

Environmental Studies Program: Studies Development Plan | FY 2019–2021

Title	Preliminary Study: GOMR Coastal Ambient Air Quality Monitoring Program
Administered by	Gulf of Mexico OCS Region
BOEM Contact(s)	Cholena Ren, cholena.ren@boem.gov
Procurement Type(s)	Contract and/or Inter-Agency Agreement
Approx. Cost	\$400 (in thousands)
Performance Period	FY 2019–2023
Date Revised	April 30, 2018
PICOC Summary	
<i>Problem</i>	Concentrations of criteria air pollutants are lacking at the northern Gulf of Mexico’s shoreline.
<i>Intervention</i>	Criteria air pollutant concentrations will be measured and monitored at a determined shoreline site.
<i>Comparison</i>	Observed criteria pollutants will be compared to air quality model predictions and to NAAQS standards.
<i>Outcome</i>	Evaluate the feasibility of installing a monitoring station and using the criteria air pollutant concentrations data to determine compliance with the NAAQS at the shoreline, validate BOEM’s modeling results, and provide recommendations to an expanded study.
<i>Context</i>	Central Gulf of Mexico, Western Gulf of Mexico

BOEM Information Need(s): BOEM needs to determine if activities authorized under the Outer Continental Shelf Lands Act (OCSLA) are in compliance with National Ambient Air Quality Standards (NAAQS). OCSLA, under section 5(a)(8), requires compliance with the NAAQS pursuant to the Clean Air Act (42 U.S.C. 7401 et. seq.).

Background: NAAQS cover six common criteria air pollutants that are considered harmful to the public. Monitoring information is important for conducting environmental assessments for the National Environmental Policy Act (NEPA) and to help BOEM evaluate air quality model predictions that have been used to determine compliance with the NAAQS. Determining trends in air quality will help determine whether emissions from oil and gas facilities are contributing factors. Information from the monitors could also contribute to the State’s ambient air monitoring data and U.S. Environmental Protection Agency (USEPA) air quality monitors app that are used by the general public. It is not well understood if the emissions generated by OCS activities cause air quality impacts on adjacent States. Though BOEM has conducted modeling studies, BOEM has not taken any actual measurements of air pollutant concentrations to confirm the validity of those models and to directly determine compliance with NAAQS. There are only a few monitoring stations located near the shoreline of the Gulf of Mexico; none of those stations located in Louisiana measure nitrogen dioxide (NO₂) near the shoreline which is the most frequently modeled air pollutant in an OCS plan.

Furthermore, those few stations are typically located near major highways or industrial sites which severely limit their usefulness to BOEM as contributions from offshore oil and gas would not be discernible compared to these neighboring industrial contributions. In total near the shoreline of Mississippi, Alabama, Louisiana, and Texas, USEPA has reported only 4 active monitors for ozone and particulate matter less than 2.5 micrometers in diameter (PM_{2.5}), 2 monitors for NO₂, 1 monitor for sulfur dioxide (SO₂), and no active monitors for carbon monoxide (CO), lead (Pb), and particulate matter less than 10 micrometers in diameter (PM₁₀).

Objectives: This study will evaluate the feasibility of a coastal NAAQS monitoring study and provide recommendations to design an expanded study.

Methods: This project will research factors that contribute to a successful monitoring study such as equipment selection and siting, data quality and cost, and looking at the compatibility with existing monitoring stations. The field monitoring task would use USEPA approved Federal Reference Methods and Federal Equivalent Methods. The USEPA Air Sensor Guidebook will also be used to guide in the development and use of air sensors. Air pollutants measured would include nitrogen dioxide (NO₂), carbon monoxide (CO), particulate pollution (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), lead (Pb), and ozone. Depending on the instrument these monitors can come equipped with solar panels and meteorological sensors. Potential collaborations with adjacent States, Fish and Wildlife Service, and National Parks Service would be considered. One station would be located in Louisiana for one year. A site assessment would be performed to determine placement of station. Collected data will be evaluated as to the success of the design and research questions. An additional monitoring station would be considered depending on funds. Coordination with the platform downwash study would be considered.

Specific Research Question(s):

1. What logistical issues exist and how can they be managed to successfully establish a coastal monitoring station?
2. Where should this one monitoring station and future monitoring stations be placed at?
3. What are the criteria air pollutants concentrations and temporal and spatial trends at the shoreline?
4. What are the main factors contributing to variability?
5. Are the measured criteria air pollutants at the shoreline in compliance with the NAAQS?
6. What is the accuracy and variability of BOEM's predictive models based on this preliminary study results?

References:

<https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=5f239fd3e72f424f98ef3d5def547eb5&extent=-146.2334,13.1913,-46.3896,56.5319>

<https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors>

https://www.epa.gov/sites/production/files/2017-12/documents/designated_reference.pdf

https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=277996&simpleSearch=1&searchAll=air+sensor+guidebook