




Connecting EPA ORD to CBP Science Needs

Regina Poeske

- High Level Overview EPA Office of Research and Development (ORD)
 - Overview of Region 3's Regional Science Program
 - ORD Research and Chesapeake Bay Program Science Needs
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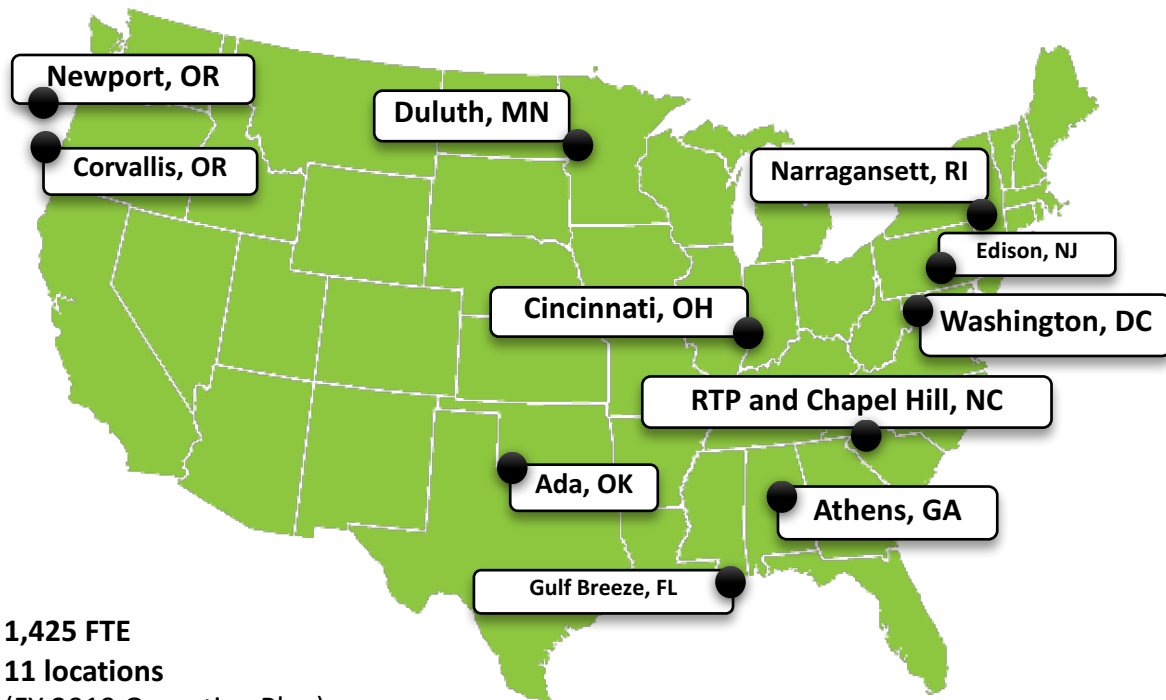
ORD Regional Science Liaisons

Regina Poeske

- ORD's Regional Science Program provides for Regional Science Liaisons (RSLs) who are primary link betw/ regions and ORD
- Connect Regions/States/Tribes with ORD's National Research Programs
- Translate and communicate ORD products
- Help identify regional/state/tribal science priorities
- Manage core Regional Science Program activities

ORD at a Glance

Provide the science, technical support, technology and tools to inform US EPA's mission to protect public health and the environment.



1,425 FTE
11 locations
(FY 2019 Operating Plan)

RTP, NC Chapel Hill, NC	Air Pollution Research, Apps and Sensors for Air Monitoring, Air Quality and Energy Modeling for Climate Change, Human Health Research and Risk Assessment, Computational Assessments, Homeland Security Decontamination Research, Analytical Methods Development
Cincinnati, OH Edison, NJ	Drinking Water and Wastewater Treatment and Management, including Stormwater Management & Green Infrastructure, Water Security, Microbial & Chemical Risk and Exposure Assessments, Analytical Methods Development
Corvallis & Newport, OR Duluth, MN Gulf Breeze, FL Narragansett, RI	Coastal, Estuarine, Freshwater, and Watershed Ecological Effects Research, Ecological Modeling, Monitoring and Assessment, Green Infrastructure, Chemical and Nutrients Research and Risk Assessment, Land-use and Climate Change Research, Ecosystem Services and Sustainability Research, Analytical Methods Development
Las Vegas, NV	Ecological Exposure Characterizations, Landscape Characterization, Analytical Methods Development
Ada, OK	Ground Water and Ecosystem Restoration
Athens, GA	Process Modeling - Chemical and Microbial Fate and Transport, Land Use Risk to Humans and Ecosystems

ORD Research

ORD provides the scientific foundation for EPA to execute its mandate to protect human health and the environment.

1. Longer Term Research: Conducts *innovative, anticipatory, multidisciplinary* research applied to EPA program and regional needs to solve **longer term environmental challenges**. Example: *Science and Tools to Support Microbial Water Quality Criteria for the Protection of Human Health*
2. Research on Statutory Requirements and Specific Environmental Challenges: Research support to EPA program and regional offices, as well as states, tribes and communities, to help them respond to **contemporary environmental challenges**. Example: *Developing and validating methods to detect and quantify PFAS in air, water, and soil.*
3. Technical and Emergency Support: Because of expertise, local, state and national officials go to ORD for technical support to **respond to environmental crises and needs**, large and small. Example: *Flint MI, Octoraro Watershed*

ORD Research Programs

ORD's National Research Programs are guided by a Strategic Research Action Plans ([StRAP 2019-2022](#)) with input from internal and external partners and stakeholders. Research priorities:

Safe and Sustainable Water Resources ([SSWR](#))

Water Treatment and Infrastructure
Nutrients & Harmful Algal Blooms
Watersheds



Sustainable and Healthy Communities ([SHC](#))

Contaminated Sites
Waste & Materials Management
Healthy Communities



Human and Environmental Risk Assessment (HERA)

Science Assessments & Translation
Advancing Practice of Risk Assessment

Chemical Safety for Sustainability ([CSS](#))

Improved Chemical Evaluation to Support Agency Decisions
Complex Systems Science to Inform Agency Knowledge of Chemicals
Solutions and Delivery of Chemical Knowledge to Agency Partners

Air and Energy ([AE](#))

Science for Air Quality Decisions
Extreme Events & Emerging Risk
Next Generation Methods to Improve Public Health & Environment

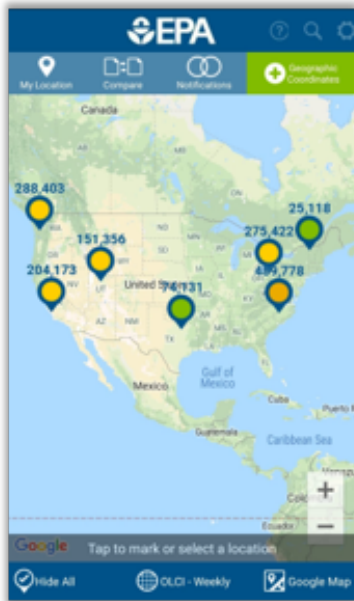


Homeland Security Research Program ([HSRP](#))

Contaminant Characterization & Consequence Assessment
Environmental Cleanup & Infrastructure Remediation
Preparedness & Response



Example A&E, SHC, and SSWR Connections with CBP

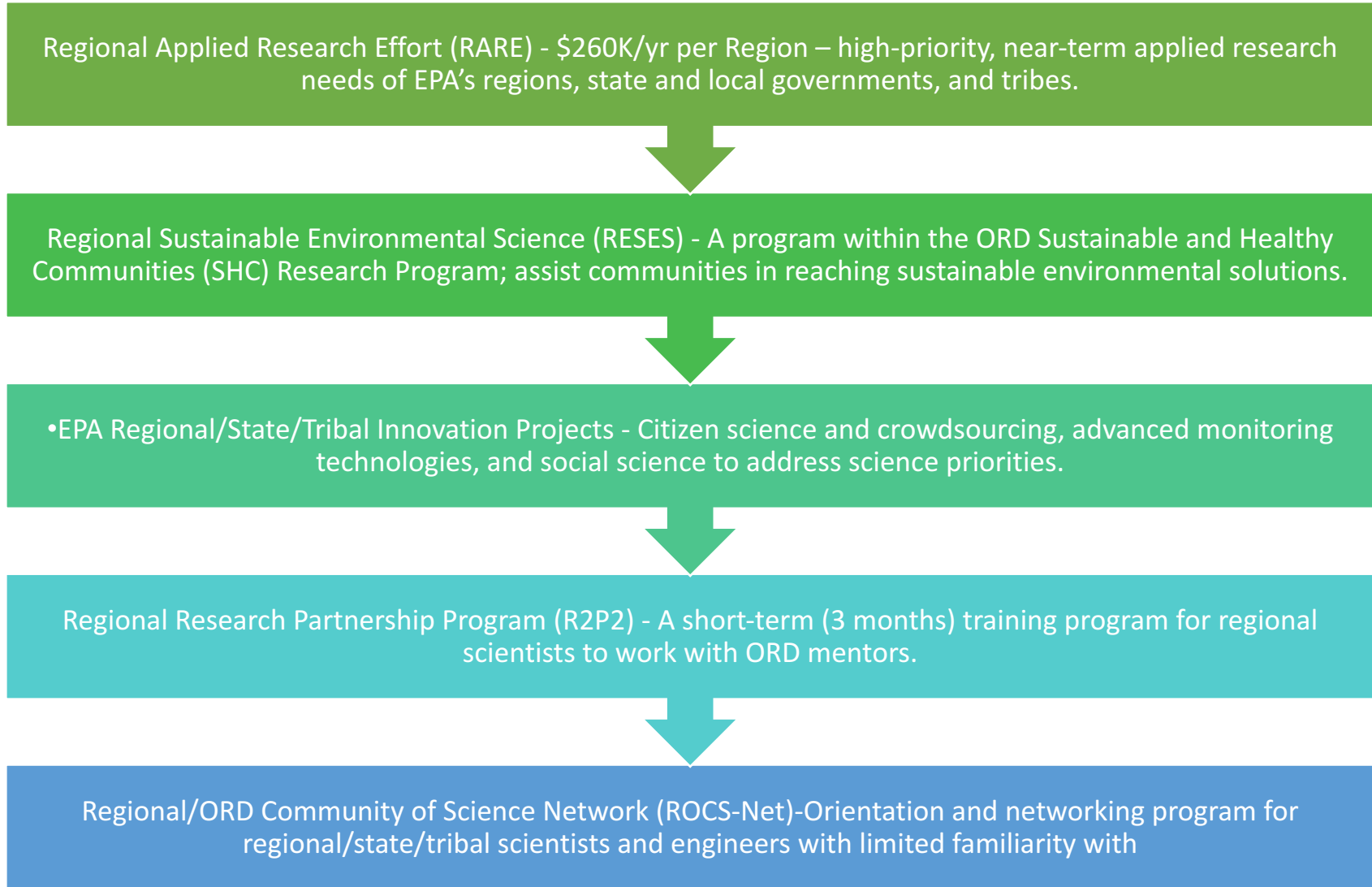


epa.gov/water-research/CyAnapp



- **A&E** - Extreme Events & Emerging Risk and Science for Air Quality Decisions
 - Methods to enable resilience to future environmental stressors. **Example:** Application of vulnerability assessment results and innovative methods to identify resilient sites and assess trends
 - AQ modeling **Example:** Collaboration to address several AQ modeling needs identified by the Bay program to support the next generation Chesapeake Bay model.
- **SHC** - Healthy and Resilient Communities: Revitalizing Communities from Contamination and Natural Disasters/Extreme Weather Events
 - **Examples:** Guidance for Effective Resiliency Action, Ecosystem Services, EnviroAtlas
- **SSWR** - Science and innovative technologies needed to maintain drinking water resources and systems, as well as to protect the chemical, physical and biological integrity of the nation's waters.
 - **Watersheds:**
 - **Examples:** Assessment, Monitoring, and Management of Aquatic Resources, Micro/Nanoplastics. Regional Monitoring Networks.
 - **Nutrients and Harmful Algal Blooms**
 - **Examples:** Science to Support Nutrient-Related Water Quality Goals, tools for measuring and quantitating cyanoHABs nationwide and to ultimately address the risks posed by these blooms.
 - **Water Treatment and Infrastructure**
 - **Example:** Drinking Water/Distribution Systems, Per- and Poly-Fluorinated Alkyl Substances (PFAS) , Integrated Stormwater Management

Regional Science Program – ORD/Regional Partnership Program



Links ORD with EPA’s regional offices and promotes the integration of ORD science into regional state and tribal decision-making.

Regionally-focused research that often includes a state, tribe or local partner and addresses high priority science needs.

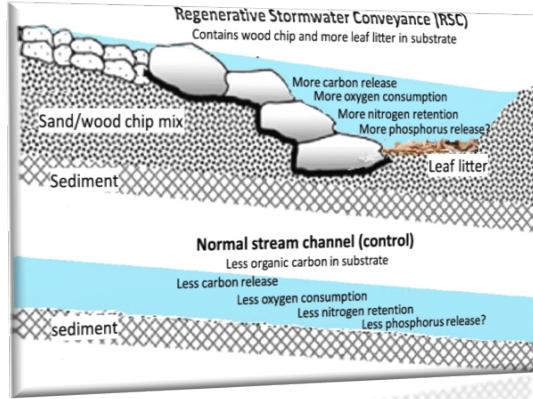
Assessing the Value and Impact of Delivering Water Quality Monitoring Data to the Public - A Pilot in Baltimore Harbor



BACKGROUND

The recent focus on the Baltimore Waterwheel and its efficacy in cleaning up trash in the Baltimore Harbor has generated both community and government action aimed at addressing water quality impairments in the Harbor. EPA's Region 3 and Office of Research and Development (ORD) are working together to identify opportunities to broaden public awareness on other water quality issues. Discussions with stakeholders in Baltimore led to the Baltimore [Village Blue](#) demonstration project to bring real-time, publicly available water quality monitoring data to the Harbor. Monitoring sensors were installed near the Baltimore Waterwheel through a partnership with the U.S. Geological Survey (USGS). Data from the sensors will be interpreted and visualized with the intent of engaging and educating the public on benefits of pollution reduction, such as reducing fish kills, harmful algal blooms, contaminant exposure, and increasing recreation, health, and wildlife.

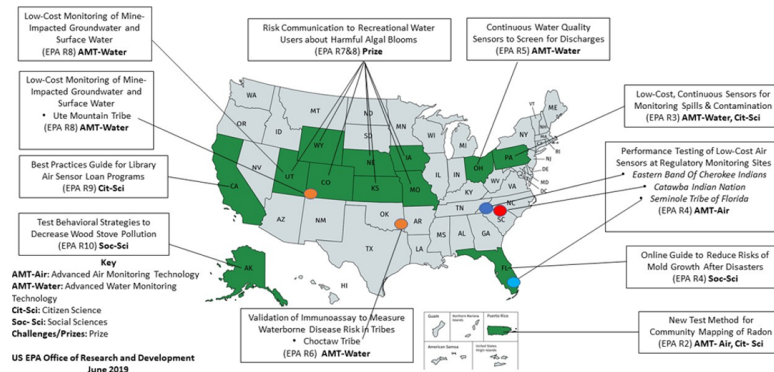
communication approaches, how they relate to different audiences (such as the public, decision makers, and key organizations) and different intervention. The project team will also partner with organizations to identify what communication and outreach techniques have worked best in the past to catalyze public awareness and action. In the project's second phase, researchers will explore communication needs through discussions with local organizations, decision makers, and the public to understand their perceptions of water quality and other environmental impairments in the Baltimore Harbor. These discussions will help the team relate water quality issues to stakeholders' key concerns. The final phase of this project will focus on modifying mechanisms of delivering water quality information. The team will investigate how the origins of water quality problems align with existing capacity to address the problems and how to frame water quality issues in ways that resonate with different stakeholders. A final report will highlight key results and share lessons learned from this pilot with EPA programs working in other regions. The results of this project will help EPA and its partners develop insights into what stimulates public knowledge, engagement, and action to improve water quality in the Baltimore Harbor and broader Chesapeake Bay, as well as in other waters across the US.



Examples of Collaborative Research in Region 3

- Social science research effort underway in Baltimore to better understand and improve how water quality information is delivered to the public.
- Research on effectiveness of regenerative stormwater conveyance (RSC) as a restoration approach.
- Testing advanced genetic monitoring technologies to identify sources of fecal pollution in Washington D.C.'s MS4 discharges.
- Advancing the science of Environmental DNA (eDNA) to identify species from water samples to inform CWA programs.
- Developing methods to identify and quantify microplastics and their effects on aquatic resources and human health.
- Identifying relevant ecosystem services to inform restoration and incorporating into resiliency decision-making for coastal communities.

2019 Regional-State-Tribal Innovation Projects
Partnerships for Environmental Priorities



Extramural Research

Science to Achieve Results (STAR)

- Funds research grants through a competitive selection process.
- Engages the nation's best scientists and engineers in research to complement EPA's own research.

Research Grant Areas

- [Air Research Grants](#)
- [Climate Change Research Grants](#)
- [Ecosystems Research Grants](#)
- [Health Research Grants](#)
- [Safer Chemicals Research Grants](#)
- [Sustainability Research Grants](#)
- [Water Research Grants](#)
- [Ex: Sustainable Chesapeake: A Community-Based Approach to Stormwater Management Using Green Infrastructure](#)
2012

EPA's Research Website and Science Inventory

- ***ORD science and engineering resources at your fingertips***

EPA's Research website (www.epa.gov/research) provides curated, topic-based web pages to guide you to our most current and active research

EPA's Science Inventory (www.epa.gov/science) provides a searchable catalog of all EPA's published research

- YouTube video:

<https://www.youtube.com/watch?v=DxbDHvVdLXI>



Research Products and Tools

- ORD hosts a public monthly ***EPA Tools and Resources webinar series*** to share research, demonstrate tools and seek input from our partners.
- **Webinar Topics:**
 - ✓ Publicly available, easily understandable, and not overly technical
 - ✓ Relevant to identified state research needs, including case studies
 - ✓ Highlighting work at the nexus of public health and the environment
- **When?**
 - Generally the **3rd Wednesday of every month**, 3-4 PM ET
 - Past webinars and upcoming registration at: <https://www.epa.gov/research/epa-tools-and-resources-webinar-series>





SSWR National Program Director Visit

Suzanne Van Drunick, National Program
Director

Virtual Visit CBPO July 30 to discuss SSWR Water
Research and possible collaborative opportunities
with the CBP



Questions?

