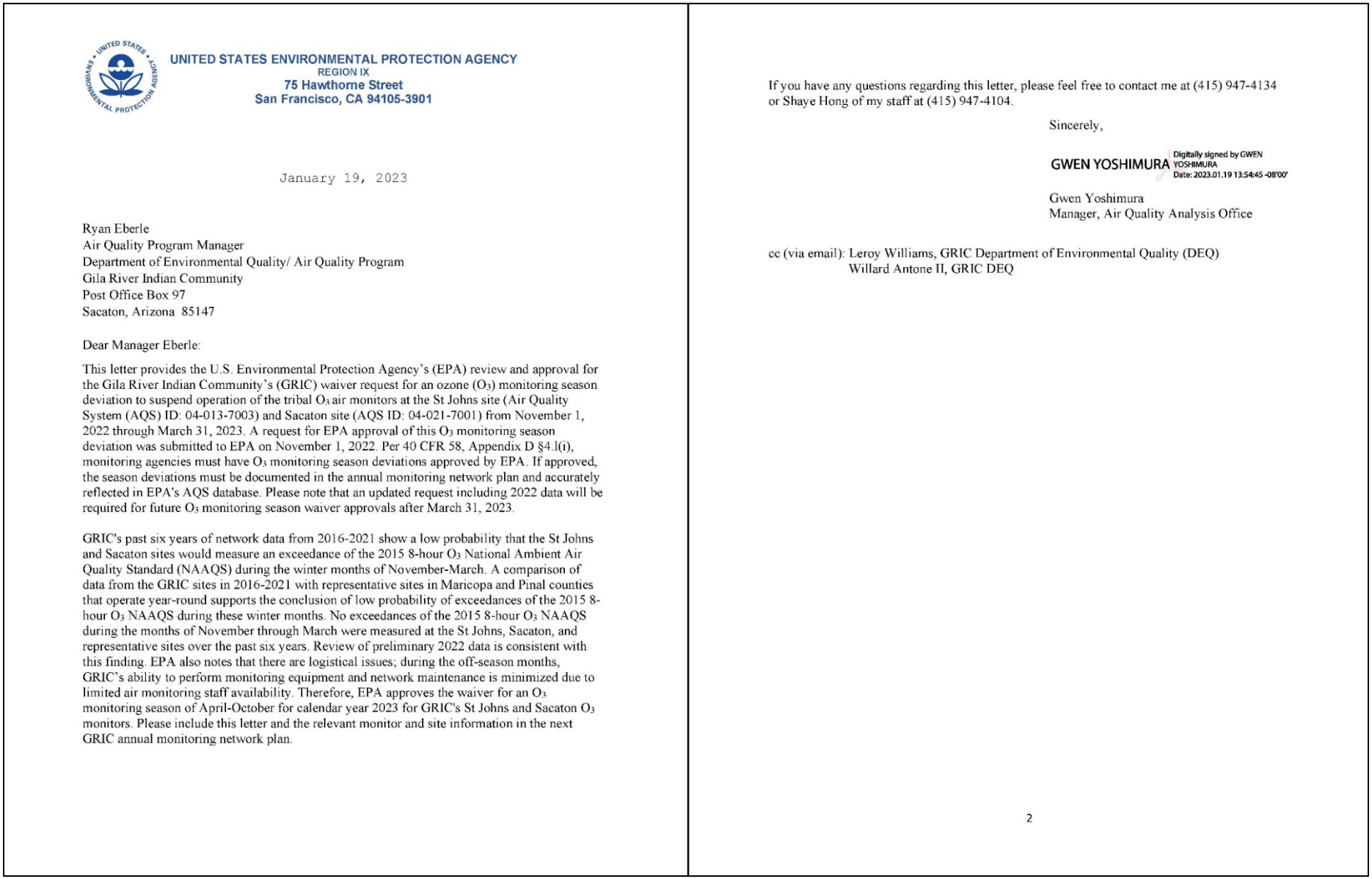
Gwen Yoshimura, Manager
Air Quality Analysis Office

Enclosure:
A. Annual Monitoring Network Plan Checklist for Tribes Performing Regulatory Monitoring

cc (via email): Leroy Williams, GRIC

2

Figure C-2. Approval of O_3 Seasonal Waiver for St. Johns and Sacaton O_3 Monitors dated January 19, 2023.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

January 19, 2023

Ryan Eberle
Air Quality Program Manager
Department of Environmental Quality/ Air Quality Program
Gila River Indian Community
Post Office Box 97
Sacaton, Arizona 85147

Dear Manager Eberle:

This letter provides the U.S. Environmental Protection Agency's (EPA) review and approval for the Gila River Indian Community's (GRIC) waiver request for an ozone (O_3) monitoring season deviation to suspend operation of the tribal O_3 air monitors at the St Johns site (Air Quality System (AQS) ID: 04-013-7003) and Sacaton site (AQS ID: 04-021-7001) from November 1, 2022 through March 31, 2023. A request for EPA approval of this O_3 monitoring season deviation was submitted to EPA on November 1, 2022. Per 40 CFR 58, Appendix D §4.1(i), monitoring agencies must have O_3 monitoring season deviations approved by EPA. If approved, the season deviations must be documented in the annual monitoring network plan and accurately reflected in EPA's AQS database. Please note that an updated request including 2022 data will be required for future O_3 monitoring season waiver approvals after March 31, 2023.

GRIC's past six years of network data from 2016-2021 show a low probability that the St Johns and Sacaton sites would measure an exceedance of the 2015 8-hour O_3 National Ambient Air Quality Standard (NAAQS) during the winter months of November-March. A comparison of data from the GRIC sites in 2016-2021 with representative sites in Maricopa and Pinal counties that operate year-round supports the conclusion of low probability of exceedances of the 2015 8-hour O_3 NAAQS during these winter months. No exceedances of the 2015 8-hour O_3 NAAQS during the months of November through March were measured at the St Johns, Sacaton, and representative sites over the past six years. Review of preliminary 2022 data is consistent with this finding. EPA also notes that there are logistical issues; during the off-season months, GRIC's ability to perform monitoring equipment and network maintenance is minimized due to limited air monitoring staff availability. Therefore, EPA approves the waiver for an O_3 monitoring season of April-October for calendar year 2023 for GRIC's St Johns and Sacaton O_3 monitors. Please include this letter and the relevant monitor and site information in the next GRIC annual monitoring network plan.

If you have any questions regarding this letter, please feel free to contact me at (415) 947-4134 or Shaye Hong of my staff at (415) 947-4104.

Sincerely,

GWEN YOSHIMURA Digitally signed by GWEN YOSHIMURA Date: 2023.01.19 13:54:45 -08'00'

Gwen Yoshimura
Manager, Air Quality Analysis Office

cc (via email): Leroy Williams, GRIC Department of Environmental Quality (DEQ)
Willard Antone II, GRIC DEQ

2

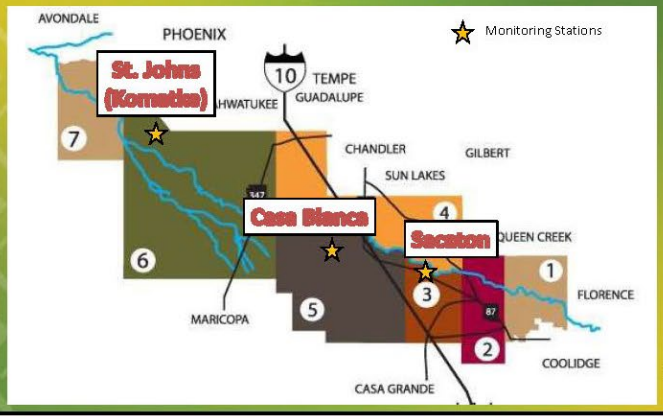
Appendix D Public Notice and Comment Information

1. Figure D-1. Public Meeting PowerPoint Presentation Slides and Handouts (*6 pages*)
2. Figure D-2. Public Meeting Handout (*3 page FAQ Sheet*).
3. Table D-1. Public comments and questions received.

Figure D-1. Public Meeting PowerPoint Presentation Slides and Handouts (*6 pages*):

2022 GRIC Air Monitoring Network Review

GRIC Air Monitoring Network



Air Monitoring Network Plan

- Requirement for Regulatory Monitoring
- Includes
  - Description of Air Monitoring Network (AMN)
  - Review of 2022 Performance/Data/Changes
  - Recommendations for 2023 Network Changes
- Requires 30-Day Public Comment Period
- Plan due to US EPA by July 1, 2023

2022 Summary

- 92-99% Data Completeness (Valid Data)
- Seasonal Monitoring for Ozone
  - April – October
- Data Management System and Equipment Upgrades
- EPA audited network March 2021
  - Final report received June 2022
  - Corrective actions pending

5

2023 Activities

- Complete corrective actions from 2021 audit
- Revise Quality Assurance Project Plan (QAPP)
- Complete Casa Blanca Met Tower installation
- Continue Seasonal Ozone Monitoring
  - (April – October)

6

The Air Quality Index (AQI)

Note: Hazardous is extremely rare and not included in the Flag Program

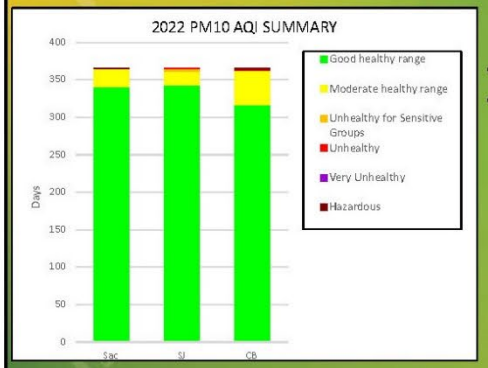
- Indicator of how clean (or polluted) the air is
- Colors associated with health affects/action steps
- Orange ~ Exceedance of National Ambient Air Quality Standard (NAAQS)

7

What Is PM10?

8

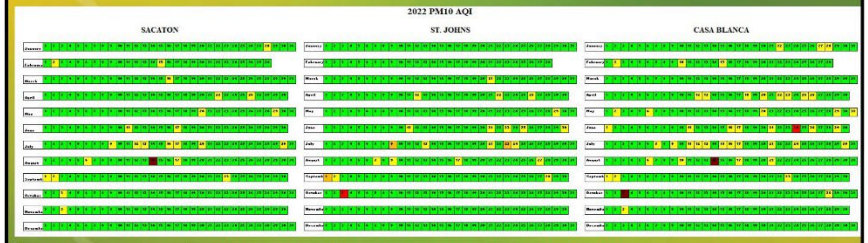
2022 PM10 Results



- Most days good/moderate
- CB has more moderate days

2022 PM10 Results

9

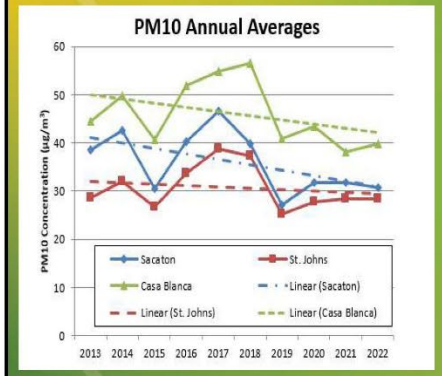


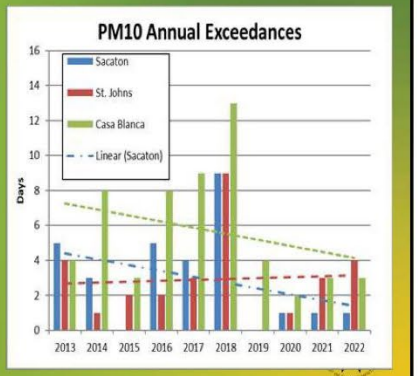
AQI Index	Concentration
Good healthy range	0-54 µg/m^3
Moderate healthy range	55-154 µg/m^3
Unhealthy for Sensitive Groups	155-254 µg/m^3
Unhealthy	255-354 µg/m^3
Very Unhealthy	355-424 µg/m^3
Hazardous	425-604 µg/m^3
Less than 75% data capture	

The NAAQS for PM10 is 150 µg/m3

PM10 Trends

10





Normal vs. Exceedance Day

11

Normal Day (SJ) – 10/4/22

4:20pm

Exceedance Day (SJ) – 10/3/22

4:40pm

Exceedance Day (10/3/22)

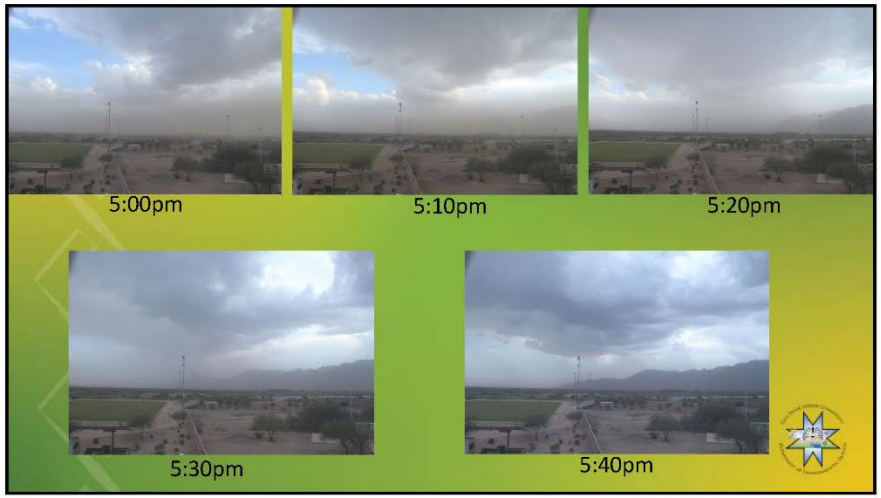
12

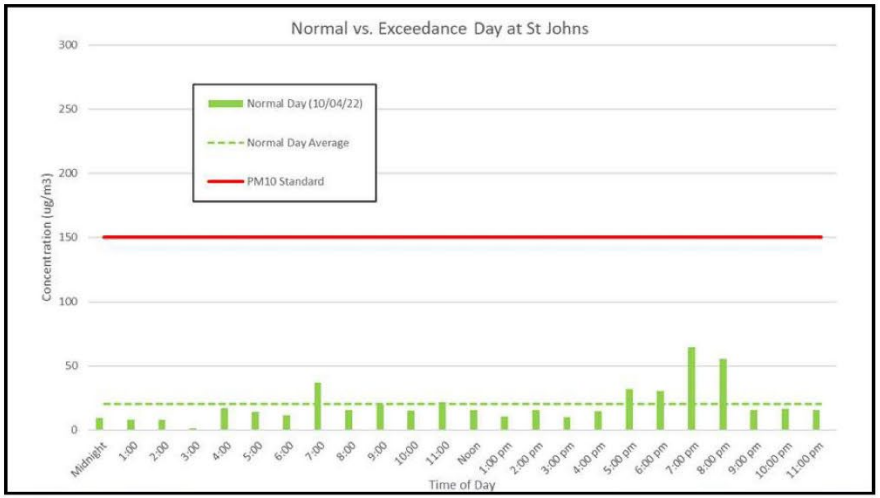
4:20pm

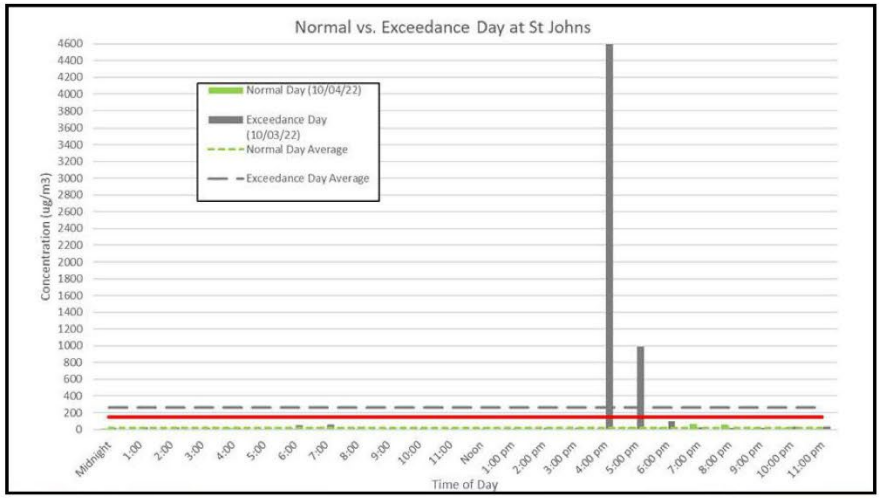
4:30pm

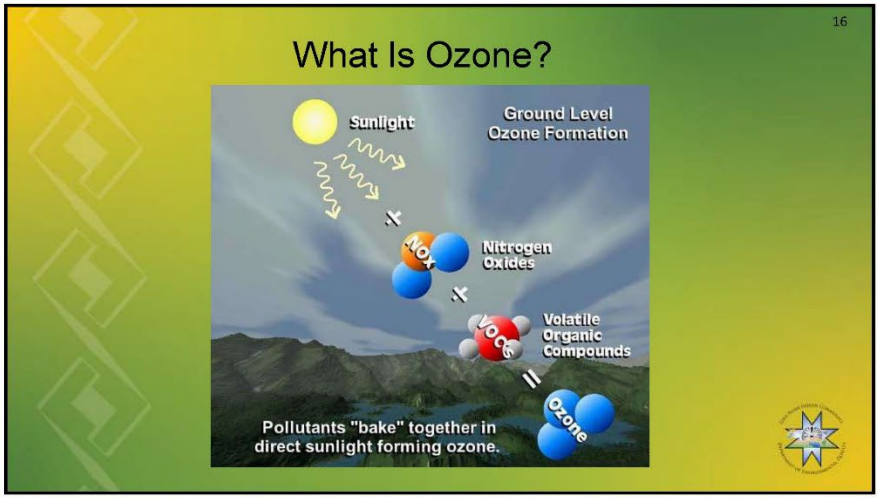
4:40pm

4:50pm


5:00pm
5:10pm
5:20pm
5:30pm
5:40pm

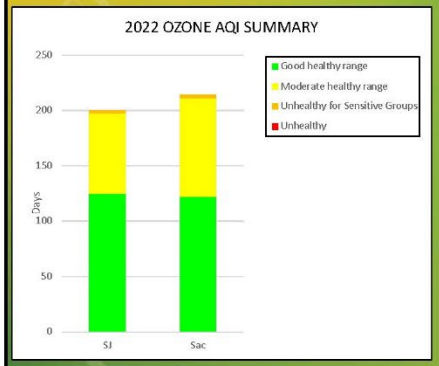

Normal vs. Exceedance Day at St Johns
Normal Day (10/04/22)
Normal Day Average
PM10 Standard
Concentration (ug/m3)
Time of Day


Normal vs. Exceedance Day at St Johns
Normal Day (10/04/22)
Exceedance Day (10/03/22)
Normal Day Average
Exceedance Day Average
Concentration (ug/m3)
Time of Day


16
What Is Ozone?
Sunlight
Ground Level Ozone Formation
Nitrogen Oxides
Volatile Organic Compounds
Ozone
Pollutants "bake" together in direct sunlight forming ozone.

17

2022 Ozone Results



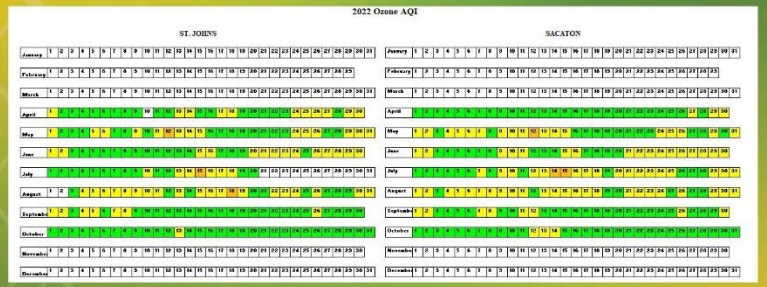
- Most days good/moderate
- Ozone not historically a problem for Community

BUT…

- GRIC borders Phoenix Metro Area

18

2022 Ozone Results

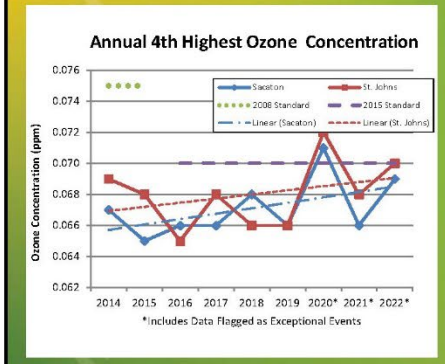


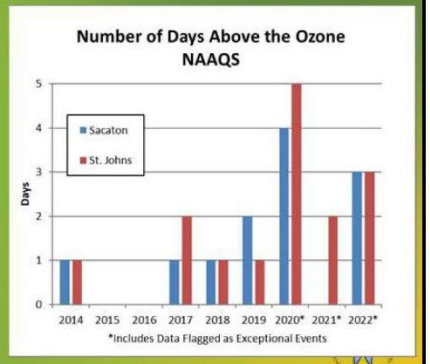
AQI Index	Concentration
Good healthy range	0 - 0.054 ppm
Moderate healthy range	0.055 - 0.070 ppm
Unhealthy for Sensitive Groups	0.071 - 0.085 ppm
Unhealthy	0.086 - 0.105 ppm
Less than 75% data capture	

The NAAQS for Ozone is 0.070 ppm

19

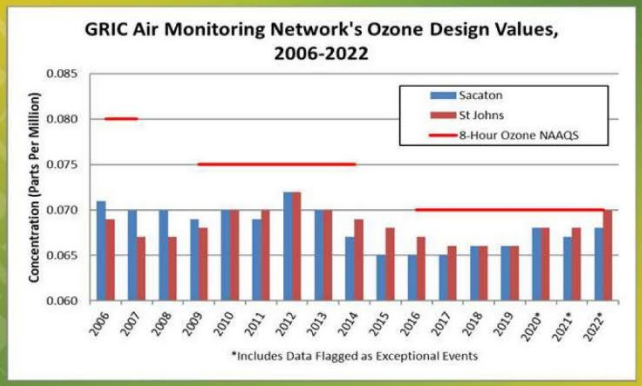
Ozone Trends

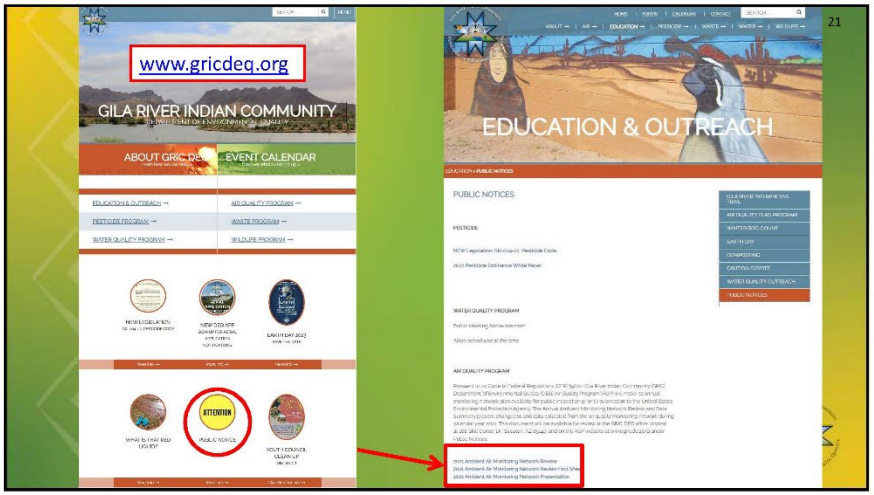


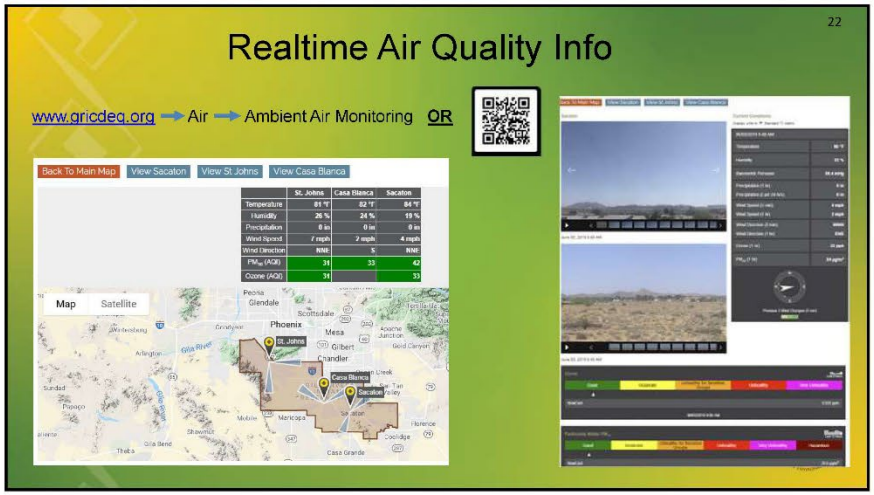


20

Ozone Design Value







Air Quality Notifications (EnviroFlash)

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

Need help signing up? Contact:

Tison Gill
Education/Outreach Specialist
Tison.Gill.DEQ@gric.nsn.us
520-610-9950

Contact Information

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Ryan Eberle
Air Quality Program
(520) 562-2234
Ryan.Eberle@gric.nsn.us

Leroy Williams
Air Monitoring Network Review
(520) 562-2234
Leroy.WilliamsJR@gric.nsn.us

DEQ Air Quality Office:
168 Skill Center Rd.
Sacaton, AZ 85147
air@gric.nsn.us
www.gricdeq.org

Figure D-2. Public Meeting Handout (3 page FAQ Sheet):

Gila River Indian Community
2022 Ambient Air Quality Monitoring Network Review FAQ Sheet

What is an Ambient Air Quality Monitoring Network Review?
It is a document that describes the air monitoring network for the Community including monitor types, background information, summary of annual monitoring results, and changes and future recommendations to the monitoring network. This annual document identifies the purpose of each monitor and provides evidence that the operation of each monitor meet the requirements in the Federal Regulations. In other words, it fulfills requirements needed for a regulatory air monitoring program.

What are the pollutants monitored in our network?
GRIC Department of Environmental Quality (DEQ) Air Quality Program(AQP) operates air quality monitors that record ambient concentrations of two criteria air pollutants- particulate matter less than or equal to 10 microns (PM_{10}) and ozone (O_3).

What are Criteria Air Pollutants?
Criteria Air Pollutants are those that the United States Environmental Protection Agency (EPA) has defined as a potential risk to human health and the environment. These six common air pollutants include particulate matter, ground-level ozone, carbon monoxide, lead, sulfur dioxide, and nitrogen dioxide. Due to the health risks of these pollutants, EPA has set National Ambient Air Quality Standards (NAAQS) for them.

Why do we only monitor two of the six criteria air pollutants?
The Clean Air Act (CAA) requirements are designed for high population areas and emission sources. Consequently, GRIC and other tribes do not fit all of the CAA monitoring requirements. Furthermore, tribes are not required to conduct ambient air monitoring. GRIC does not monitor for these pollutants because they have been found, through discrete sampling and emission inventories, to be at background ambient (outdoor) air quality concentrations. Additionally, GRIC does not have major stationary pollution sources that emit these particular criteria pollutants that may significantly affect the NAAQS within GRIC jurisdiction.

What is the NAAQS?
The National Ambient Air Quality Standards (NAAQS) are intended to protect public health and welfare by setting limits on the allowable level of each criteria pollutant in the ambient air. These standards, also known as public health standards, were developed through scientific-based studies that indicate the level or amount of air in which the public can safely breathe. The NAAQS for Ozone (O_3) is 0.070 parts per million (ppm) based on the annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years. The NAAQS for PM_{10} is to not exceed 150 micrograms per cubic meter (µg/m3) more than once per year on average over 3 years.

What is Particulate Matter?
It is particle pollution that comes from many different types of sources. Coarse particles (between 2.5 and 10 micrometers) that GRIC monitors come from crushing and grinding operations, road dust, and agricultural operations. Particulate matter can be a problem at any time of the year and can cause serious health problems (asthma attacks, heart attacks, and strokes).

What is Ozone?
Ozone is a colorless gas found in the air we breathe. Ozone can be good or bad, depending where it occurs. Good ozone is present in the Earth's upper atmosphere shielding us from the sun's harmful ultraviolet rays. Bad ozone is present at ground level, where we breathe, because it can harm human health. Ozone forms when two types of pollutants (VOCs and NO_x) react in sunlight, usually on hot summer days. These pollutants come from sources such as vehicles, industries, power plants, and products like solvents and paints.

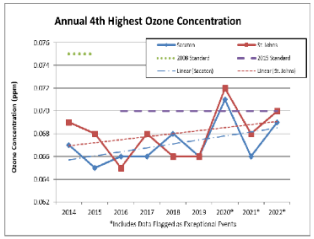
Where are the GRIC ambient air monitors located?
There are currently three permanent ambient air monitoring stations within the Community.

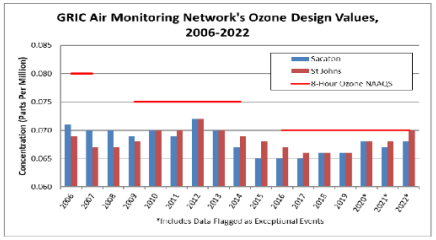
1. St. Johns (SJ) (District 6) - located in a residential area within Gila Crossing Community School property. This site location monitors for Ozone and PM_{10}.
2. Casa Blanca (CB) (District 5) - located in a residential area within Casa Blanca Community School property. This site location monitors for PM_{10}.
3. Sacaton (Sac) (District 3) - located within the GRIC Office of Land Use Planning and Zoning. This site location monitors for Ozone and PM_{10}.

Meteorological data is collected at all three air monitoring sites which include measurements of ambient temperature, barometric pressure, wind speed/direction, relative humidity, and precipitation.

Why are they located there?
Air monitoring sites are strategically based throughout the Community to provide data that meets monitoring objectives: Highest Concentrations, Population Exposure, Source Impacts, Background Concentrations, Regional Transport, and Welfare Impacts. For example, the Casa Blanca site analyzes for PM_{10} in the agricultural center of the Community and all three monitors are placed in locations within the highest population centers on the Community.

How does the 2022 Ozone monitoring data compare with previous years' data?
Prior to 2016, ozone levels were below the 2008 NAAQS of 0.075 ppm. Then on October 1st, 2015, the EPA lowered the 8-hour ozone NAAQS from 0.075 to 0.070 ppm, which was applicable starting with the 2016 data. It is important to know that compliance with the ozone NAAQS is determined by averaging the annual fourth highest concentration for the previous three years. For example, for Sacaton in 2022, the fourth highest concentration was 0.069 ppm, so the three-year average of 2020 (0.071 ppm), 2021 (0.066 ppm), and 2022 is 0.068 ppm. Therefore, the three-year average was below the NAAQS and the air monitoring network continues to show compliance with the ozone standard.





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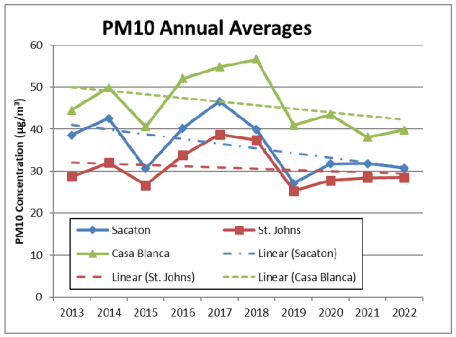
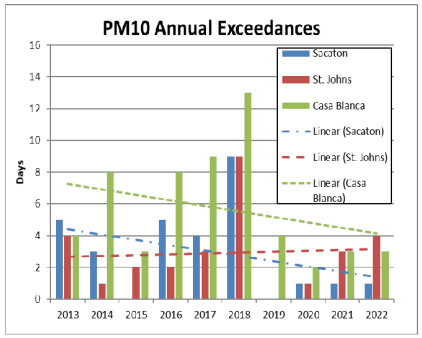
How does the 2022 PM10 monitoring data compare with previous years' data?

Looking at the PM_{10} graphs below, one can see the PM10 annual average concentrations are similar to last year and significantly lower than 2016-2018. In order to be compliant with the PM10 NAAQS, each monitoring site must not have more than one daily exceedance per year over a three-year period. The three-year average exceedance is known as the design value. Since 2013, each of the three sites has a design value greater than one as shown in the chart below. However, both figures below include flagged data for exceptional events in the calculation. An exceptional event is uncontrollable and caused by natural sources of pollution or an event that is not expected to recur at a given location. The AQP assesses any exceedances and makes an initial determination whether or not they were caused by an exceptional event. Those events that are determined to be exceptional are then flagged by the AQP in the AQS database. If EPA concurs that the events are exceptional, then the exceedances are removed from the calculation to determine compliance with the NAAQS. GRIC experienced 115 exceedances in the past ten years (13 in 2013, 12 in 2014, 5 in 2015, 15 in 2016, 16 in 2017, 31 in 2018, 4 in 2019, 4 in 2020, 7 in 2021, and 8 in 2022) from a combination of the three monitors with some that occurred on the same day at different monitors. However, GRIC has flagged 111 of the 115 exceedances as exceptional events. In the past three years, GRIC has flagged 19 of the 19 exceedances as exceptional events. Once approved, these data are not used in determining compliance with the NAAQS.





Is the air getting cleaner?

This is a difficult question to answer because there are so many variables to factor in from year-to-year. Based on the ozone graphs above, ozone concentrations appear to be on a stable or downward trend. However, ozone on the Community is largely influenced by the Phoenix metropolitan area, day of the week, and weather conditions. A period of hot, stagnant air can easily cause ozone concentrations to become elevated. Similarly, PM_{10} measurements are influenced by weather and local and upwind activities within the area (such as agriculture and construction). A warmer, drier season means less moisture in the soil, which may make smaller soil particles (e.g., PM_{10}) more susceptible to entrainment at lower wind speeds. Based on the PM_{10} graphs above, the PM_{10} concentrations appear to be on a stable or downward trend; however, this data also includes the exceptional events.

Can we get a monitor in our district?

Regulatory air quality monitors are expensive to operate and maintain and the EPA continually places additional requirements and responsibilities on air monitoring programs. Additionally, the existing air monitoring stations already exceeds the minimum monitoring objectives outlined in Federal regulations. Therefore, there are currently no plans to expand the monitoring network. In the future, pending the availability of resources, the AQP may be able to conduct short-term informational monitoring in other Districts in the Community.

www.gricdeq.org

Table D-1. Summary of comments and questions received from GRIC members and visitors.

District	Date	Comments / Questions Received
1	4/17/23	District 1 Community Meeting in-person. 1. Do we have bad air quality coming from Phoenix? Why don't you monitor for ozone year-round considering smog in Phoenix? 2. What happens when monitors do exceed the standard? 3. How do we plan for neighboring jurisdictional expansion? For District 1, specifically mentioned Sand and Gravel operations and the city of Coolidge expanding. 4. All this data collected, what are you use for and why are you doing this? 5. *Comment*: the dry river bed can also contribute to blowing dust.
2	NA	Unable to obtain agenda invitation to present.
3	5/16/23	District 3 Community Meeting in-person with Zoom option available. Presentation made in-person. No questions asked in-person or on Zoom.
4	NA	Unable to obtain agenda invitation to present.
5	6/19/23	District 5 Community Meeting in-person. 1. Could the more moderate AQI days and higher annual averages for CB PM10 be because there are mountains surrounding the other sites and there are not any mountains near the Casa Blanca site?
6	6/5/23	District 6 Community Meeting via Webex video conference. No questions received at meeting.
7	5/17/23	District 7 Community Meeting in person. No questions received at meeting.