



GOVERNMENT OF PUERTO RICO  
DEPARTMENT OF NATURAL AND ENVIRONMENTAL RESOURCES

**PUBLIC NOTICE**

**PUERTO RICO AIR MONITORING NETWORK PLAN 2022**

Department of Natural and Environmental Resources (DNER) in fulfillment with Code 40 of Federal Regulations Parts 53 and 58 have delineated the **Puerto Rico Air Monitoring Network Plan 2022**; this plan must be submitted to the Environmental Protection Agency on or before July 1, 2022 for its approval.

The Plan provides information about ambient air quality monitoring in Puerto Rico. The air monitoring network measure ground level concentrations of criteria pollutants (gaseous and particulate air pollutants). The plan proposes some changes and an update to the actual network according with the new air regulations.

Due to the precautionary restrictions caused by COVID-19, the **Puerto Rico Air Monitoring Network Plan 2022** will be available for public review exclusively on the Department's website, [www.drna.pr.gov/acai](http://www.drna.pr.gov/acai) for 30 days from this public notice.

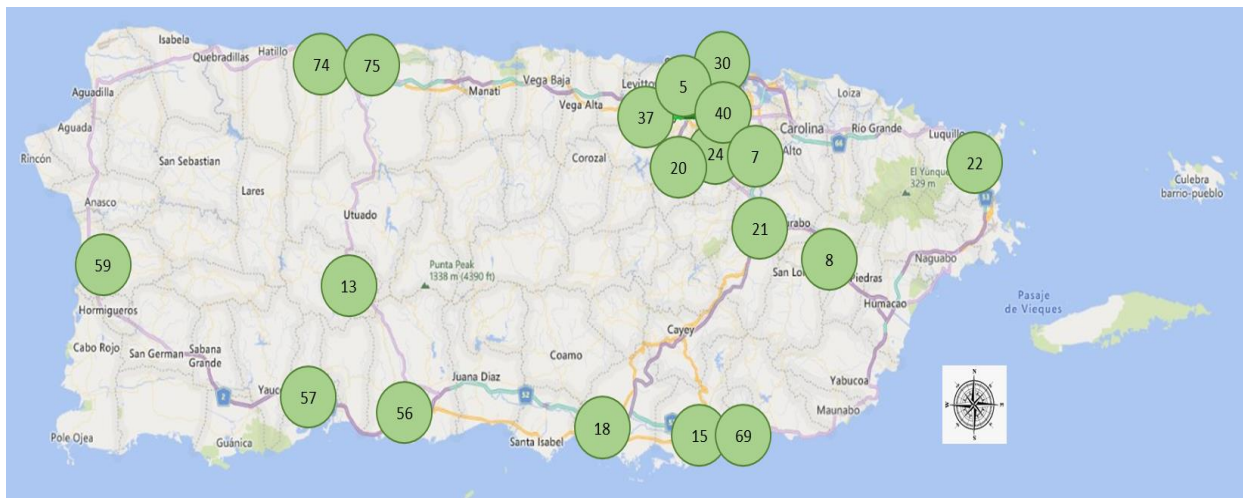
The public is invited to submit comments or recommendations to the following e-mail address, [aire@drna.pr.gov](mailto:aire@drna.pr.gov), to the attention of Mrs. Lucía Fernández-Fontán, Chief of Air Monitoring, Validation, Data Management and Air Dispersion Models Division of Air Quality Area. The comments and recommendations will be considered in the final document that will be submitted to the Environmental Protection Agency.

In San Juan, Puerto Rico, today May 16th, 2022.

  
Anais Rodríguez Vega  
Acting Secretary



# Puerto Rico Air Monitoring Network Plan 2022



Commonwealth of Puerto Rico  
Air Quality Area



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## Acronyms and Abbreviations

AQA: Air Quality Area  
AQI: Air Quality Index  
AQS: Air Quality System  
CFR: Code of Federal Regulations  
CPR: Commonwealth of Puerto Rico  
CBSA: Core-based Statistical Area  
DNER: Department Natural and Environmental Resources  
EPA: Environmental Protection Agency  
FEM: Federal Equivalent Method  
FRM: Federal Reference Method  
MSA: Metropolitan Statistical Area  
NAAQS: National Air Ambient Quality Standards  
NAMS: National Air Monitoring Stations  
NCore: National Core Multi-Pollutant Monitoring Stations  
NO<sub>2</sub>: Nitrogen Dioxide  
O<sub>3</sub>: Ozone  
OSI: Information System Office  
PAMS: Photochemical Assessment Monitoring Stations  
Pb: Lead  
PM<sub>10</sub>: Particulate Matter  
PM<sub>2.5</sub>: Fine Particulate Matter  
ppm: parts per million  
PR: Puerto Rico  
PRAMN: Puerto Rico Air Monitoring Network  
PREL: Puerto Rico Environmental Laboratory  
PREPA: Puerto Rico Power Electrical Authority  
QA: Quality Assurance  
QAMP: Quality Assurance Monitoring Plan  
QAPP: Quality Assurance Project Plan  
RCAP: Regulation for the Control of Atmospheric Pollution of Puerto Rico  
SLAMS: State and Local Air Monitoring Stations  
SO<sub>2</sub>: Sulfur Dioxide  
SO<sub>4</sub>: Sulfate  
SPM: Special Purpose Monitor  
TEOM: Tapered Element Oscillating Microbalance  
TSD: Temporary Shutdown  
TSP: Total Suspended Particulate



## 1. Introduction

The Commonwealth of Puerto Rico (CPR), through the 2021 –Puerto Rico Air Monitoring Network (PRAMN), provides evidence that meets current federal air monitoring requirements. The PRAMN Plan details any proposed changes for the next 18 months after publication, provides specific information for each of the existing and proposed monitoring stations, and offers to the public the opportunity to comment on air sampling activities made by the DNER.

The air quality data of the PRAMN is used to determine compliance with the National Environmental Air Quality Standards (NAAQS). In 1970, the Clean Air Act (CAA) established NAAQS for the six pollutants: Lead (Pb), Particulates (PM<sub>10</sub> and PM<sub>2.5</sub>), Ozone (O<sub>3</sub>), Sulfur dioxide (SO<sub>2</sub>), Nitrogen dioxide (NO<sub>2</sub>) and Carbon monoxide (CO). The CAA requires to the Commonwealth of Puerto Rico to monitor these pollutants, called criteria pollutants, and report the collected data to the Environmental Protection Agency (EPA).

The operation of the ambient air monitoring network by PRDNER is a critical component for the protection of public health and the environment. The operation of the network is to meet the following requirements necessary to demonstrate:

Infrastructure SIP requirements: Clean Air Act Section (CAA) 110(a)(2)(B) provides for the establishment and operation of monitoring systems for ambient air quality and that the air quality data collected be available.

Nonattainment Areas: Ambient air monitoring is crucial for the nonattainment areas for determining whether the areas are meeting the National Ambient Air Quality Standards (NAAQS). Air monitoring is also vital in providing air quality information about areas not meeting the NAAQS to the public because their health may be directly impacted providing air quality information to the public.

Providing air quality information to the public: The air monitoring network is crucial in providing air quality information to the public. This information helps the public make air quality-based decisions about what activities they can participate in or whether they are exposed to pollutant concentrations above healthy Air Quality Index (AQI) levels.

The PRAMN plan describes the Puerto Rico Air Sampling Network and include updates and modifications to the network. The air sampling network is reviewed annually as part of federal regulation under Title 40, Part 58, Section 10 of the Code of Federal Regulations (40 CFR § 58.10) to identify changes in accordance with regulations or incorporate revisions to the National Ambient Air Quality Standards (NAAQS). In addition, it includes a review of the measures adopted during fiscal year 2020 and the action plans for next year. This plan will be



presented to the Environmental Protection Agency (EPA) on or before July 1 of each year, after a public comment period of 30 days.

The revision to the plan focuses on the current and future strategies of the air sampling network. The network modifications are made in consultation with the EPA. In addition, it evaluates the operating cost of the network in accordance with the available budget for 2021 fiscal year.

## **2. Public Comments**

In accordance with federal regulations, the plan will be available for public review and comment period for 30 days before submitting the final plan to the EPA. Comments received during the public consultation period will be forwarded to the Environmental Protection Agency (EPA) at the same time the plan is submitted. Due the COVID-19 Pandemic, this plan will be only available at the DNER website, <http://www.drna.pr.gov/acai/muestreo/>. Written comments should be sent to **aire@drna.pr.gov**. The final document will be submitted to the EPA on or before July 1, 2022, along with the public comments received to comply with the federal regulatory requirements.

## **3. Monitoring Data Quality Assurance**

The purpose of the Quality and Certainty Program (QA / QC) is to ensure the quality of data obtained from air monitoring networks. The PRAMN meets or exceeds the requirements defined in 40 CFR Part 58 and all applicable appendices.

The Quality and Certainty program includes, but is not limited to, the following activities:

- Instrument performance audits
- Monitor siting evaluations
- Precision and span checks
- Bias determinations
- Flow rate audits
- Leak checks

The National Performance Audit Program (NPAP) and the Performance Evaluation Program (PEM) are independent activities where the PR participates to ensure the quality of the criteria pollutant monitoring data.

The Agency operates under a Quality Management Plan (QMP) approved by the EPA and develops a Quality Assurance Project Plan (QAPP) for the PRAMN. The Management and Quality Assurance Plan (QAMP) was prepared by the CPR and approved by EPA Region 2. The air monitoring network complies with the criteria identified in the QAMP.





Each sampling site is evaluated to ensure that all EPA location requirements are met, as part of the performance audit of the instruments. In addition, it includes a safety inspection to guarantee a work environment for the personnel who work the stations.

#### 4. Network STATUS

Given that resources were limited the efforts will be used to complete pending activities from previous plans (2021).

##### Network Plan 2021:

- Complete the installation of the SO<sub>2</sub> site in Salinas
- Select the new PM<sub>2.5</sub> Guayanilla location.
- Repair the Guaynabo station (Metropista).
- Reestablish operation of stations closed due to lack of personnel

Since the Puerto Rico Environmental Laboratory (PREL) has not resumed analysis of PM<sub>2.5</sub> and Lead, the Air Quality Area (AQA) will use the services of the EPA national laboratory to carry out the analysis. The AQA maintain continuous communication with EPA Region 2, all the changes are done in coordination with EPA.

Table 1 Puerto Rico Network

PR Id	AQS Num.	County	Parameter	Active	Comments
EQB 5	72-033-0008	Cataño	O <sub>3</sub>	TSD	TSD 2021/01/14 (due to lack of personnel)
EQB 7	72-061-0001	Guaynabo	PM <sub>10</sub>	✓	
			SO <sub>4</sub>	TSD	Waiting PREL resume analysis
EQB 8	72-077-0001	Juncos	O <sub>3</sub>	TSD	TSD 2020/12/31 (due to lack of personnel)
EQB 13	72-001-0002	Adjuntas	PM <sub>2.5</sub>	✓	
EQB 15	72-057-0012	Guayama	PM <sub>2.5</sub>	✓	
			PM <sub>10</sub>	✓	
			SO <sub>4</sub>	TSD	Waiting PREL resume analysis
EQB 18	72-123-0002	Salinas	SO <sub>2</sub>	P	To be established at New Site
EQB 20	72-061-0006	Guaynabo	CO	TSD	TSD Traffic Accident 2020/01/26
			NO <sub>2</sub>	TSD	TSD Traffic Accident 2020/01/26
EQB 21	72-025-0007	Caguas	PM <sub>2.5</sub>	✓	
			NO <sub>2</sub>	✓	
			CO	✓	
EQB 22	72-053-0003	Fajardo	PM <sub>2.5</sub>	✓	
			PM <sub>10</sub>	✓	
			SO <sub>4</sub>	TSD	Waiting PREL resume analysis
EQB 24	72-061-0005	Guaynabo	PM <sub>2.5</sub>	✓	
			PM <sub>2.5</sub> QA	✓	
			PM <sub>10</sub>	✓	
			PM <sub>10</sub> QA	✓	





			SO <sub>4</sub>	TSD	Waiting PREL resume analysis.
EQB 30	72-127-0003	San Juan	CO	TSD	TSD 2021/01/01(due to lack of personnel)
EQB 37	72-021-0010	Bayamon	PM <sub>2.5</sub>	✓	
			PM <sub>10</sub>	✓	
			SO <sub>2</sub>	✓	
			CO	✓	
			NO <sub>x</sub>	TSD	TSD 2020/08/06
			PM <sub>2.5</sub> Spec.	TSD	Waiting for the new equipment
			AQI PM <sub>2.5</sub>	TSD	Waiting for the new equipment
			O <sub>3</sub>	✓	
			PM <sub>2.5</sub> Cont.	✓	Waiting for the new equipment
EQB 40	072-33-0004	Cataño	SO <sub>2</sub>	✓	
			AQI PM <sub>2.5</sub>	✓	
			AQI PM <sub>10</sub>	✓	
EQB 56	72-113-0004	Ponce	CO	✓	
			PM <sub>2.5</sub>	✓	
			PM <sub>10</sub>	✓	
			AQI PM <sub>10</sub>	✓	
			SO <sub>4</sub>	TSD	Waiting PREL resume analysis.
			AQI PM <sub>2.5</sub>	TSD	TSD 2020/12/31
EQB 57	72-059-0016	Guayanilla	PM <sub>2.5</sub>	TSD	Select the new location
EQB 59	072-97-0007	Mayagüez	O <sub>3</sub>	✓	
			PM <sub>2.5</sub>	✓	
EQB 69	72-057-0011	Guayama	SO <sub>2</sub>	✓	
EQB 74	72-013-0001	Arecibo	Pb	✓	Restarted on May 5, 2021
EQB 75	72-013-0002	Arecibo	Pb	✓	Restarted on May 5, 2021
			Pb-QA	✓	Restarted on May 5, 2021

#### 4.1 Network Equipment

The PRAMN uses the equipment recommended and approved in the *List of Designated Reference and Equivalents Method* of Title 40, Part 53 of the Code of Federal Regulations (40 CFR Part 53) to carry out the sampling according to each parameter being sampled. These consist of two types, continuous and intermittent (manual) sampling.

- Intermittent or manual sampling is used for the particulate stations (PM<sub>10</sub>, PM<sub>2.5</sub> and Pb). They take samples for 24-hours, with different frequencies, PM<sub>10</sub> and Lead every six days (1-6 days) and PM<sub>2.5</sub> every three days (1-3 days). This equipment uses filters that are weighted and/or analyzed through chemical processes either in the DNER environmental laboratory or by EPA national contract laboratory.
- Continuous sampling is used for NO<sub>2</sub>, CO, SO<sub>2</sub>, O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. The continuous equipment takes samples continuously 24-hours every day. This equipment calculates averages of five (5) minutes and hourly averages from the values taken.

Both types of equipment are calibrated and have preventive maintenance according with the *QA Handbook Vol. II App D Measurement Quality Objectives and Validation Templates*.



All the equipment has and meet the specifications of certainty and quality control; and the captured data is reliable for comparison with the NAAQS.

**Table 2:** Equipment used in the Puerto Rico air monitoring network by parameter.

Parameter	Equipment	Type
Particulate Matter (PM <sub>10</sub> )	Thermo Scientific Hi-Vol SA/GMW-321B	manual
	Met-One E-Seq-FRM PM <sub>10</sub>	manual
	Thermo Scientific TEOM 1405 _AVF 246-B Inlet	continuous
Particulate Matter (PM <sub>2.5</sub> )	Met-One E-Seq-FRM PM <sub>2.5</sub> / VSCC	manual
	Thermo Scientific TEOM 1405F AVF PM <sub>2.5</sub> VSCC	continuous
	Met-One Beta Attenuation Particulate Monitor	continuous
Sulfur Dioxide (SO <sub>2</sub> )	Teledyne T-100 Pulsed Fluorescence	continuous
Nitrogen Dioxide (NO <sub>2</sub> )	Teledyne T-200 Chemiluminescence	continuous
Ozone (O <sub>3</sub> )	Teledyne T-400 Instrumental Ultraviolet Abs.	continuous
Lead (Pb)	Thermo Scientific Hi-Vol ICP-MS	manual
Carbon Monoxide (CO)	Teledyne T-300 Gas Filter Corr. CO Analyzer	continuous
PM <sub>2.5</sub> Speciation	Met-One SASS Teflon Energy Dispersive XRF	manual

## 5. Network Budget and Limitations

The air monitoring network has several limitations that affect its development, operation, and maintenance. Although the sampling network has new equipment, maintenance will be affected if the following limitations are not resolved.

- The lack of personnel for the maintenance, checks and data handling of the air monitoring network. The staff responsible of these functions are only two (2) field technicians, one (1) electronics technician and two (2) statisticians.
- Streamline the allocation of funds for the operation and purchase of materials have been approved and are available for the period needed. Since the PRAMN is funded with federal funds under Section 103 and Section 105 of the Clean Air Act, the PRAMN must be approved by EPA Region 2. After the funds are allocated cannot immediately be used. The funds require state funds match, DNER requires approval of external government agencies.
- To make the purchasing process more flexible since all PR Government purchases are made by the General Services Administration regardless of the amount of the purchase and the urgency of the purchase. The Air Quality Area does not know the status of the orders. In addition, if the amount of the order exceeds \$10,000, authorization from another External Agency, Office of Management and Budget, is also required. All these new administrative requirements delay the orders and therefore the operation of the sampling network.
- Also, make the purchasing process more flexible in terms of the purchase of equipment, since the sampling equipment used in the network is not manufactured in PR. This requirement delays ordering by not being able to purchase directly from the manufacturer, and sometimes increases the cost of parts. PR Government regulation even limits the



amount of money for purchases and requires prior approval from the Office of Management and Budget.

- Increase cooperation between Government Agencies to facilitate processes when establishing a new site. Any new site is complicated as it depends on the topography of the area, available electrical utility infrastructure, security, use permit and site owner approval.

## **6. Network Design**

The PRAMN has nineteen (19) locations with forty-two (42) monitors around the island where the air quality for criteria pollutants (gaseous and particulate) is measured. The goal of the network is, almost instantaneously, to maintain information about pollution. The information is available on maps, Internet sites, and / or public notices. The PRAMN is a backbone for air quality management programs, provide the public with information on current conditions and the progress in improving air quality, and are used by health researchers, business interests, environmental groups, and others.

The air sampling network has the collection of pollutant data such as particles with a diameter of 2.5 micrometers or less ( $PM_{2.5}$ ), particles with a diameter of 10 micrometers or less ( $PM_{10}$ ), ozone ( $O_3$ ), carbon monoxide (CO), sulfur dioxide ( $SO_2$ ), nitrogen oxide ( $NO_2$ ),  $PM_{10}$  - sulfates ( $SO_4$ ) and lead (Pb). In addition, meteorological data are also collected, the network has an NCore station with a  $PM_{2.5}$  speciation monitor and, two  $NO_2$  stations near roads. These last one with the purpose of analyzing and describing the nature of air quality problems to the population on the Island.

The data obtained from the FRM and FEM monitors for the criteria pollutants are compared with NAAQS, in order to develop achievement and maintenance plans. Sites classified as SLAMS, and especially NCore, are used to evaluate air quality and provide data that is used in the development of strategies and explore trends in the impact of control measures. Air sampling near major emission sources can give an idea of how these sources control their pollutants as a result of their operations.

The characteristic data of an NCore station and / or of SLAMS stations are comparable with the data collected by research on the effects on health and atmospheric events, or very well for the work of method development.

Currently, Puerto Rico meets all minimum air monitoring requirements. The EPA in Appendix D of 40 CFR Part 58 establishes the minimum number of monitoring sites necessary to meet the environmental monitoring objectives. The minimum monitoring requirements are specific for each of the pollutants or based on objectives (NCore, ozone,  $PM_{2.5}$ ,  $NO_2$  near roads). Generally, the monitoring requirements of the population and the air emissions of the area.



Table 3: Site Information – Puerto Rico Sites

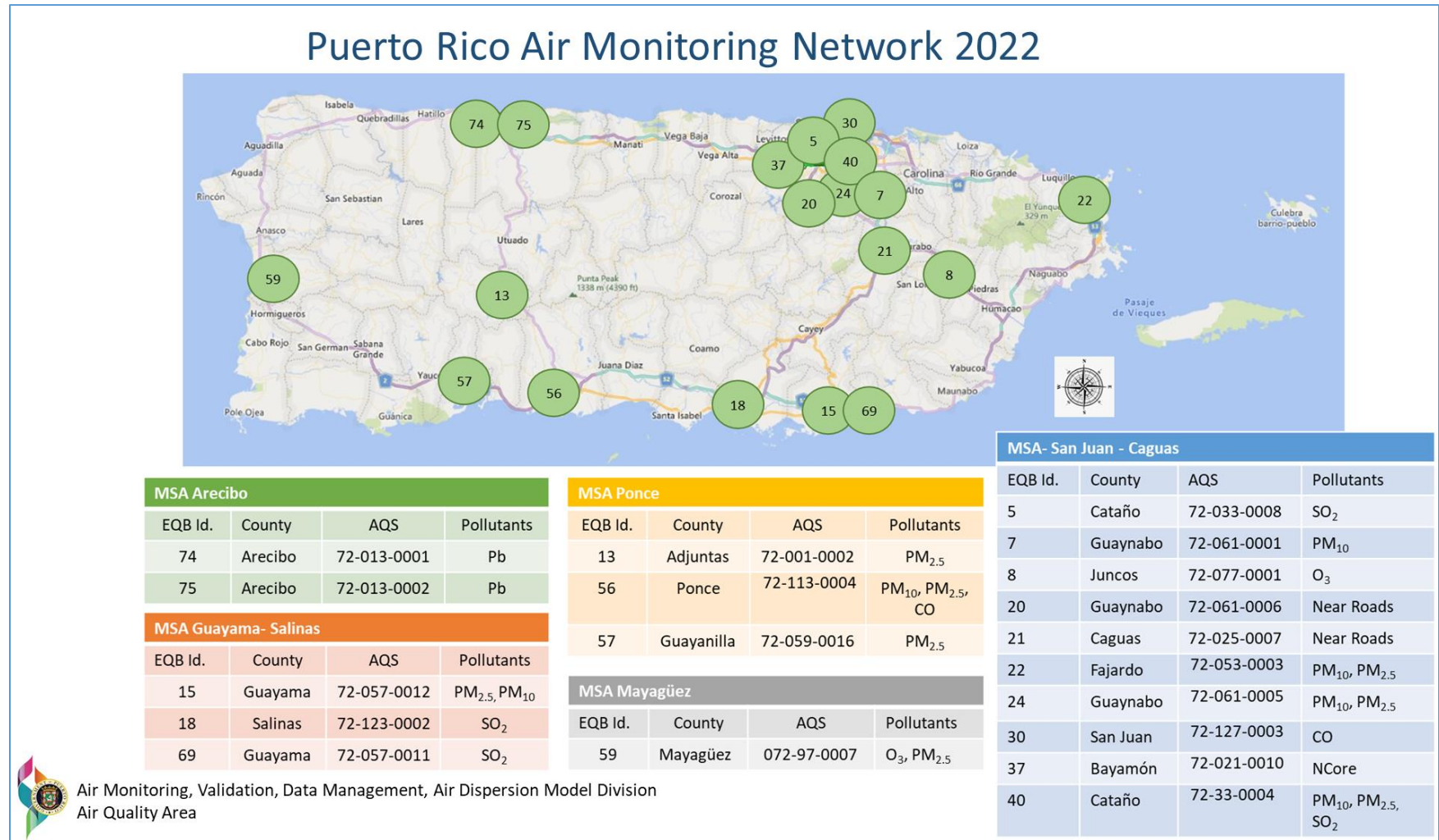
PR Id.	AQS Num.	County	Coordinates		Parameter
			Latitude	Longitude	
Metropolitan Area San Juan - Caguas					
EQB 5	72-033-0008	Cataño	18.438132	-66.126658	O <sub>3</sub>
EQB 7	72-061-0001	Guaynabo	18.177318	-66.115845	PM <sub>10</sub> , SO <sub>4</sub>
EQB 8	72-077-0001	Juncos	18.17793873	-65.916041	O <sub>3</sub>
EQB 20	72-061-0006	Guaynabo	18.4218472	-66.1206861	CO, NO <sub>2</sub>
EQB 21	72-025-0007	Caguas	18.198092	-66.052719	PM <sub>2.5</sub> , NO <sub>2</sub> , CO
EQB 22	72-053-0003	Fajardo	18.381414	-65.617799	PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>4</sub>
EQB 24	72-061-0005	Guaynabo	18.432122	-66.114702	PM <sub>2.5</sub> , PM <sub>10</sub> , PM <sub>10</sub> QA PM <sub>2.5</sub> -QA, SO <sub>4</sub>
EQB 30	72-127-0003	San Juan	18.4478145	-66.0525095	CO
EQB 37	72-021-0010	Bayamón	18.419231	-66.150429	NCore (PM <sub>2.5</sub> , SO <sub>2</sub> , CO, NO <sub>x</sub> , O <sub>3</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> Spec, AQI)
EQB 40	72-033-0004	Cataño	18.428427	-66.141648	SO <sub>2</sub> , AQI (PM <sub>2.5</sub> , PM <sub>10</sub> )
Metropolitan Area Ponce					
EQB 13	72-001-0002	Adjuntas	18.17537759	-66.725988	PM <sub>2.5</sub>
EQB 56	72-113-0004	Ponce	18.0095583	-66.6272249	CO, PM <sub>2.5</sub> , PM <sub>10</sub> , AQI
EQB 57	72-059-0016	Guayanilla	New		PM <sub>2.5</sub>
Metropolitan Area Guayama - Salinas					
EQB 15	72-057-0012	Guayama	17.955378	-66.162122	PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>4</sub>
EQB 18	72-123-0002	Salinas <sup>1</sup>	17.968352	-66.261365	SO <sub>2</sub>
EQB 69	72-057-0011	Guayama	17.965713	-66.186803	SO <sub>2</sub>
Metropolitan Area Mayaguez					
EQB 59	072-097-0007	Mayagüez	18.21428	-67.14461	O <sub>3</sub> , PM <sub>2.5</sub>
Metropolitan Area Arecibo					
EQB 74	72-013-0001	Arecibo	18.457166	-66.696468	Pb
EQB 75	72-013-0002	Arecibo	18.453062	-66.695688	Pb, Pb-QA

The network design proposed in this document is according to the Clean Air Act, the 40 Code of the Federal Regulations (CFR) Part 58, which presents a balance between the desired number of monitors, the sampling frequency, the available budget, and the employees necessary for its management and operation. The recommended changes will be implemented during the period from July 2022 to December 2023, depending on the available budget. The operation of the network may change over the years without public notification based on unexpected circumstances. Examples of unexpected circumstances include catastrophic equipment failures, construction or demolition activities, and loss of access to the site, monitor obstructions or natural events (hurricanes or storms).

<sup>1</sup> Salinas site will be established in the next 18 months.



Figure 1: Puerto Rico Air Monitoring Network





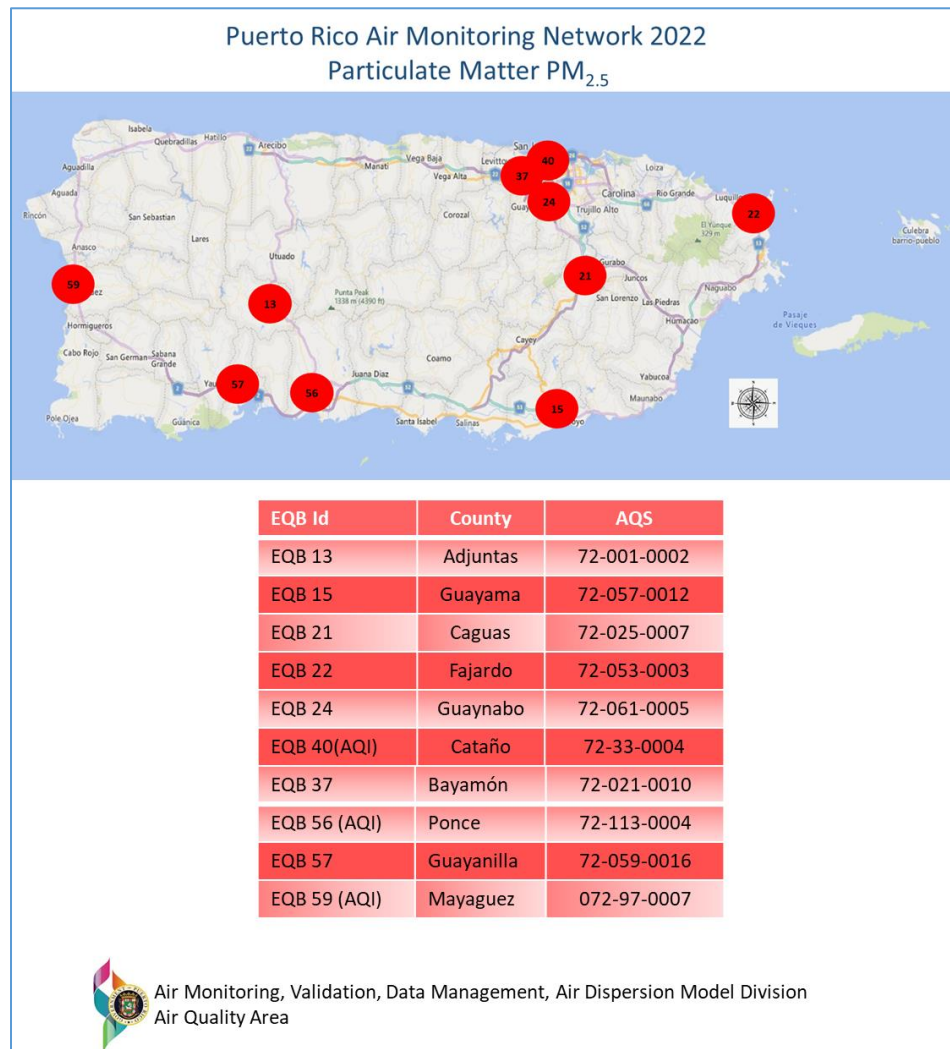


## 6.1 PM<sub>2.5</sub> Air-Monitoring Network

The PRAMN operates twelve (10) sites of PM<sub>2.5</sub> in the air sampling network, eight (7) use the FRM, four (4) continuous FEM sampling and one (1) collocated (QA). The FRM PM<sub>2.5</sub> sampling equipment was changed for a reference sampling equipment included in the EPA-Designated Reference List as Met One E-SEQ-FRM PM<sub>2.5</sub>/ VSCC. All FRM sites operate one every three days (1-3). The monitor placed FRM QA operate one day every 6 days.

The PM<sub>2.5</sub> continuous monitors operate throughout the year and the data is sent to the EPA AQS database in one-hour values. The continuous sampling of PM<sub>2.5</sub> uses the TEOM 1405F-AVF PM<sub>2.5</sub> VSCC and the Met-One Beta Attenuation Particulate Monitor at the NCore site. The continuous monitors of PM<sub>2.5</sub> are used to report the AQI. The details of these sites are included in Appendix I and Figure 2.

Figure 2: PM<sub>2.5</sub> Network





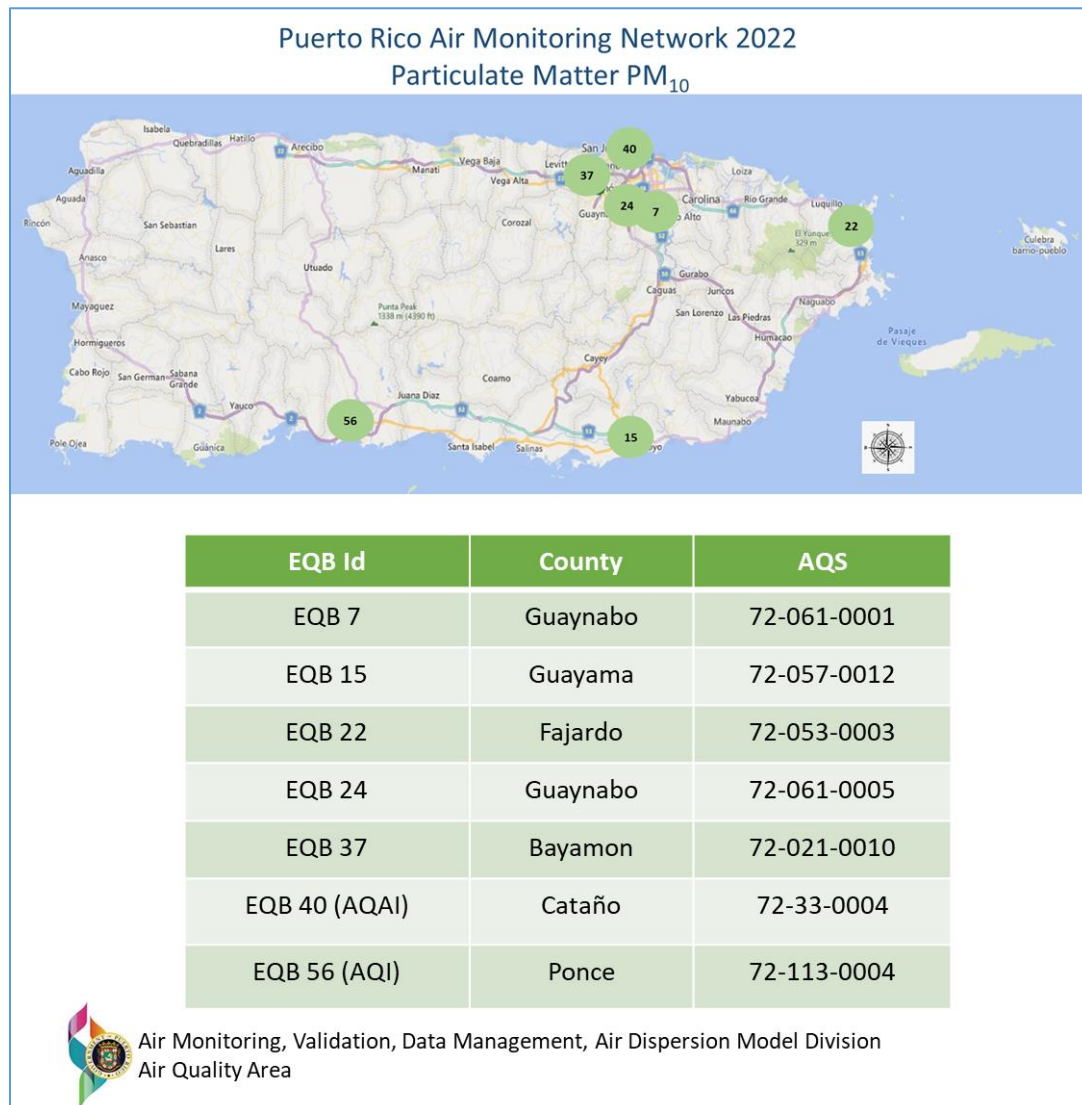
## 6.2 PM<sub>10</sub> Air-Monitoring Network

The PRAMN operates seven (7) PM<sub>10</sub> sites and is broken down into five (5) intermittent FRM monitors, one (1) collocated and two (2) PM<sub>10</sub> continuous monitors in the air sampling network.

The FRM PM<sub>10</sub> sampling equipment used in the network are the Hi-Vol SA/GMW-321B. One site located of Guaynabo and the site located at Bayamón operate every three days (1 in 3) and while the others four (4) sites operated every six days (1 in 6). In addition, the CPR operates one (1) PM<sub>10</sub> FRM monitor as collocated (QA) with frequency of 1 in 6 days.

The continuous PM<sub>10</sub> monitors take samples throughout the year and the concentrations are sent to the AQS of the EPA and are used for AQI purposes. The equipment used are a TEOM 1405F-AVF. The details of the sites are included in Appendix I and Figure 3.

Figure 3: PM<sub>10</sub> Network



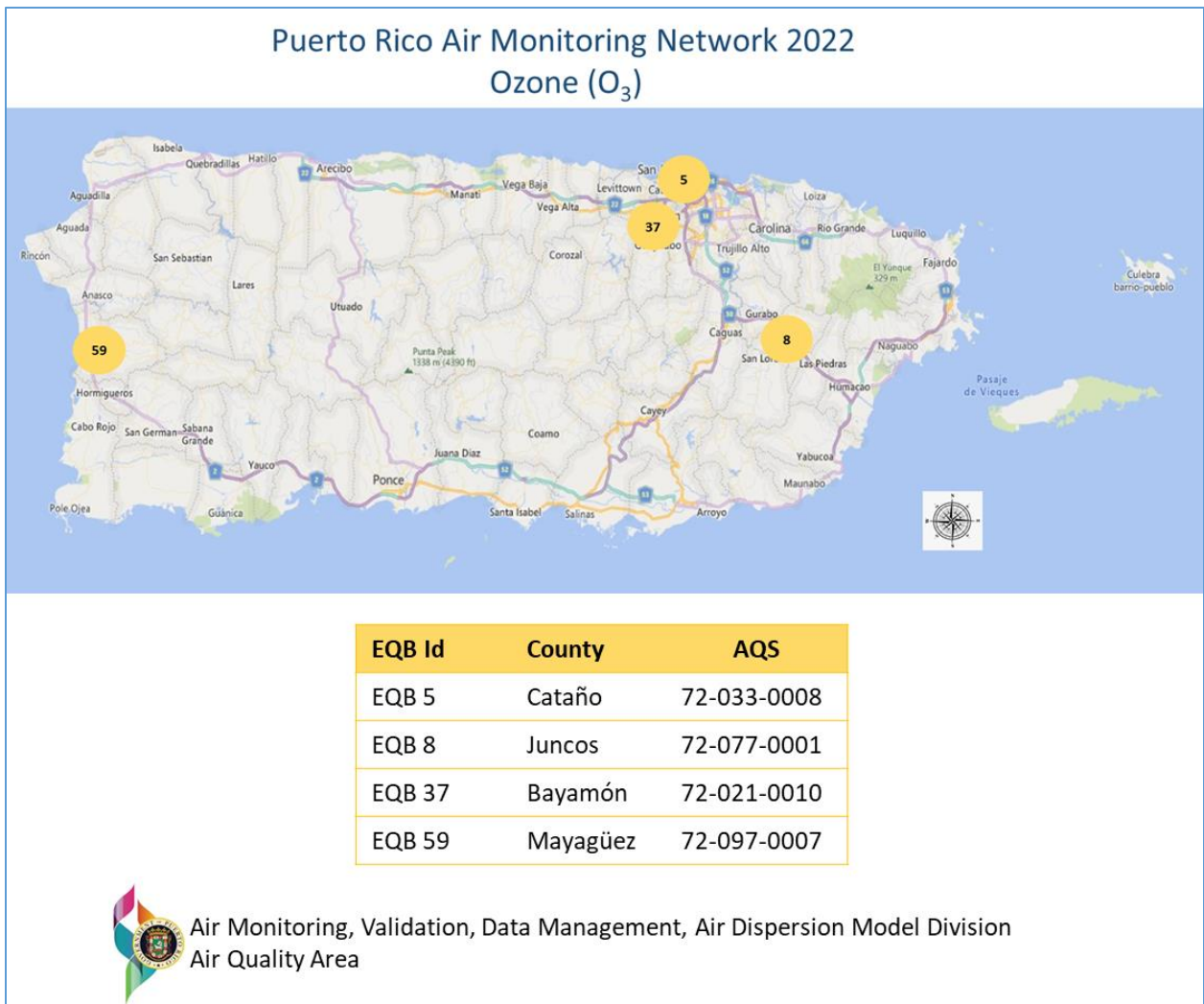




### 6.3 Ozone Air-Monitoring Network

The PRAMN operates four (4) ozone sites in the air sampling network with one (1) monitor located at the NCore site. The ozone monitors operate throughout the year and the concentrations are sent in one-hour values to AQS of the EPA. The monitors are classified as SLAMS and the equipment used are FEM (Teledyne T-400 Instrumental Ultraviolet Abs). The details of the location of the sites are included in Appendix I and Figure 4.

Figure 4: O<sub>3</sub> Network



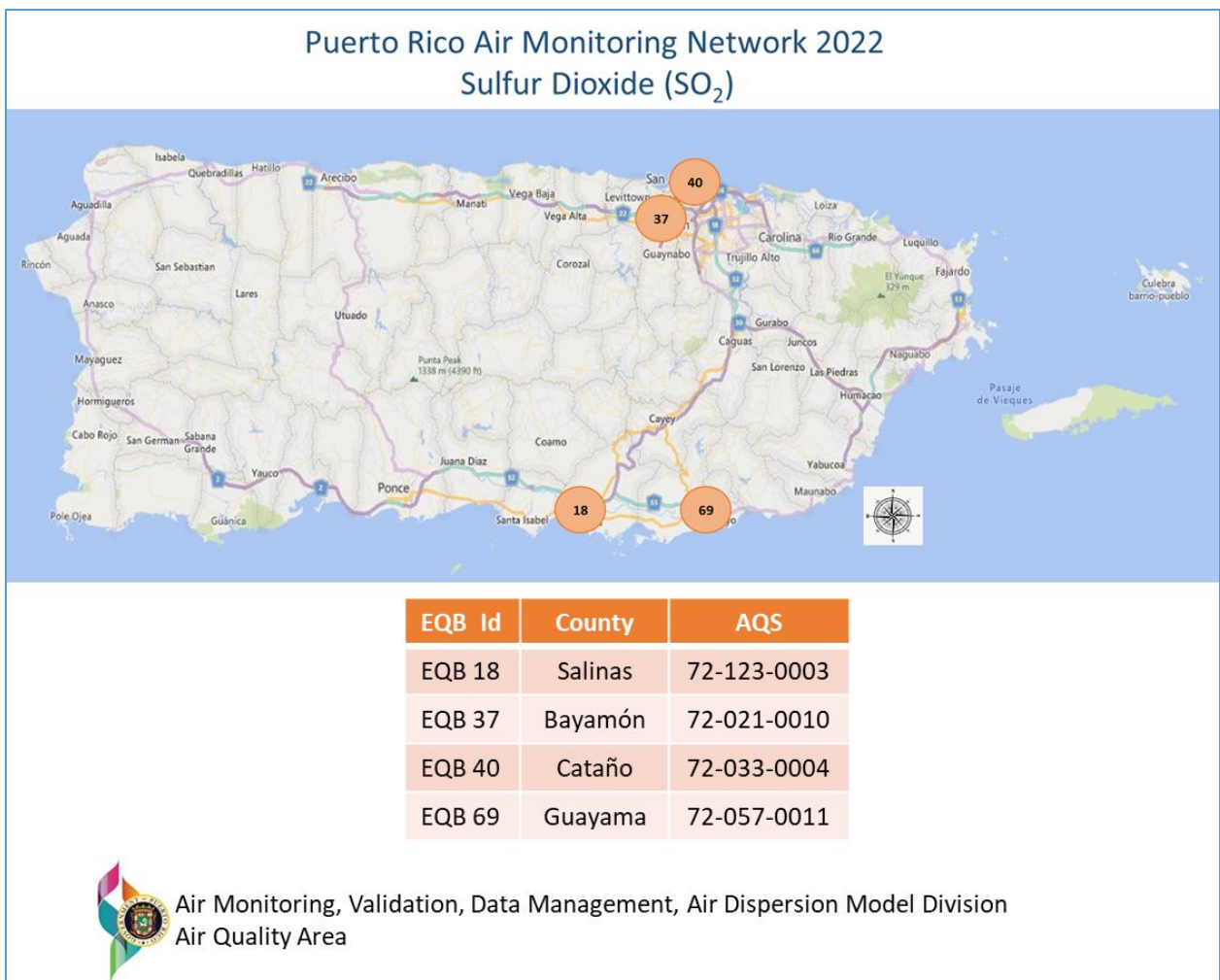


## 6.4 SO<sub>2</sub> Air-Monitoring Network

The PRAMN operates four (4) sites of sulfur dioxide (SO<sub>2</sub>) in the air sampling network; one of these monitors is at the NCore station. All SO<sub>2</sub> monitors are operated throughout the year. The concentrations are sent in one (1) hour values and five (5) minutes to AQS of the EPA. All SO<sub>2</sub> monitors are oriented to the sources. The equipment used are FEM (Teledyne T-100 Pulsed Fluorescence).

The Salinas station will be located near an area where maximum SO<sub>2</sub> concentrations. The location has already been approved by the EPA. The station will be inside the Syngenta Company. The details of the location of the sites are included in Appendix I and Figure 5.

Figure 5: SO<sub>2</sub> Network



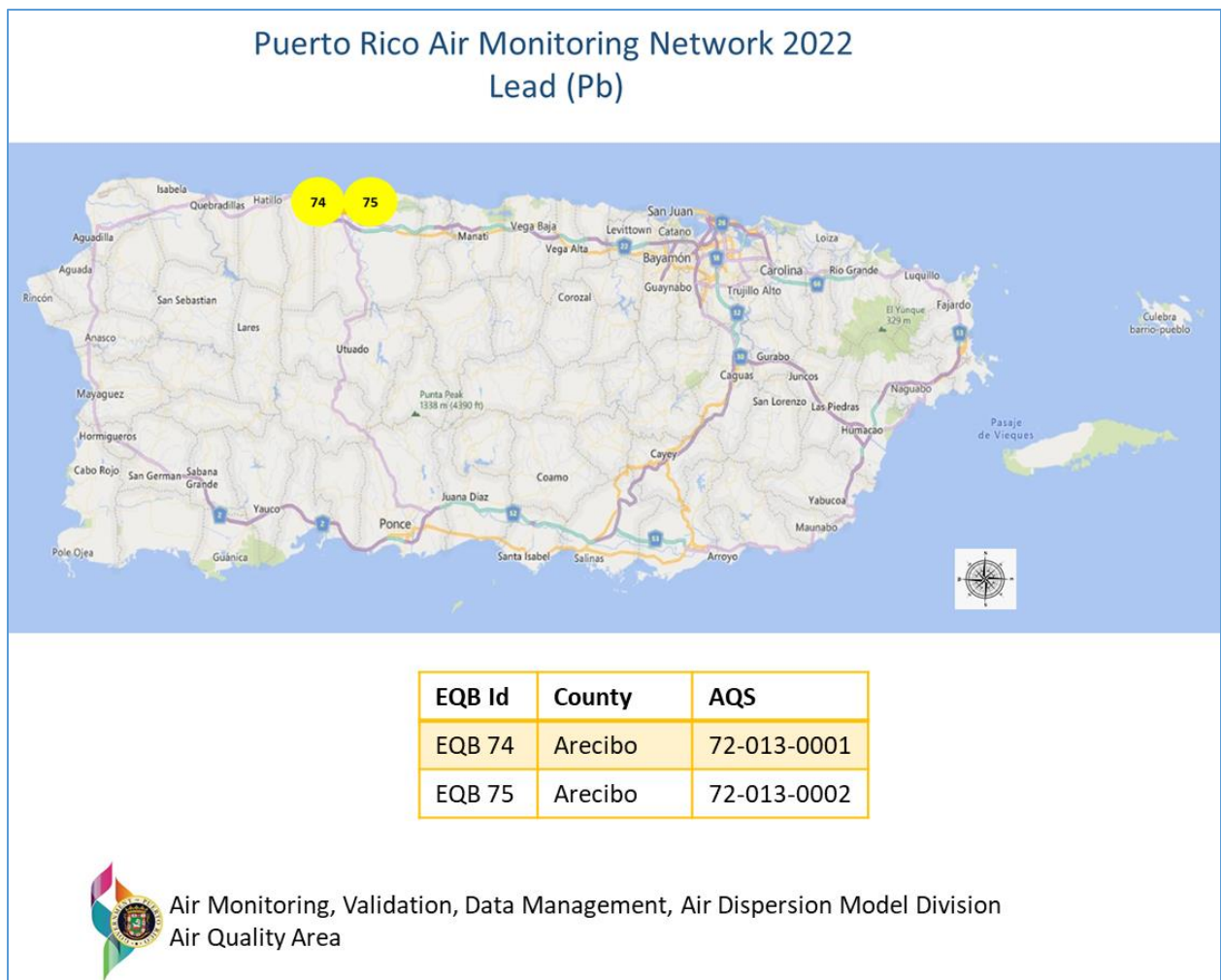


## 6.5 Lead Air-Monitoring Network

The PRAMN operates two (2) Lead sites (Pb) in the air sampling network, both in Arecibo, the monitoring concentrations obtained by industries that handle lead. All Pb monitors, including the collocate (QA) are operated one (1) in every six (6) days (1-6) throughout the year and the concentrations are sent in day values to EPA AQS.

The monitors for lead are SLAMS and use the method (FRM). The sampler used is a Hi-Vol ICP-MS. The details of the sites are included in Appendix I and in Figure 6.

Figure 6: Lead Network

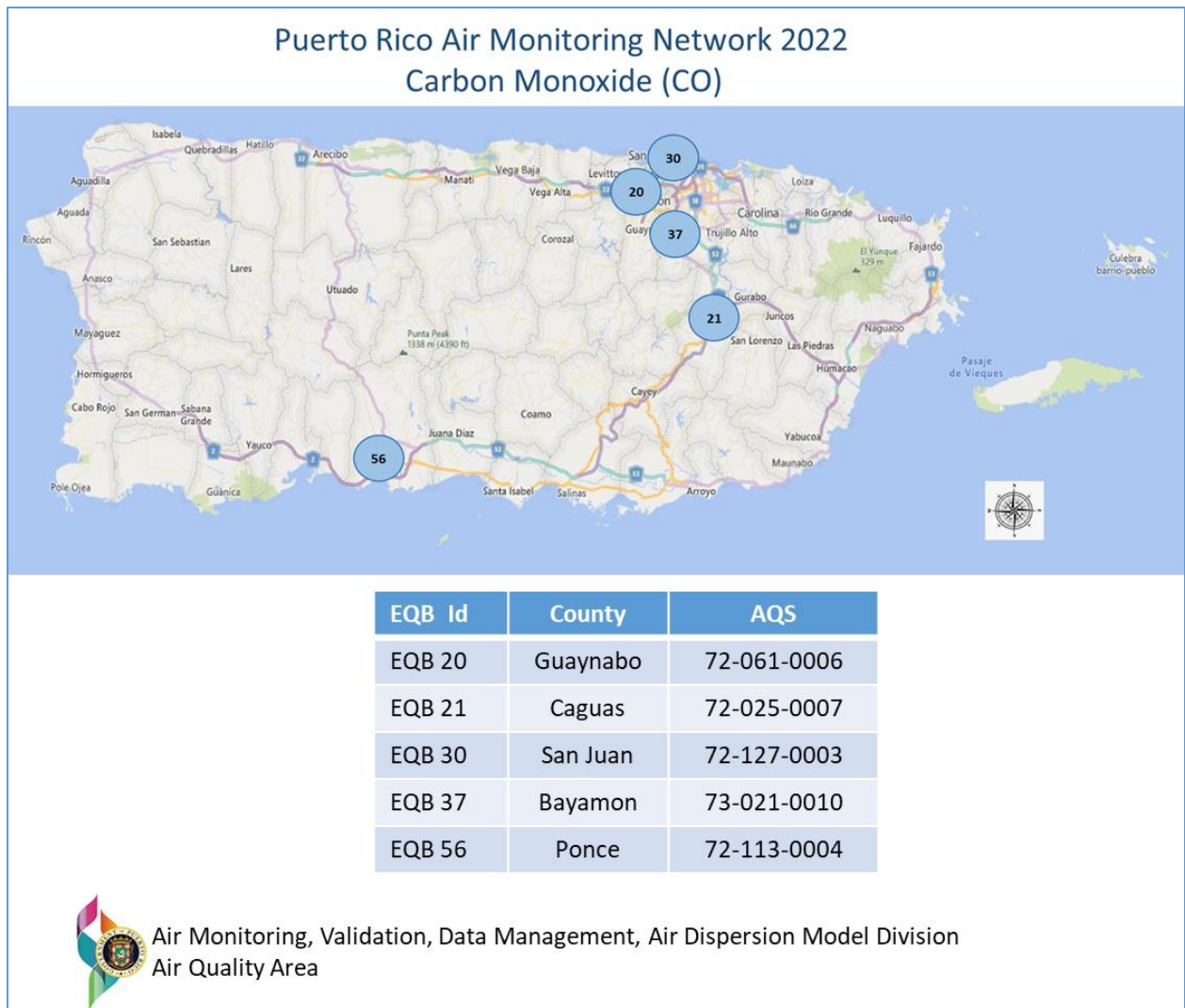




## 6.6 NO<sub>2</sub> Air-Monitoring Network

The PRAMN operates three (3) nitrogen oxide (NO<sub>2</sub>) sites in the air-monitoring network, two (2) as parts of the near roads program, (at Guaynabo and Caguas); and one (1) at Bayamón NCore site. The NO<sub>2</sub> samplers are operated year-round and the measurements are sent to the EPA AQS on an hourly basis. The SLAMS NO<sub>2</sub> sites are used FRM; and the equipment used are Teledyne T-200 Chemiluminescence. The details of the sites are included in Appendix 1 and Figure 7.

Figure 7: NO<sub>2</sub> Network







## 6.7 CO Air-Monitoring Network

The PRAMN operates five (5) carbon monoxide (CO) sites in the air-monitoring network, one (1) of them at Bayamón NCore site. All CO samplers are operated year-round, and the measurements are sent to the EPA AQS on an hourly basis. The SLAMS CO sites use FRM monitors. The equipment used are Teledyne T-300 Gas Filter Corr. CO Analyzer. The details of these sites are included in Appendix 1 and Figure 8.

Figure 8: CO Network

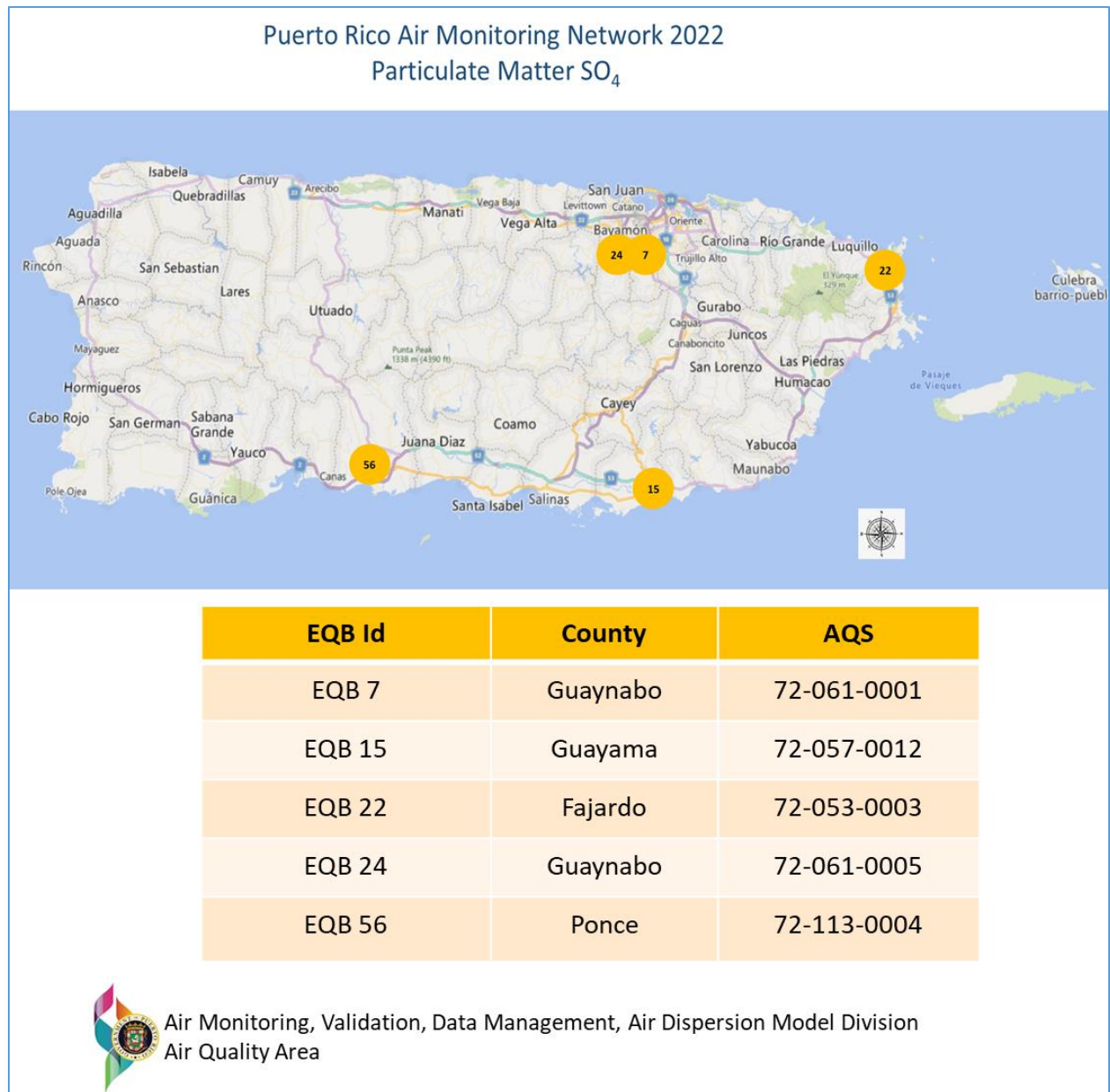




## 6.8 PM Sulfate Air Monitoring Network

The PRAMN operates four (4) sulfate sites ( $\text{SO}_4$ ) in the air sampling network. The sulfate particulate sampling network analyzes the  $\text{PM}_{10}$  filters by atomic absorption analysis to generate the sulfate concentrations. The sulfate monitors are operated throughout the year and the concentrations are sent in 24-hour values to EPA AQS. The details of the location of the sites are included in Appendix I.

Figure 9: Sulfato ( $\text{SO}_4$ )





## 6.9 NCore – Air Monitoring Network

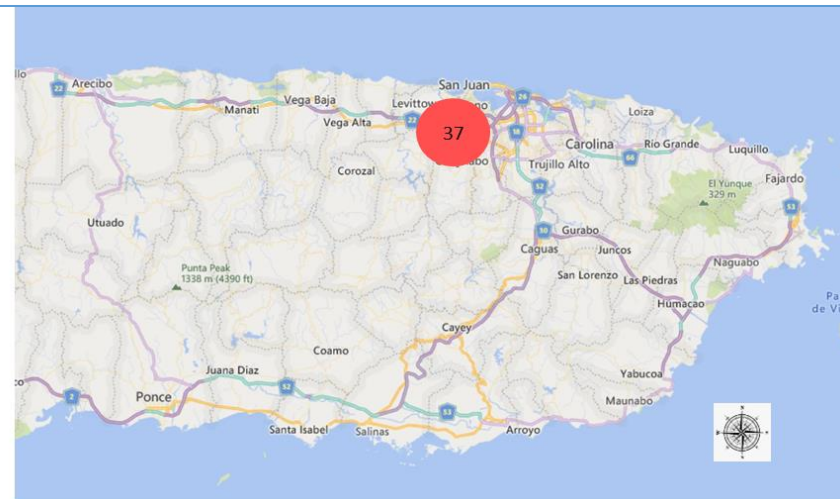
In PR an NCore site was established on March 2011. This site is part of the sampling network that uses various advanced equipment for measuring particles, gases, and meteorology. The EPA requires each state at least one NCore site. The parameters sampled are: CO, O<sub>3</sub>, NO<sub>2</sub>, NOy, NO, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, PM<sub>10-2.5</sub>, PM<sub>2.5</sub> Speciation and basic meteorology.

Puerto Rico is required to have an NCore site. Bayamón (AQS: 72-021-0010) was established as the NCore site for Puerto Rico. The monitor of PM<sub>2.5</sub> continuous is a Metone Bam 1022. The details of the monitors are in the Appendix I and in the Figure 10.





Figure: 10 NCore Site



AQS ID: 72-021-0010

County: Bayamón

MSA: San Juan - Bayamón

EPA Region 2

Latitude: +18.420089; Longitude: -66.150615

Street Address: Regional Jail of Bayamón

Objective: NCore Site (multipollutant)

Pollutants: CO, O<sub>3</sub>, NO<sub>2</sub>, NOy, NO, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, PM<sub>10-2.5</sub>, PM<sub>2.5</sub> Speciation and basic meteorology



Air Monitoring, Validation, Data Management, Air Dispersion Model Division  
Air Quality Area



## **7. Network Changes**

The Agency will continue its efforts and resources to reestablish the entire sampling network to continue maximize the data capture over 75% and complete the selection and installation of the new sites approved by the EPA, that are still pending from previous sampling plans (2019, 2020 and 2021).

### **Network Plan 2019, 2020 and 2021 plan:**

- Complete the installation of the SO<sub>2</sub> Salinas station. The location has already been approved by the EPA. The details of the site for the new location can be found in the Appendix I.
- Select the new PM<sub>2.5</sub> Guayanilla location. The old location was closed by the owner of the site.
- Repair the Guaynabo station (Metropista).
- Reestablish operation of stations closed due to lack of personnel.
- Develop and implement a plan to use American Rescue Plan funding to replace aging ambient air monitoring equipment for new monitoring equipment.

All changes involving the relocation, closure, and/or establishment of a new site will require approval by EPA. Each change request will be submitted to EPA when additional details regarding the sites are available.

### **Activities to be carried out as part of the 2022 Plan and were proposed at previous Network**

- Close the Cataño O<sub>3</sub> monitor EQB 5 (72-033-0008) and re-locate to the south or south-east area of Puerto Rico.

The south and south-east area (Ponce & Guayama-Salinas) of Puerto Rico are areas without ozone data. The Cataño area have two (2) O<sub>3</sub> monitors. If the EQB 5 is closed, the area will be covered by the Bayamon (72-033-0010) monitor. The Cataño EQB 5 equipment would be used either for the Ponce or Salinas-Guayama area. The decision where located the monitors will be determined according with the modeling results, is possible located the monitors at existing sites or a new site.

- Add a new NO<sub>2</sub> monitors at the south or south-east area of PR.

The south and south-east area of Puerto Rico are areas without NO<sub>2</sub> data; but according with the emissions inventory these areas have high concentrations of NO<sub>2</sub>. According to the emissions inventory, this area emits approximately more than 5,000 tons per year. The decision where located the monitors will be determined according with the modeling results, is possible located the monitors at existing sites or a new site.



- Add monitors of lead at San Juan and Guayanilla Areas

According with the emissions inventory, Puerto Rico have areas with more than 0.5 ton/yr. of lead, such as San Juan and south-east area. According with the lead regulation, is possible establish monitors in the following areas San Juan and Guayanilla, these areas have sources that emit 0.5 tons or more of lead.

- Change the type of equipment used for sampling PM<sub>10</sub>

Puerto Rico has problems and difficulties in obtaining the necessary maintenance parts for the HI-Vol used for PM<sub>10</sub> sampling. The new equipment proposed is the Met-One E-Seq-FRM.

#### 7.1 Limitations to Implement the Proposed Changes.

In order to implement all the proposed changes, it is necessary to comply with the following:

- A request to EPA for approval of changes and posting to new sites is required.
- PR must have the budget to purchase the necessary equipment to establish the station
- PR must have the personnel requested for the maintenance, operation and management of the network and the data handling
- Have the required sitting criteria to establish the sampling sites. That is, the topography and infrastructure of the area allows it with access to the site, the area have electricity service for the operation of the equipment.

### 8. Network Modifications Forms

Network modifications forms will be prepared for submit to EPA Region 2 to implement the network changes identified in this plan.

### 9. Summary and Conclusions

The air monitoring network of Puerto Rico presented in this plan meets the monitoring requirements of federal regulations. The procedures that are used and the instruments that are operated meet the standards that has been established by EPA.

The only significant network changes are complete the installation of the SO<sub>2</sub> monitor in Salinas and select a new site to PM<sub>2.5</sub> at Guayanilla. The other changes are proposed changes that requires the EPA approval and identify previously the budget available.

## APPENDIX I: Site Description

Site Name		EQB 13				
Address		Road #123				
City		Adjuntas				
AQS Code		72-001-0002				
PR County		Adjuntas				
MSA/CSA		N/A				
Latitude		+18.172695				
Longitude		-66.726262				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		Yes				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
Ambient Average Temperature	Instrumental	Electronic	1 in 3	Urban	Extreme Downwind	2005/01/01
Sample Average Barometric Pressure	Instrumental	Barometric Sensor	1 in 3	Urban	Extreme Downwind	2005/01/01
PM <sub>2.5</sub>	E-Seq-FRM/VSCC	Gravimetric	1 in 3	Urban	Upwind Background	2005/01/01
Site Purpose		Reference for Extreme downwind				
Plans for the next 18 months		No Changes				
Other Comments		TSD 2021/01/20 (due lack of personnel)				



## APPENDIX I: Site Description

Site Name		EQB 74				
Address		Victor Santoni Cordero Road				
City		Arecibo				
AQS Code		72-013-0001				
PR County		Arecibo				
MSA/CSA		Arecibo				
Latitude		+18.457166				
Longitude		-66.696468				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		N/A				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
Ambient Average Temperature	Instrumental	Offsite Avg. Pressure	1 in 6	Micro	Source Oriented	2010/01/02
Sample Average Barometric Pressure	Instrumental	Offsite Avg. Pressure	1 in 6	Micro	Source Oriented	2010/01/02
Lead	Hi-Vol	ICP-MS	1 in 6	Micro	Source Oriented	2010/01/02
Site Purpose		Population Protection				
Plans for the next 18 months		No Changes				
Other Comments						



## APPENDIX I: Site Description

Site Name		EQB #75				
Address		PR Road #2				
City		Arecibo				
AQS Code		72-013-0002				
PR County		Arecibo				
MSA/CSA		Arecibo				
Latitude		+18.453062				
Longitude		-66.695688				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		N/A				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
Ambient Average Temperature	Instrumental	Offsite Avg. Pressure	1 in 6	Micro	Source Oriented	2012/08/19
Sample Average Barometric Pressure	Instrumental	Offsite Avg. Pressure	1 in 6	Micro	Source Oriented	2012/08/19
Lead	Hi-Vol	ICP-MS	1 in 6	Micro	Source Oriented	2012/08/19
Site Purpose		Population Protection				
Plans for the next 18 months		No Changes				
Other comments		Pb collocated.				





## APPENDIX I: Site Description

Site Name		EQB 21				
Address		Highway 22 Caguas South Toll				
City		Caguas				
AQS Code		72-25-0007				
PR County		Caguas				
MSA/CSA		San Juan-Caguas				
Latitude		+18.198712				
Longitude		-66.052237				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		N/A				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
NO <sub>2</sub>	Teledyne T200u	Chemiluminescence	Continuous	Urban	High Concentration	2016/12/19
CO	Teledyne T300U	Gas filter Correlation CO analyzer	Continuous	Urban	High concentration	2017/02/06
PM <sub>2.5</sub>	Met-One E-Seq-FRM/VSCC	Gravimetric	1 in 3	Urban	High concentration	2017/06/01
Ambient Average Temperature	Instrumental	Electronic	1 in 3	Urban	High concentration	2017/06/01
Sample Average Barometric Pressure	Instrumental	Barometric Sensor	1 in 3	Urban	High concentration	2017/06/01
Site Purpose		Near Roads				
Plans for the next 18 months		No Changes				
Other comments						





## APPENDIX I: Site Description

Site Name		EQB 40				
Address		11 Final St. Las Vegas				
City		Cataño				
AQS Code		72-033-0004				
PR County		Cataño				
MSA/CSA		San Juan-Caguas				
Latitude		+18.428427				
Longitude		-66.141648				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		N/A				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
SO <sub>2</sub>	Teledyne T100u	Ultraviolet Pulsed Fluorescent	Continuous	Neighborhood	Population Exposure	1993/12/07
PM <sub>10</sub> Continuous	Thermo SA246B-Inlet	TEOM Gravimetric	Continuous	Urban	Population Exposure	2000/07/13
PM <sub>2.5</sub> Continuous	TEOM PM <sub>2.5</sub> VSCC	FDMS Gravimetric	Continuous	Urban	Population Exposure	2015/01/01
Site Purpose		Population Protection				
Plans for the next 18 months		No Changes				
Other comments		AQI (PM <sub>10</sub> , PM <sub>2.5</sub> ) PM <sub>2.5</sub> continuous monitor				



## APPENDIX I: Site Description

Site Name		EQB 5				
Address		PR Rd. 165				
City		Cataño				
AQS Code		72-033-0008				
PR County		Cataño				
MSA/CSA		San Juan-Caguas				
Latitude		+18.438132				
Longitude		-66.126658				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		N/A				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
Ozone	Teledyne T400U	Ultraviolet Absorption	Continuous	Urban	Population Exposure	2004/07/22
Site Purpose		Population Protection				
Plans for the next 18 months		Close and relocate the monitor				
Other comments		AQI (O <sub>3</sub> ) TSD 2021/01/14 (due to lack of personnel)				



## APPENDIX I: Site Description

Site Name		EQB 22				
Address		Fajardo Lighthouse				
City		Fajardo				
AQS Code		72-053-0003				
PR County		Fajardo				
MSA/CSA		San Juan-Caguas				
Latitude		+18.381414				
Longitude		-66.617799				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		Yes				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
PM <sub>10</sub>	Hi-Vol SA/GMW-1200	Gravimetric	1 in 6	neighborhood	Regional Transport	1989/03/05
PM <sub>2.5</sub>	Met-One E-Seq-FRM /VSCC	Gravimetric	1 in 3	Regional	Background	1999/04/20
PM <sub>10</sub> Sulfate	Hi-Vol SA/GMW-321B	Colorimetric	1 in 6	neighborhood	Background	
Ambient Temperature Average	Instrumental	Electronic	1 in 3	Regional	Background	1999/04/20
Ambient Pressure Average	Instrumental	Barometric Sensor	1 in 3	Regional	Background	1999/04/20
Site Purpose		Background / Regional Transport				
Plans for the next 18 months		No Changes				
Other comments		SO <sub>4</sub> monitor (TSD Waiting PREL resume analysis)				



## APPENDIX I: Site Description

Site Name		EQB 15				
Address		PR Rd. 3				
City		Guayama				
AQS Code		72-057-0012				
PR County		Guayama				
MSA/CSA		Guayama-Salinas				
Latitude		17.955378				
Longitude		-66.617792				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		Yes				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
PM <sub>10</sub>	Hi-Vol SA/GMW-1200	Gravimetric	1 in 6	neighborhood	Population Exposure	2019/10/30
PM <sub>2.5</sub>	Met-one E-Seq	Gravimetric	1 in 3	neighborhood	Population Exposure	2019/10/03
	FRM /VSCC					
PM <sub>10</sub> Sulfate	Hi-Vol SA/GMW-321B	Colorimetric	1 in 6	neighborhood	Population Exposure	2019/10/03
Ambient Temperature Average	Instrumental	Electronic	1 in 3	neighborhood	Population Exposure	2019/10/03
Ambient Pressure Average	Instrumental	Barometric Sensor	1 in 3	neighborhood	Population Exposure	2019/10/03
Site Purpose		Protection for the Population				
Plans for the next 18 months		No Changes				
Other comments		SO <sub>4</sub> monitor (TSD Waiting PREL resume analysis)				



## APPENDIX I: Site Description

Site Name		EQB 69				
Address		PR Police Station, Stolen Vehicles Division				
City		Guayama				
AQS Code		72-057-0011				
PR County		Guayama				
MSA/CSA		Guayama-Salinas				
Latitude		+17.965713				
Longitude		-66.186803				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		N/A				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
SO <sub>2</sub>	Teledyne	Ultraviolet	continuous	neighborhood	Source oriented	2017/04/06
	T100u	Fluorescence				
Site Purpose		Protection for the population				
Plans for the next 18 months		No Changes				
Other comments						



# APPENDIX I: Site Description

Site Name		EQB 57				
Address						
City		Guayanilla				
AQS Code		72-059-0017				
PR County		Guayanilla				
MSA/CSA		Ponce				
Latitude						
Longitude						
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		Yes				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
PM <sub>2.5</sub>	E-Seq-FRM PM <sub>2.5</sub> /VSCC	Gravimetric	1 in 3	Neighborhood	Population Exposure	new
Ambient Average Temperature	Instrumental	Electronic	1 in 3	Neighborhood	Population Exposure	new
Sample Average Barometric Pressure	Instrumental	Barometric Sensor	1 in 3	Neighborhood	Population Exposure	new
Site Purpose		Protection for the population				
Plans for the next 18 months		Select a new location				
Other comments						

## APPENDIX I: Site Description

Site Name		EQB 7				
Address		USGS & Water Resources Bldg.				
City		Guaynabo				
AQS Code		72-061-0001				
PR County		Guaynabo				
MSA/CSA		San Juan- Caguas				
Latitude		+18.423559				
Longitude		-66.114453				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		No				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
PM <sub>10</sub>	Hi-Vol SA/GMW-1200	Volumetric	1 in 6	Micro Scale	Highest Concentration	1999/02/28
PM <sub>10</sub> Sulfate	Hi-Vol SA/GMW-321B	Volumetric	1 in 6	Neighborhood	Highest Concentration	1998/01/05
Site Purpose		Determine High Concentration				
Plans for the next 18 months		No changes				
Other comments		SO <sub>4</sub> monitor (TSD Waiting PREL resume analysis)				





## APPENDIX I: Site Description

Site Name		EQB 24				
Address		Electrical Substation				
City		Guaynabo				
AQS Code		72-061-0005				
PR County		Guaynabo				
MSA/CSA		San Juan- Caguas				
Latitude		+18.432122				
Longitude		-66.114702				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		yes				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
PM <sub>2.5</sub>	E-Seq FRM/ VSCC	Gravimetric	1 in 3	Neighborhood	Population Exposure	1999/01/15
PM <sub>10</sub>	Hi-Vol SA/GMW-321B	Volumetric	1 in 3	Neighborhood	Population Exposure	1988/01/05
PM <sub>10</sub> Sulfate	Hi-Vol SA/GMW-321B	Colorimetric	1 in 6	Neighborhood	Population Exposure	1988/01/05
Ambient Average Temperature	Instrumental	Electronic	1 in 3	Neighborhood	Population Exposure	1999/01/15
Average Barometric Pressure	Instrumental	Barometric Sensor	1 in 3	Neighborhood	Population Exposure	1999/01/15
Site Purpose		Population Protection				
Plans for the next 18 months		No Changes				
Other comments		PM <sub>10</sub> & PM <sub>2.5</sub> collocate (QA); SO <sub>4</sub> monitor (TSD Waiting PREL resume analysis)				



## APPENDIX I: Site Description

Site Name		EQB 20				
Address		Highway 22 Buchanan Toll				
City		Guaynabo				
AQS Code		72-061-0006				
PR County		Guaynabo				
MSA/CSA		San Juan- Caguas				
Latitude		+18.422595				
Longitude		-66.120012				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		n/a				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
CO	Teledyne T300U	Gas filter Correlation CO	Continuous	Urban	High concentration	2014/07/08
NO <sub>2</sub>	Teledyne T200u	Chemiluminescence	Continuous	Urban	High concentration	2015/02/20
Site Purpose		Near Roads				
Plans for the next 18 months		Re- Start				
Other comments		TSD 2020/01/26, the site was affected by traffic accident in Jan. 2020				



## APPENDIX I: Site Description

Site Name		EQB 59				
Address		University of PR Mayaguez Campus				
City		Mayagüez				
AQS Code		72-097-0007				
PR County		Mayagüez				
MSA/CSA		Mayagüez				
Latitude		18.21428				
Longitude		-67.14461				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		No				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
PM <sub>2.5</sub>	TEOM 1405 PM <sub>2.5</sub> VSCC	FDMS Gravimetric	Continuous	neighborhood	Population exposure	2019/06/11
O <sub>3</sub>	Teledyne T400U	Ultraviolet Abs	Continuous	Urban	Population exposure	2019/06/11
Site Purpose		AQI purpose				
Plans for the next 18 months		No Changes				
Other comments		PM <sub>2.5</sub> & Ozone (AQI)				



## APPENDIX I: Site Description

Site Name		EQB 8				
Address		Road 183				
City		Juncos				
AQS Code		72-077-0001				
PR County		Juncos				
MSA/CSA		San Juan - Caguas				
Latitude		+18.177318				
Longitude		-65.916041				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		No				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
Ozone	Teledyne T400U	Ultraviolet Abs	Continuous	Neighborhood	Population exposure	2007/10/03
Site Purpose		AQI purpose, Population Protection				
Plans for the next 18 months		No Changes				
Other comments		Ozone (AQI) TSD 2020/12/31 (due to lack of personnel)				



## APPENDIX I: Site Description

Site Name		EQB56				
Address		Civil Defense Bldg. Urb. San Antonio				
City		Ponce				
AQS Code		72-113-0004				
PR County		Ponce				
MSA/CSA		Ponce				
Latitude		+18.009558				
Longitude		-66.627249				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		yes				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
PM <sub>2.5</sub>	E-Seq VSCC	Gravimetric	1 in 3	Neighborhood	Population Exposure	1999/01/15
PM <sub>10</sub>	Hi-Vol SA/GMW-1200	Volumetric	1 in 6	Neighborhood	High Concentration	1999/01/06
CO	Instrumental	T300U Gas filter Correlation CO	Continuous	Neighborhood	Population Exposure	2011/10/01
PM <sub>10</sub> continuous	TEOM 1405 246-B Inlet	TEOM Continuous	Continuous	Neighborhood	Source oriented	2011/10/05
PM <sub>2.5</sub> continuous	TEOM PM <sub>2.5</sub> VSCC	FDMS Gravimetric	Continuous	Neighborhood	Source Oriented	2017/07/05
Ambient Average Temperature		Barometric Sensor		Neighborhood	Source Oriented	1999/01/15
Sample Average Barometric Pressure		Electronic		Neighborhood		1999/01/15
Site Purpose		AQI purpose, Population Protection				
Plans for the next 18 months		No Changes				
Other comments		AQI (PM <sub>2.5</sub> & PM <sub>10</sub> ); SO <sub>4</sub> monitor (TSD Waiting PREL resume analysis)				





## APPENDIX I: Site Description

Site Name		EQB 18				
Address		PR Rd. 3 (Inside Syngenta Company área)				
City		Salinas				
AQS Code		72-123-0002				
PR County		Salinas				
MSA/CSA		Guayama - Salinas				
Latitude		+17.9688352				
Longitude		-66.261365				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		N/A				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
SO <sub>2</sub>	Teledyne	Ultraviolet Fluorescence	Continuous	Neighborhood	High Concentration	new
	T-100u					
Site Purpose		Population Protection & High Concentration				
Plans for the next 18 months		No changes				
Other comments						





## APPENDIX I: Site Description

Site Name		EQB 30				
Address		Baldorioty de Castro Ave.				
City		San Juan				
AQS Code		72-127-0003				
PR County		San Juan				
MSA/CSA		San Juan- Bayamón				
Latitude		+18.449814				
Longitude		-66.052510				
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?		No				
Monitor Type		SLAMS				
Parameter	Method	Analysis Method	Schedule	Spatial Scale	Objective	Begin Date
CO	Teledyne  T- 300U	Gas Filter Corr. CO	Continuous	Middle	High Concentration	1995/04/01
Site Purpose		Determine High Concentration and protection of population				
Plans for the next 18 months		No changes				
Other comments		TSD 2021/01/01 (due to lack of personnel)				



## APPENDIX I: Site Description

Site Name	EQB #37 NCore Station
Address	Regional Jail of Bayamón
City	Bayamón
AQS Code	72-021-0010
PR County	Bayamón
MSA/CSA	San Juan - Bayamón
Latitude	+18.420089
Longitude	-66.150615
Suitable for Comparison to PM <sub>2.5</sub> NAAQS?	N/A

Parameter	Sampling Method	Analysis Method	Schedule	Spatial Scale	Monitoring Objective	Begin Date
SO <sub>2</sub>	Teledyne T100u	Ultraviolet Fluorescent	Continuous	Neighborhood	Population Exposure	2011/03/16
CO	Teledyne T300u	Gas Filter Corr. CO Analyzer	Continuous	Neighborhood	Population Exposure	2011/03/16
NO	Teledyne T200u	Chemiluminescence	Continuous	Neighborhood	Population Exposure	2014/05/21
NO <sub>y</sub>	Teledyne T200u	Chemiluminescence	Continuous	Neighborhood	Population Exposure	2014/05/21
NO <sub>y</sub> -NO	Teledyne T200u	Chemiluminescence	Continuous	Neighborhood	Population Exposure	2014/05/21
PM <sub>10</sub>	E-FRM PM <sub>10</sub>	Gravimetric	1-3	Neighborhood	Population Exposure	2015/05/09
PM <sub>2.5</sub>	E-Seq FRM PM <sub>2.5</sub> /VSCC	Gravimetric	1-3	Neighborhood	Population Exposure	2015/04/12
PM <sub>10-2.5</sub>	E-FRM PM <sub>10-2.5</sub> Sampler Pair	Paired Gravimetric	1-3	Neighborhood	Population Exposure	2015/05/09

## APPENDIX I: Site Description

Parameter	Sampling Method	Analysis Method	Schedule	Spatial Scale	Monitoring Objective	Begin Date
O <sub>3</sub>	Teledyne T-400	Ultraviolet	Continuous	Neighborhood	Population Exposure	2014/05/21
Wind Speed Resultant	Instrumental	RM Young Ultrasonic Anemometer Model 81000	Continuous	Neighborhood	Population Exposure	2014/05/21
Wind Direction Resultant	Instrumental	RM Young Ultrasonic Anemometer Model 81000	Continuous	Neighborhood	Population Exposure	2014/05/21
Outdoor Temperature	Instrumental	Met One 083D	Continuous	Neighborhood	Population Exposure	2014/05/21
Relative Humidity	Instrumental	Met One 083D	Continuous	Neighborhood	Population Exposure	2014/05/21
Barometric Pressure	Instrumental	Barometric sensor	Continuous	Neighborhood	Population Exposure	2014/05/21
PM <sub>2.5</sub> /PM <sub>10</sub>	Met-One Beta	Attenuation Particulate Monitor	Continuous	Neighborhood	Population Exposure	TSD
PM <sub>2.5</sub> Speciation	Met-One SASS Teflon	Energy Dispersive XRF	1-3	Neighborhood	Population Exposure	2015/11/20

Parameter	Monitor Type
Sulfur Dioxide	SLAMS
Carbon Monoxide	SLAMS
Oxide Nitrogen	SLAMS
Oxide Nitrogen (NO <sub>y</sub> )	SLAMS
Ozone	SLAMS
PM <sub>2.5</sub>	SLAMS
PM <sub>10</sub>	SLAMS
PM <sub>2.5</sub> /PM <sub>10</sub>	SLAMS
PM <sub>2.5</sub> Speciation	SLAMS

Site Purpose	NCore Site
Plans for the next 18 months	Replace and install the new equipment (Met-One Bam 1022)
Comments	NO <sub>2</sub> TSD 2020/08/06