MARAMA 2020 Mid-Atlantic Regional

2020 ANNUAL REPORT

Photo credit: Sharon Ray, Maryland

Helping Members Improve Air Quality

A voluntary association of ten state and local air pollution control agencies, MARAMA strengthens the skills and capabilities of member agencies and helps them work together to prevent and reduce air pollution impacts in the Mid-Atlantic Region.

This report highlights our accomplishments from October 2019 through September 2020.

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MARAMA Training Events for FY 2020

MARAMA hosted two workshops.

MARAMA's workshops provide invaluable opportunities for new and experienced staff from all ten MARAMA agencies to interact and learn from each other as well as from invited expert speakers and MARAMA Air Directors.

- MARAMA Monitoring Committee Training Workshop - 105 attended in Swarthmore, PA
- MARAMA Air Permitting VIRTUAL Training Workshop - 209 attended on-line

MARAMA hosted 3 in-person training courses (before COVID lockdown)

- Oil and Gas Training, Williamsport, PA - 33 participants
- Oil and Gas Training, Pittsburgh, PA – 49 participants
- APTI 418 Control of NOx Emissions, Richmond, VA - 45 participants

MARAMA hosted 2 on-line training courses after COVID lockdown.

- APTI 454 Effective Permit Writing (Pilot) Virtual Training - (13 participants)
- Title V Training On-Demand Training Series (RTP)

MARAMA also helped 31 members travel (or paid for registration for Virtual Meetings) to national/regional conferences or meetings.

MARAMA Virtual Air Permitting Workshop

The COVID 19 Pandemic closed most in-person offices for over a year starting in March 2020. MARAMA staff were flexible and continued our mission of training air quality staff by working remotely.

We held our first Virtual Workshop, the Air Permitting Workshop on September 15-17, 2020. This workshop was attended by 209 MARAMA regional staff. Holding it virtually allowed more staff to attend than normal without worrying about travel approvals and state budgets.

The MARAMA Air Permitting Workshop topics that were presented / discussed were: EPA Region 3 Training on Writing Enforceable Permits, EPA Permitting Guidance & Rulemaking, Project Accounting & PSD Applicability, Permits for Permit Writers & Inspectors, State Permitting Studies, Emerging Pollutants, Fumigation Permitting, Odor Permits, and E-Permitting by Philadelphia and New Jersey. We also had several panel discussions.

Feedback was overwhelmingly positive, especially for the refresher course that EPA gave on permit writing, the synthetic minor permitting, and PTE (potential to emit) presentations. Participants also felt that including Environmental Justice language into the permits was a positive way to communicate between the agencies and the communities near a source/facility.

By all accounts the workshop was an enormous success. Congratulations go to Debbie Wilson from MARAMA for coordinating and hosting a successful workshop.

MARAMA Hosted 15 Technical Webinars

MARAMA has become a national leader in webinar training for state, local, and Federal Air Management agency staff. The attendance numbers below reflect not only MARAMA staff, but staff who participated from across the country. Webinar topics included:

- R Training Webinar Series
  - Module 1 - Introduction to R Training Webinar (48 participants)
  - Module 2 - TIDYVERSE R Training Webinar (45 participants)
  - Module 3 - OPENAIR R Training Webinar (40 participants)
  - Module 4 - GGPLOT R Training (37 participants)

- Part 1 - Air Pollution Meteorology and Modeling for Beginners Webinar (96 participants)
- Part 2 - Air Pollution Meteorology and Modeling for Beginners Webinar (91 participants)

- EPA National AQ Training Program: How States/local Governments Needs (32 participants)

- Air Quality Management Webinar Series
  - Module 1 - Introduction to Air Quality Management Webinar (233 participants)
  - Module 2 - Foundation of Air Pollution Control/Clean Air Act Webinar (181 participants)
  - Module 3 - SO_2 Health Effects, Ambient Standards Webinar (159 participants)
  - Module 4 - Air Toxics Overview Webinar (168 participants)
  - Module 5 - Ozone Part 1: Health Effects, NAAQS, O3 Webinar (232 participants)
  - Module 6 - Ozone Part 2: Modeling and Control Programs Webinar (149 participants)
  - Module 7 - Particulates Part 1: Monitoring, Health, NAAQS (153 participants)
  - Module 8 - Particulates Part 2: Modeling/Control Programs Webinar (159 participants)

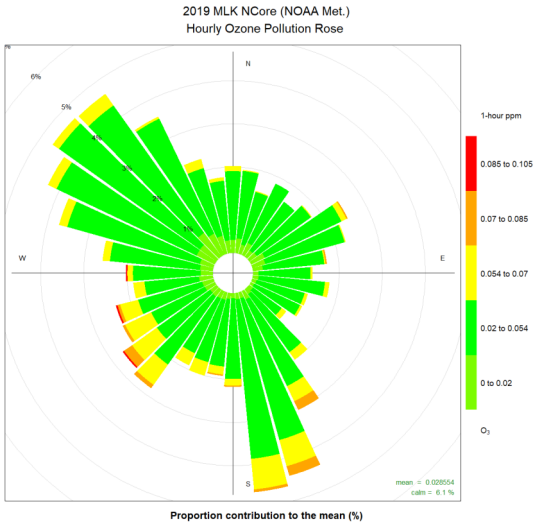
2,381 MARAMA Agency Staff Attended MARAMA Events in FY 2020
That is the highest participation ever and a 40% increase from FY 2019

Allegheny County	124	New Jersey	236	Philadelphia	176
Delaware	197	North Carolina	289	Virginia	406
District of Columbia	70	Pennsylvania	465	West Virginia	201
Maryland	217				

MARAMA Started a New R Exchange Workgroup

After two successful R Programming Workshops, MARAMA started a new workgroup to facilitate ongoing learning about R Programming for air quality agency staff. This workgroup, the MARAMA R Exchange, meets quarterly and features presentations about projects that implement R Programming with an emphasis on how projects were completed.

Additionally, this workgroup provides a unique opportunity for staff who use R Programming (or who want to learn R Programming) to network with each other and improve their skills together. Presentations have covered a wide array of projects such as: creating wind/pollution roses using R and OpenAir, creating R Libraries/Packages, creating web-maps using Leaflet, and creating web-based data analysis applications using R Shiny.



Hourly Ozone Pollution Rose (Keith Hoffman, DNREC)

MARAMA Board of Directors Meeting—November 2019

Last in-person Board Meeting before the COVID 19 Pandemic

From Left to right: David Fees, DNREC; Susan Spielberger, EPA; Frank Steitz, NJ DEP; Ram Tangirala, DOEE; Dean Deluca, ACHD; Marc Cone, MARAMA; Sharon Ray, MARAMA; Chuck Turner, VA DEQ; Julie McDill, MARAMA; Mike Abraczinskas, NC DEQ; Tad Aburn, MDE; Renu Chakrabarty, WV DEP; Viren Trivedi, PA DEP; Jenny St. Clair, MARAMA; Sue Dilli, MARAMA; and Jackie Burkhardt, MARAMA.

Julie McDill Retires - Marc Cone is new MARAMA Executive Director

Julie McDill retired as MARAMA Executive Director in November 2019. Prior to becoming MARAMA's Executive Director in 2017, Julie was MARAMA's Senior Environmental Engineer for ten years.

Julie came to MARAMA with over 20 years of experience in previous environmental work and jumped right into emissions inventories, the training program, and developed strong partnerships with other MJOs and the EPA. Her work in the inventory world led Julie to champion the development of the Eastern Regional Technical Advisory Committee Electricity Generating Unit (ERTAC EGU) emission estimation tool. This tool continues to be refined today and is one of the cornerstone tools to understanding EGU pollution transport. Julie's lead on MARAMA's inventory work developed over the years has been a recognized strength of the MARAMA organization.

Julie had understood the importance of virtual training when it was cutting-edge technology. With her leadership, MARAMA started doing webinars beginning in 2010, making MARAMA a nationwide leader. MARAMA benefitted tremendously from Julie's vision and initiatives as Executive Director and we are thankful for her service.

With Julie's departure, Marc Cone was chosen to lead MARAMA as the next Executive Director. Marc obtained his BS in Chemical Engineering at the University of Maine, a MS in Business from Thomas College and is a Registered Professional Engineer. Marc worked at paper mill before he embarked on his career at the Maine Department of Environmental Protection as an assistant engineer in the permitting section and section manager in a little over 2 years. After 25 years working in the Bureau of Air Quality, he became the Director. Over those years he brought an innovative out of the box approach to air quality improvement in Maine which he has brought to Maryland in serving Mid-Atlantic air agencies.

Julie McDill at her retirement party with her Executive Director replacement, Marc Cone.

2020 MARAMA Outstanding Service Awards

MARAMA's success depends on collaborative efforts by staff from member agencies. Each year MARAMA presents an award to recognize those individuals whose contributions have been outstanding. The 2020 MARAMA Outstanding Service Awards went to Sean Nolan of PA DEP and Shane Cone from DNREC.

Sean Nolan received his award in recognition for his leadership as the Chair of MARAMA's 2019 (and 2020) Monitoring Committee Training Workshop. Sean worked diligently on developing the agenda, inviting speakers, collaborating with state agencies, serving as moderator, and engaging all of the attendees with his humor and wit throughout the workshop.

Shane Cone received his award in recognition of his contribution to MARAMA's R Programming Language training and Commercial Marine Vessels (CMV) Workgroup. In both endeavors, he was a productive team member who welcomed informed and productive debate of issues and consistently comes to the table well prepared.

Sean Nolan, PA DEP

Shane Cone, DNREC

MARAMA Diesel Emission Reduction Program

A pair of new DERA program trucks leaving the Port of Virginia gates. The two new dray truck owner operators are father and daughter.

MARAMA worked with other members of the Mid-Atlantic Diesel Collaborative to reduce diesel emissions in the region.

MARAMA administered three EPA Diesel Emissions Reduction Act (DERA) Grants, valued at over $2.5 million dollars, to reduce diesel emissions from dray trucks serving Mid-Atlantic ports.

The grants provided (up to $30,000) down payments as financial incentives to truck owners to give up their old polluting dray trucks. A dray or drayage truck is a heavy-duty class 8 on-road vehicle that moves through port properties for the purpose of loading and unloading cargo.

Truck idling is a big problem at the ports for air quality and for the drivers getting paid by the mile of driving. The average dray truck idles at the port for four hours a day. Replacing old dray trucks with newer trucks that have clean diesel DPF/SCR technologies is a cost effective way to reduce diesel emissions for ports and their surrounding communities.

This photo shows an old truck entering the scrapyard for engine destruction. In order to receive grant funds, MARAMA requires proof that the truck will no longer be on the road.

Photo of a scrapped dray truck engine—all DERA programs require truck owners send proof that their old engines have been destroyed by putting 3-inch holes in the engine block and the manifold.

DERA Program Replacing Polluting Trucks

During the year, under all the Diesel Emissions Reduction Act (DERA) Grant Programs, MARAMA replaced a total of 43 old dray trucks serving the ports of Virginia, Delaware and Pennsylvania. The oldest truck replaced was a model year 1998, and the newest truck was a model year 2010.

MARAMA worked under a DERA subgrant from Virginia Department of Environmental Quality, where 9 pre - 2007 model year diesel trucks were scrapped and replaced with newer and cleaner diesel trucks in model year 2013 or newer trucks that are by law equipped with DPF/SCR (Diesel Exhaust Fluid/Selective Catalytic Reduction) an advanced active emissions control technology System.

Under DERA in the port areas of Wilmington, Delaware, and Philadelphia, Pennsylvania, 34 old trucks were scrapped and replaced with engine's 2013 or newer.

Photo from Port of Philadelphia (www.philaport.com)

Estimated emission reductions achieved from replacing 43 old model trucks during the year are presented in the table below.

	NOx	PM2.5	HC	CO	CO2	Gallons of Fuel Reduced
Estimated Lifetime Emission Reductions from 43 truck replacements in VA, DE and PA (tons)	228.21	14.42	15.40	76.15	2,052.80	182,476

Mid-Atlantic Diesel Collaborative Webinars (MDC)

In its role of providing information and training support for Region 3, MARAMA was the host to four MDC webinars throughout the period.

- The Latest Technology for Region 3 Commercial Vehicles and Large Engine Research – November 2019
- Air Monitoring: Are Current Strategies Protecting Human Health? - January 2020
- EPA's Port Initiative Website: New Site, Case Studies & Tools - June 2020
- Addressing NOx Emissions from Heavy-Duty Vehicles in Urban Areas - July 2020

Impact of Lockdown on Traffic and Air Quality during the Coronavirus Pandemic

The year 2020 will go down in history as a very strange year. The COVID 19 pandemic brought a year of isolation and cancelled plans. Remote work for most employees, as schools, businesses and even public parks closed beginning in March all across the US. Some states never closed down (or very minimal) while others, including most of our MARAMA states, were on lockdown through a majority of the year.

The pandemic lockdowns & self-isolation had unforeseen impact on traffic emissions and air quality. Looking at emissions from the various categories of vehicles, light-duty vehicles (LDVs) were the most impacted for local traffic, as several states mandated that people stay home and socially isolate. While the vehicle miles traveled (VMT) for LDVs was reduced significantly, heavy-duty vehicles (HDVs) continued to travel, delivering supplies and goods to not just businesses, but to personal homes.

When the pandemic hit, city streets were eerily quiet. Passenger traffic plummeted, and traffic-related emissions dropped accordingly. However, while the lockdown improved air quality in some cities, there were other areas that continued to see high pollutant levels and the next stage of research began, trying to determine the impact on emissions, specifically ozone, from mother nature (e.g., weather and climate).

The air quality impact at first dropped as people worked from home, but the emission changes were short-lived, as things started to return to normal later in the year.

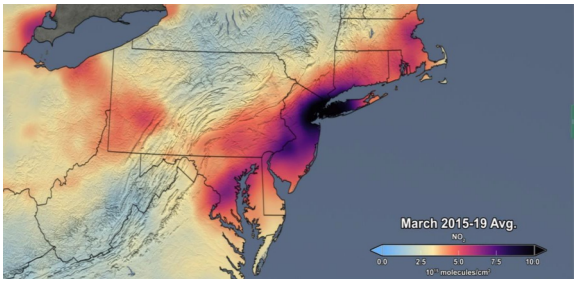
There were negatives on emissions from the lockdown, including an increase in emissions from power plants due to more power needed to work from home, more local single occupant car trips, and idling while waiting for items to be delivered curb-side. Longer road trips and traveling by airplane, boat or train, decreased dramatically with most people not taking vacations in 2020. The result was air pollution levels dropped in 2020. It will be very interesting to see the impact of the economy opening back up in 2021 on our air quality. And of course, meteorology will play a major role too.

Many agencies and institutions in the MARAMA region worked on impacts on air quality during the lockdowns; the following is a brief summary of a study from Joel Dreessen, Maryland Department of the Environment (MDE), which he presented in August 2020 during one of our MJO MOVES webinars.

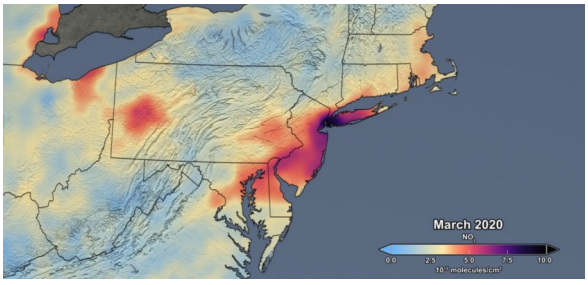
[The MJO MOVES Workgroup is focused on the development of mobile emissions data with EPA for national inventories as well as inputs for air quality models through improved MOVES inputs and better application of the MOVES model itself to produce better emissions estimates. This past year has provided quite a bit of data for us to review for future emission inventories.]

Satellite Images of NO_2 Levels Drop due to COVID 19

NO_2 Levels, March 2015-2019



No_2 Levels, March 2020

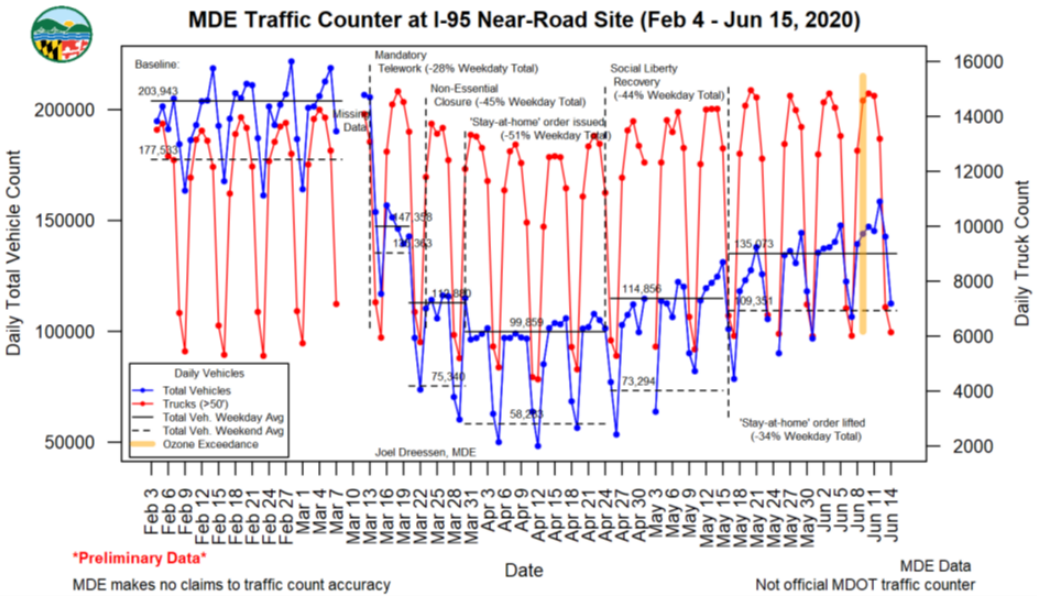


https://www.nasa.gov/feature/goddard/2020/drop-in-air-pollution-over-northeast

Joel Dreessen's (MDE) Presentation on August 2020 Lockdown Impact on Maryland's Air Quality

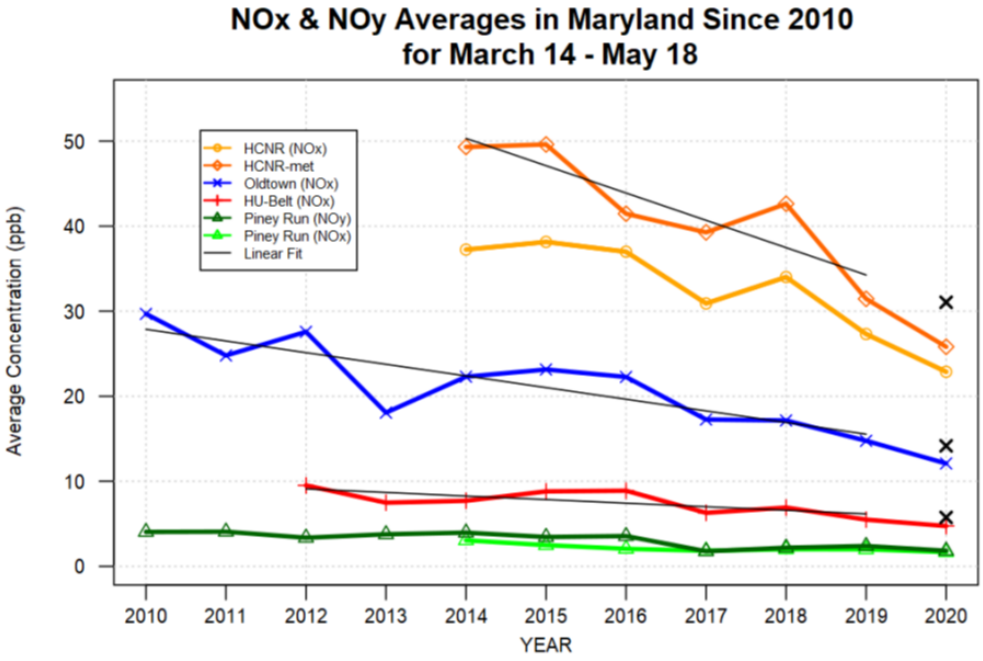
Joel Dreessen and the Maryland Department of the Environment (MDE) looked at a monitoring site near a Rest Stop on I-95 South between Baltimore and Washington. Joel mentioned in his presentation that lower traffic numbers were seen in previous years, so the lower numbers reflected in 2020 may not be entirely due to COVID. Also, during this time, trucks were driving at higher speeds during what would have been peak times and taking highways, rather than other routes, since the congestion found on the highways was less, so local roadway emissions during 2020 were different depending on truck routes used.

This is a very busy graph, but shows the significant reduction of all vehicles (blue line) beginning in March through June, while heavy-duty vehicles (red) were fairly consistent throughout the pandemic lockdown.



Looking at the data closer, shows that the vehicle reduction mostly came from Light-duty vehicles (LDVs).

A comparison of NOx data collected near the road site in 2020 to earlier years measured a drop in NOx that agreed with satellite data. However, shown in the lower graph, it appears that NOx has been steadily declining since 2014, and more research is necessary to determine the true impact of the lockdown. In summary, there is a lot more research that needs to be done to determine the impact that the COVID 19 lockdown had on our emissions. This real-time science experiment has given us a lot to think about and to study.



MARAMA - A Year in Review

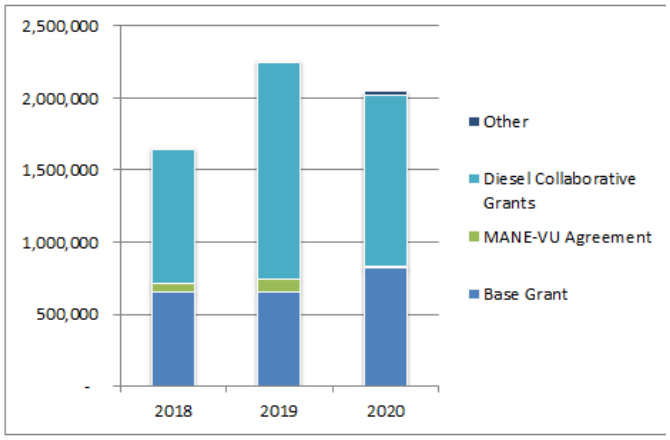
In FY 2020, MARAMA welcomed Marc Cone as MARAMA's Executive Director (please see Page 5 for more details) a few months before the country shut down with stay-at-home orders from the COVID 19 pandemic. MARAMA was flexible and quickly changed the way we do business.

Most of MARAMA's staff and our agency staff were able to work remotely delivering services needed to address air quality improvement. In addition to our usual webinars, MARAMA held all our NACT and APTI training courses and our workshops through virtual platform systems.

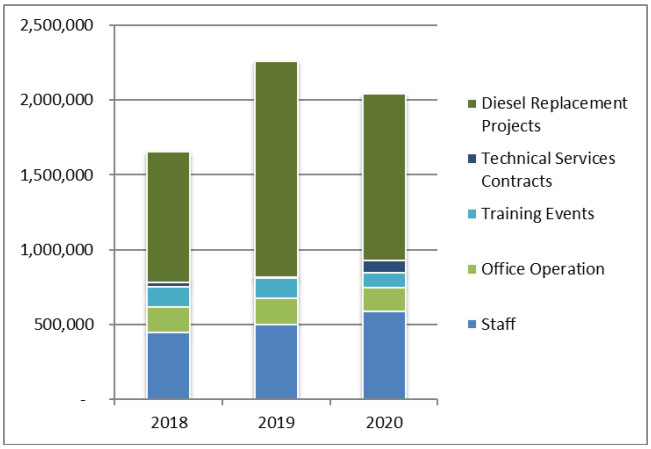
The pandemic had some positives, we were able to train more staff, not only MARAMA agency staff who have budget constraints for attending in-person courses, but we were able to train staff from all across the nation.

MARAMA received continuing primary support through from our member agencies. Much of the decrease in revenue and expense from FY 2019 levels, in the graphs below, were in pass-through EPA grants for diesel emissions reduction projects (DERA Grants).

FY 2020 Revenue



FY 2020 Expenses



MARAMA Directors and Staff

Board of Directors, 2020

Francis "Frank" Steitz, New Jersey, Chair
Kelly Crawford, District of Columbia, Vice-Chair
Laura Crowder, West Virginia, Treasurer
Michael Abraczinskas, North Carolina
George S. "Tad" Aburn, Jr., Maryland
Michael G. Dowd, Virginia
David Fees, Delaware
Jayme Graham/Dean DeLuca Allegheny Country
Kassahun Sellassie, Philadelphia
Viren Trivedi/Mark Hammond, Pennsylvania

MARAMA Staff, 2020

Marc Cone Executive Director
Jackie Burkhardt, Co-Training Coordinator
Sue Dilli, Co-Training Coordinator
Tina Gibson, Office Manager
Susan McCusker, PhD, Sr Environmental Scientist
Sharon Ray, Administrative Assistant
Jenny St. Clair, Environmental Data Specialist
Deborah Thomas, Diesel Program Manager
Debbie Dutcher Wilson, Air Quality Scientist

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