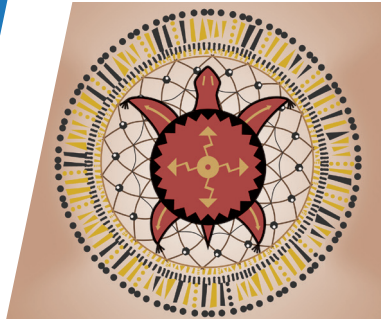




United States Environmental
Protection Agency



Strategic Research Action Plans FY 2023-2026 Tribal Consultation Commitment Product Portfolio



Introduction

The [mission](#) of EPA's Office of Research and Development (ORD) is to provide the best available environmental science and technology to inform and support human health and environmental decision making for federal, state, Tribal, local, and community partners, address critical environmental challenges and anticipate future needs through leading-edge research. Our [strategic goals](#) are to: advance science and technology; support decision making; build a healthy workforce and organization; and be a trusted scientific source. This Tribal Consultation Commitment Product Portfolio (Fiscal Year 2023-2026) is a concise summary of research currently underway to address the human health and environmental decision-making needs of Tribal Nations. The scope of this document is on research addressing Tribal needs that is under ORD's research planning and implementation process. In addition to the research planning and implementation process, ORD conducts short-term, applied research through other programs outside of this portfolio that may also address Tribal needs.

ORD's research is organized around six highly integrated and transdisciplinary National research programs that are closely aligned with the Agency's strategic goals and cross-Agency strategies. Each program is guided by a Strategic Research Action Plan (StRAP) developed by EPA with input from its many internal and external partners and stakeholders:

- [Air, Climate, and Energy StRAP](#)
- [Chemical Safety for Sustainability StRAP](#)
- [Health and Environmental Risk Assessment StRAP](#)
- [Homeland Security StRAP](#)
- [Safe and Sustainable Water Resources StRAP](#)
- [Sustainable and Healthy Communities StRAP](#)

In addition to outlining a research framework, the StRAPs also describe the overall structure and purpose of the program. The strategic directions and research areas identified in each StRAP serve as planning guides for ORD's research centers to design specific research products that address the needs of both internal and external Agency partners and stakeholders. Partner engagement is an essential part of the StRAP development process to identify and prioritize research needs.

Tribal Listening Sessions on High Priority Issues of Interest to Tribes such as Wildfires, Cumulative Impacts, and Climate Change and Equity

This Tribal Consultation Commitment Product Portfolio (Fiscal Year 2023-2026) contains 65 research products across ORD's six national research programs that are aligned with Tribal interests. These products are based on ORD's engagement with Tribal partners including listening sessions, pre-consultation engagement, and formal Nation-to-Nation consultation with Tribes. ORD held listening sessions in 2021 to hear from Tribes on their most pressing technical challenges and science needs to inform development of the StRAPs. These sessions focused on

the cross-cutting research issues of wildfires, cumulative impact assessments, and climate and equity, identified through early engagement with Tribal Partnership Groups (TPGs) and Regional Tribal Operation Committees (RTOCs) as having Tribal interest. ORD received feedback from 56 Tribes on wildland fires, 65 Tribes on cumulative impact assessments, and 49 Tribes on climate and equity. Additionally, ORD sought engagement opportunities to share its research portfolio with partners in the program and regional offices, as well as the National Tribal Caucus during the fall National Tribal Operations Committee (NTOC) meetings. ORD's National Program Directors also met with media-specific EPA-supported Tribal Partnership Groups and the National EPA-Tribal Science Council (6 meetings) to help inform research scoping. Finally, ORD conducted official consultation from March – May 2022 in accordance with the [EPA Policy on Consultation and Coordination with Indian Tribes](#). Key research topics identified through the various engagements and Tribal consultation included climate, wildland fires, chemicals of immediate and emerging concern including PFAS and 6PPD-quinone, solid waste, and emergency management.

The engagements also identified interest and opportunities to advance how research with Tribes is conducted, including the opportunity for EPA and Tribal experts to work together to co-create research and to blend Indigenous Knowledges (IK) and Western ways of knowing as part of research, with recognition that IK belongs to Tribes and must be treated with respect.

ORD continues to engage with Tribes as research implementation progresses. Through this Portfolio, ORD is sharing information regarding each of the 65 research products that align with Tribal interests. This information is organized according to ORD's six National Research Programs. For each National Research Program, a table is provided that contains concise information regarding:

- Research Area: a problem statement to address stakeholder and partner needs in the protection of human health and the environment.
- Output: intended intermediate outcome, purpose, aim, goal, or target.
- Product Title: summarizes the project overall as a tangible scientific or technical deliverable to address the needs of ORD and ORD's partners.
- Expected Impact: brief description of the intended outcome of the work.
- Partner Engagement: ranges from collaborating with specific Tribes, Tribal Partnership Groups, a subset of Regional Tribal Operations Committees, place-based projects, and co-creation of research with Tribes.
- Relevant Regions: where the work is relevant to needs in that geographic location.

ORD will engage with Tribal partners and Tribal Partnership Groups throughout research implementation and pursue co-creation of research considering Indigenous Knowledges where opportunities have been identified and are mutually beneficial. Results from research conducted directly with Tribes or involving data collected on Tribal lands will be shared and

discussed with Tribes before making them publicly available. All other research results will be shared publicly as they become available.

Photo Acknowledgments from Cover Page

Top left: Turtle imagery representing the National EPA-Tribal Science Council

Bottom left: Oyster reef, salt marsh, and seagrass habitat in Pensacola Bay. Water quality monitoring and modeling to support habitat restoration and ecosystem function in Pensacola Bay varies in focus from the shallow nearshore to offshore open water.

Bottom right: Photo of sockeye salmon courtesy of Thomas Quinn, University of Washington

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Air, Climate and Energy (ACE) Research Program

EPA ORD Strategic Research Action Plans FY 2023-2026 Tribal Consultation Commitment Products

Relevant Tribal Needs: Air Pollutants, Climate, Indoor Air Quality, Wildfires, Wildland Fires, Wildland Fire Smoke

Potential for Co-creation with Indigenous Knowledges

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Human Health Impacts of Air Pollution and Climate Change	Impacts of Climate Change-related Extreme Events on Human Health	Climate, Health, and Environmental Justice	Will provide key information for communities or policy makers who seek to understand and develop effective methods of remediation.	Share results with the National Tribal Air Association (NTAA).	Any
Ecosystem Impacts of Air Pollution and Climate Change	Ecosystem-mediated Effects on Human Health and Wellbeing	Ecological Factors Influencing Air Pollution and Potential Health Impacts from Prescribed Fire	Help prioritize management actions and allocate efforts for adapting to new climate-change induced trajectories.	Work with the National Tribal Air Association (NTAA) and Regional Tribal Operations Committees (RTOCs) in Regions 9 and 10.	Regions 9 & 10
	Ecosystem Recovery from Pollution and Climate-related Disturbances	Mapping and Modeling Watershed Resilience to Climate-Related Floods, Droughts, and Wildfire	Help State, Tribal, State, and other managers prioritize climate-change adaptation management actions and activity on the landscape.	Present results to National Tribal Air Association (NTAA), National Tribal Water Council (NTWC), and Region 10 Regional Tribal Operations Committee (RTOC).	Region 10

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Empowering Communities and Individuals to Improve Public and Ecosystem Health	Accessible and Usable Data and Information	Resources to Facilitate Use of Air Sensors	Develop resources to support sensor use, sensor evaluations, and educational outreach which will be publicly available on the Air Sensor Toolbox website .	Share results with National Tribal Air Association (NTAA) and Tribal Science Council (TSC).	Any
Responding to Fires, Floods, and Other Extreme Events	Interventions to Reduce Exposures and Risks from Wildland Fire Smoke	Wildfire Advancing Science Partnerships for Indoor Reductions of Smoke Exposures (ASPIRE) Study	Results shared through Wildfire ASPIRE and ASPIRE Health websites.	Work with Air Quality Program Manager for the Hoopa Valley Tribe.	Region 9
		Wildfire Smoke Air Monitoring Response Technology (WSMART)	Improved smoke monitoring allows for better characterization of and response to wildland fire health risks.	Partner with Tribes, collect feedback, share training materials, and provide webinars.	Any
	Strategies to Reduce Adverse Ecosystem and Water Quality Effects from Wildland Fires	Strategies to Reduce Adverse Hydrologic and Water Quality Effects from Wildfires under a Changing Climate	Results can support Tribes making decisions concerning reducing wildfire impacts, mitigating emerging risks to water quality, ecosystem, and, ultimately, human health.	Share research results with National Tribal Air Association (NTAA), National Tribal Water Council (NTWC), and Regional Tribal Operations Committees (RTOCs) in Regions 4, 7, 9, and 10.	Regions 4, 7, 9, & 10

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Responding to Fires, Floods, and Other Extreme Events	Methods to Inform Resilience Decisions	Regional Climate Projections and Methods to Simulate and Understand Extreme Events	Supports resilience decisions for communities by providing data on climate change and extreme events at sufficiently fine spatial scales to provide adequate spatial and temporal coverage. See Weather Research and Forecasting model .	Share results utilizing a fact sheet.	Any
		Developing New Synthetic Migration and Population Data for Resilience and Adaptation Planning	Updated Integrated Climate and Land-Use Scenarios (ICLUS) which produces spatially explicit projections of population and land-use that are based on widely used global change scenarios. Accelerating resilience and adaptation planning to climate change impacts.	Work with interested Tribal partners.	Any
	Evaluating Susceptibility, Vulnerability, Resilience, and Adaptation Measures	Use Case Prototypes for Robust Decision-Making for Communities Concerning Integrated Water Management under Changing Climate	Training exercises will be developed from case studies to be posted on the Watershed Management Optimization Support Tool (WMOST) website and used in training workshops for stakeholders.	Engage Tribes in case studies, provide WMOST trainings, and share final results with Region 7 Regional Tribal Operations Committee (RTOC).	Regions 6 & 7

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Responding to Fires, Floods, and Other Extreme Events	Evaluating Susceptibility, Vulnerability, Resilience, and Adaptation Measures	Tribal-EPA Co-production of Model-based Strategies for Improving Long-term Ecosystem Resilience and Adaptation to Climate Change in the Puget Sound Basin	Through modeling, and in collaboration with Tribes in the Puget Sound Basin, identify watershed restoration strategies that would mitigate impacts of climate change and increase resilience, with a focus on salmonid populations. See VELMA (Visualizing Ecosystem Land Management Assessments) Model .	Work with the Nisqually, Tulalip, Snoqualmie, and Nooksack Tribes.	Region 10
Transitions to a Sustainable Future	Regional Capacity Building for Sustainable Transitions	Learning from Capacity Building and Co-Development of Knowledge Approaches with EPA Region 10, Alaskan Tribes, and Rural Communities' Waste Management in Response to Climate-related Changes	Apply a co-development of knowledge approach to support traditional knowledges in designing sampling with targeted timing and diverse site characteristics; developing solutions based on both Indigenous Knowledges and Western science; and building a network of partners, experts, and community members who can advise and help communicate results and implement decisions.	Work with Brevig Mission, City of Brevig Mission; City of Nulato, Nulato Village Council; Northway Village, Northway Village Council; Village of Old Harbor, Alutiiq Tribe of Old Harbor; and City of Quinhagak, Native Village of Kwinhagak aka Quinhagak.	Region 10

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Transitions to a Sustainable Future	Regional Capacity Building for Sustainable Transitions	Regional Capacity Building to Develop Resources that Facilitates Implementation of Regional Monitoring Networks in Aquatic Systems and Data Analysis	Aquatic resource monitoring is needed to support Clean Water Act goals and to understand changing baselines due to climate change. The training materials will contribute to regional capacity building to facilitate the implementation of regional monitoring networks and to conduct data analysis along with promoting peer-to-peer learning and facilitating the uptake of new methods and information.	Work with the Red Lake Nation, present to Region 5 Regional Tribal Operations Committee (RTOC), provide training to the National Tribal Water Council (NTWC).	Region 5
		The Role of Regional Climate Assistance Network (RCAN) Co-Production Pilots in Providing Place-Based Climate Solutions	Will expand the development and use of science on climate impacts and responses—both mitigation and adaptation and build regional networks of climate expertise connecting experts to practitioners and both to communities.	Work with Region 10 and Alaskan Tribal Villages (Brevig Mission, Northway, Nulato, Old Harbor, Quinhagak and Savoonga).	Region 10

Chemical Safety for Sustainability (CSS) Research Program

EPA ORD Strategic Research Action Plans FY 2023-2026 Tribal Consultation Commitment Products

Relevant Tribal Needs: 6PPD-Quinone, Bioaccumulation, Polychlorinated biphenyls (PCBs), Per- and Polyfluoroalkyl Substances (PFAS), Tribal Lifeways, Tools Translation

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Rapid Exposure and Dosimetry (RED)	Collect and Curate Exposure-relevant Data	Fate and Transport of Inadvertently Generated Polychlorinated biphenyls (PCBs) from Consumer Product Sources to Tribes and Schoolchildren	Improved exposure estimates and best management practices for schools and childcare centers to reduce PCB exposure, and improved consumer product purchasing guidelines.	Conduct outreach and share results in webinars with the interested Tribal Nations such as the Penobscot Nation, Yakama Nation, and Puyallup Tribe, as well as the National Tribal Toxics Council (NTTC) and the Spokane River Regional Toxics Task Force (SRRTTF).	Regions 1, 9, & 10
Ecotoxicological Assessment and Modeling (ETAM)	Develop and Demonstrate Ecological Models to Characterize Risk of Environmental Contaminants for Risk Assessment at National, Regional, and Local Scales	Ecological Effects of Tire Wear Particles and 6PPD-Quinone on Marine Benthic Communities	Support environmental managers and regulators in managing effects caused by tire wear particles (TWP) and 6PPD-quinone.	Provide regular updates to the Region 10 Regional Tribal Operations Committee (RTOC).	Region 10

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Ecotoxicological Assessment and Modeling (ETAM)	Develop and Demonstrate Ecological Models to Characterize Risk of Environmental Contaminants for Risk Assessment at National, Regional, and Local Scales	Aquatic Invertebrate Translator 1.0	A suite of translator models that will improve estimates of chronic exposure impacts to aquatic invertebrates with a focus on freshwater mussels. Improved development of aquatic life criteria, can be incorporated into ecological risk assessment (ERA) process.	Share results with National Tribal Toxics Council (NTTC).	Regions 4, 5,7 & 10
	Improve Ecological Methods and Models for Predicting Exposure, Accumulation and Effects of Per- and Polyfluoroalkyl Substances (PFAS)	Evaluating Bioaccumulation of PFAS in Freshwater Systems	Inform management approaches related to PFAS in fish.	Share final results with National Tribal Toxics Council (NTTC), Tribal Science Council (TSC), and Tribal PFAS Working Group.	Any
		Bioaccumulation of PFAS in Marine Aquatic Food Webs	Improved understanding of factors controlling PFAS bioaccumulation in coastal ecosystems.	Share final results with National Tribal Toxics Council (NTTC), Tribal Science Council (TSC), and Tribal PFAS Working Group.	Any

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Integration, Translation and Knowledge Delivery (ITK)	Knowledge Delivery and Interoperability in Support of Chemical Safety Decisions	ECOTOX User Interface Updates, New Functionality, and Communication: FY23-FY24	Improve the ability of ECOTOX users to rapidly identify and review relevant studies for research and risk assessment.	Share results with National Tribal Toxics Council (NTTC) and other interested Tribal partners.	Any
		CompTox Chemicals Dashboard : FY25	Provide data to inform decision making, including chemical screening and prioritization.	Work with and share results with National Tribal Toxics Council (NTTC). Completed trainings and materials available on the EPA website .	Any
	Cross-disciplinary Integration and Applied Case Studies to Support Chemical Safety Decision Making	High Throughput Hazard Screening for 6PPD-Quinone, a High Priority Contaminant.	Inform risk assessment and management decision making concerning 6PPD-q.	Engage and share results with National Tribal Toxics Council (NTTC), Tribal Science Council (TSC) and Region 10 Regional Tribal Operations Committee (RTOC).	Region 10

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Integration, Translation and Knowledge Delivery (ITK)	Translation of Research for Chemical Safety Decision Making through Demonstration, Training, Outreach, and Partner Engagement	Demonstration of Case Studies to Engage Stakeholders and Apply Chemical Safety for Sustainability (CSS) Cross-Disciplinary Research to Support Chemical Safety Decision Making	Increased partner usage of CSS research to help inform public health and environmental decisions.	Share final results with National Tribal Toxics Council (NTTC), Tribal Pesticide Program Council (TPPC), and Region 9 Regional Tribal Operations Committee (RTOC).	Region 9
		Outreach Activities, Stakeholder Engagement and Informational Resources To Translate and Encourage Use of Chemical Safety for Sustainability (CSS) Research	Increased utility of CSS research results for informing public health and environmental decisions.	Engage with Tribes, the Tribal Science Council (TSC), and National Tribal Toxics Council (NTTC).	Regions 3, 5, 7, 9, & 10

Health and Environmental Risk Assessment (HERA) Research Program

EPA ORD Strategic Research Action Plans FY 2023-2026 Tribal Consultation Commitment Products

Relevant Tribal Needs: Lead, PFAS, Tribal Lifeways

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Science Assessment Development	Portfolio of Final Assessment Products to Support Decision-making	Final Integrated Risk Information System (IRIS) Assessment for PFHxA	Expand understanding of effects of PFAS on human health to inform risk management decisions and risk communication.	Share results with the National Tribal Toxics Council (NTTC) and the Tribal PFAS Working Group.	Any
		Final Integrated Risk Information System (IRIS) Assessment for PFHxS	Expand understanding of effects of PFAS on human health to inform risk management decisions and risk communication.	Share results with the National Tribal Toxics Council (NTTC) and the Tribal PFAS Working Group.	Any
		Final Integrated Risk Information System (IRIS) Assessment for PFDA	Expand understanding of effects of PFAS on human health to inform risk management decisions and risk communication.	Share results with the National Tribal Toxics Council (NTTC) and the Tribal PFAS Working Group.	Any
		Final Integrated Risk Information System (IRIS) Assessment for PFNA	Expand understanding of effects of PFAS on human health to inform risk management decisions and risk communication.	Share results with the National Tribal Toxics Council (NTTC) and the Tribal PFAS Working Group.	Any

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Science Assessment Development	Portfolio of Final Assessment Products to Support Decision-making	Final Integrated Science Assessment for Lead	Assessment will serve as the scientific foundation for EPA's review of the National Ambient Air Quality Standards (NAAQS) for Lead (Lead (Pb) Air Quality Standards US EPA).	Share results with National Tribal Toxics Council (NTTC) and Tribal Science Council (TSC).	Any
Emerging and Innovative Assessment Methodologies	Expand and Update Exposure Factors Handbook (EFH) Chapters	Establishing Partnerships with Agency Users and Implementing Scientific Content Updates in the EFH	Ensures the EFH presents up-to-date information and recommendations using systematic review principles in the review of the evidence.	Share results with National Tribal Toxics Council (NTTC).	Any

Homeland Security (HS) Research Program

EPA ORD Strategic Research Action Plans FY 2023-2026 Tribal Consultation Commitment Products

Relevant Tribal Needs: Climate, Emergency Management, Solid Waste

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Contaminant Characterization and Risk Assessment	Developing Reliable Strategies, Data Management Capabilities, and Methodologies for Sampling, Processing, and Analysis to Address Contamination Incidents and Inform Mitigation and Remediation Decisions	Tools to Inform, Support, and Enhance the Environmental Sampling and Analytical Methods (ESAM) Program for the Environmental Characterization Process for Chemical, Biological, Radiological, and Nuclear (CBRN) Contaminants.	CBRN contaminant characterization and remediation efforts will be enhanced with tools for sampling, analysis, and data management.	Share results with Tribal Waste and Response (TWAR) Steering Committee and Tribal Emergency Response Professionals.	Any
Water Systems Incident Response Support	Tools and Methodologies to Inform Infrastructure Decontamination and Management of Drinking Water, Wastewater, and Stormwater	Testing Mobile Water Treatment Technologies in the Field	Responders will be able to better provide safe water during or after events where drinking water systems are compromised.	Share results and provide demonstration and training for interested Tribes and the Tribal Waste and Response (TWAR) Steering Committee, the National Tribal Water Council (NTWC), and Tribal Emergency Response Professionals.	Any

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Waste Management	Advancing Approaches and Tools for Waste and Materials Management	Advancements in Waste Management Tools - Improving Usability and Accessibility	Improved and reduced maintenance costs related to waste management, improved usability and accessibility of waste management tools.	Share results with Tribal Waste and Response (TWAR) Steering Committee and provide training workshop.	Any
Systems-based Decision Making	Models, Tools, and Information to Build Equitable Community Resilience to the Changing Climate Induced Disasters	Incorporate Feedback in Water and Waste Infrastructure Tools to Support Decision-making	Improved usability of decision-support tools for climate-induced disasters.	Share available subproduct and final results with Tribal Waste and Response (TWAR) Steering Committee and National Tribal Water Council (NTWC).	Any
		Apply Decision-support Tools in Case Studies to Increase Equitable Community Resilience	Enhanced usefulness of tools for support in disasters.	Share available sub-product and final results with the Tribal Waste and Response (TWAR) Steering Committee and Tribal Science Council (TSC).	Any

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Communities, Resilience, and Remediation	Social Analysis of Remediation, Removal, and Disaster Waste and Debris Management (DWDM) Decisions and Outcomes	Decision-making for Disaster Waste and Debris	Help state, local, Tribal, and territorial agencies make sustainable and resilient debris removal decisions during pre-incident planning, emergency response, and disaster recovery.	Share results with the Tribal Waste and Response (TWAR) Steering Committee, the annual Tribal Lands and Environment Forum (TLEF), and the National Tribal Emergency Management Council. Invite Tribes to engage in case study research.	Any
	Social Considerations for Building Community Resilience	Design for Community Resilience and Equity	Enable communities to build their resilience before an emergency occurs and respond and recover from incident. Update existing tools (e.g., Environmental Resilience Tools Wizard).	Provide trainings and webinars for Tribal Waste and Response (TWAR) Steering Committee, and National Tribal Emergency Management Council, and at the Tribal Lands and Environment Forum (TLEF).	Any

Sustainable and Healthy Communities (SHC) Research Program

EPA ORD Strategic Research Action Plans FY 2023-2026 Tribal Consultation Commitment Products

Relevant Tribal Needs: Climate, PFAS, Solid Waste, Tribal Lifeways, Waste Management

Potential for Co-creation with Indigenous Knowledges

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Site Characterization and Remediation	Methods, Tools, and Guidance on Remediation Options	Innovative Research for Using Biochar to Clean-Up and Promote Recovery of Mine Waste Contaminated Marine and Freshwater Sediments and to Promote the Recovery of Impacted Benthic Organisms	Provide an expanded decision support tool that includes a guide for making critical cleanup decisions for contaminated sediments that Federal, State, and Tribal RPMs must make for cleaning up mining waste contaminated sites.	Garner input from and share results with the Organized Village of Kasaan; engage the Region 10 Regional Tribal Operations Committee (RTOC).	Region 10
		Development of a Monitoring Tool for 1) Identification, and 2) Post-Remediation Remedy Effectiveness of Biological Hotspots for Metals Uptake at Superfund Sites	Monitoring practices/tools that may be applied to other Superfund Sites with waterfowl species and expanded to include other non-traditional eco-receptors.	EPA ORD is actively collaborating with the Coeur d'Alene Tribe, US Fish and Wildlife Service, Idaho Department of Fish and Game, US Geological Survey (USGS), and EPA Region 10 with the common goal of reducing aquatic and terrestrial ecosystem impacts due to metals release from the former Bunker Hill Mine.	Region 5

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Site Characterization and Remediation	Methods and Approaches to Improve Groundwater Characterization and Remediation at Heterogeneous Contaminated Sites	Geophysical Methods, Approaches, and Related Tools to Demonstrate and Improve Efficient and Effective Subsurface Characterization and Monitoring of Complex Contaminated Sites	Assists Regions and Tribal Governments to better characterize varied contaminated sites.	Partner with the Hopi Tribe, the Chemehuevi Indian Tribe, and the Region 9 Tribal Leaking Underground Storage Tank (LUST) Group.	Region 9
	Innovative Technologies to Eliminate or Control Mining Wastes as Sources of Water Contamination	Innovative Research to Guide and Demonstrate the Beneficial Reuse of Waste Products to Support the Clean-up, Revegetation and Closure of National Priorities List (NPL) Sites.	Decision support tools for use at the hundreds of thousands of U.S. sites impacted by mining and mining wastes.	Share results with Region 10 Regional Tribal Operations Committee (RTOC) and Tribal Superfund Working Group (TSFWG) via webinar.	Region 10
Leaking Underground Storage Tanks	Underground Storage Tanks Site Management: Models, Metrics, and Spatial Tools	Groundwater Vulnerability Model	Enhance prevention, including approaches to assess and triage site cleanups, and evaluate appropriate cleanup technologies. See Underground Storage Tank (UST) Finder	Share results and provide training for Tribal Waste and Response (TWAR) Steering Committee and National Tribal Water Council (NTWC).	Any

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Leaking Underground Storage Tanks	Underground Storage Tanks Site Management: Models, Metrics, and Spatial Tools	Underground Storage Tank Finder	Support decision-making on site cleanups and program management based on risk to co-located public and private drinking water sources. New versions to the UST Finder V1 .	Engage with the Tribal Waste and Response (TWAR) Steering Committee and Institute for Tribal Environmental Professionals (ITEP).	Any
	Underground Storage Tanks Site Management: Extreme Weather Events and Environmental Justice	Management of Underground Storage Tanks Sites While Protecting Water Resources and EJ Communities and in Extreme Weather Events	Approaches for mitigation and clean-up in the event there are fuel releases due to these extreme weather events.	Share updates and final results with the Tribal Waste and Response (TWAR) Steering Committee.	Any
		Aboveground Storage Tanks (AST) Clean Water Act (CWA) Hazardous Substances: Climate Change and the Impacts on Environmental Justice	Better management and protection of AST's nationwide in preparation to withstand extreme weather events and provide support for post event mitigations and remediation of accidental releases.	Share final results with Region 10 Regional Tribal Operations Committee (RTOC) and the Tribal Waste and Response (TWAR) Steering Committee.	Region 10

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Chemicals of Emerging and Immediate Concern	Remediation and Treatment to Manage PFAS in the Environment	Technical Support to the Program Offices, Regions, States, Tribes and Communities on Managing PFAS-Containing Wastes and Contaminated Sites.	This Technical Assistance will be applied across the US and provide science to mitigate the PFAS problem.	Work hand-in-hand with Tribes in technical support settings, and share results with the Tribal PFAS Working Group.	Any
Landfill Management	Environmental Justice and Climate Change Implication of Waste	Environmental Sampling to Address and Support Rural Alaska Native Villages and Alaska Tribes' Shared Concerns Regarding the Potential Impacts of Contaminants from Landfills	Support managers to make informed site-specific decisions and improved waste management. Community members will also be able to make informed choices about when and where they gather drinking water and subsistence foods.	Partner with the Brevig Mission, City of Brevig Mission; the City of Nulato, Nulato Village Council; the Northway Village, Northway Village Council; the Village of Old Harbor, Alutiiq Tribe of Old Harbor; and the City of Quinhagak, Native Village of Kwinhagak aka Quinhagak.	Region 10

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Benefits from Remediation, Restoration, and Revitalization	Contribution of Site Remediation and Restoration to Revitalizing Communities and Improving Well-being	Ecosystem Service-based Approaches to Support Community Restoration and Revitalization	Lessons learned and guidance from these efforts can be applied at other marine estuary systems and freshwater bays looking to incorporate ecosystem service-based approaches in restoration and revitalization plans.	Work with Tribes in Puget Sound, seek input on research translation materials, and share in-progress and available sub-product results and final results.	Region 10
	Increasing Environmental Benefits and Community Involvement	Community Capacity, Ecosystem Services, and Decisions in Coupled Social-environmental Systems	Better understand the interfaces between research, solutions, community, and practitioners to build collective capacity that can be applied in the Great Lakes region and nationally.	Work with existing Tribal groups in the Great Lakes area and share final results with Tribal Science Council (TSC).	Region 5, EPA's Great Lakes National Program Office (GLNPO)

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Cumulative Impacts and Community Resilience	Through Cumulative Impact and Cumulative Risk Assessments, Characterize and Quantify Select Interrelationships Between Environmental Stressors and Their Impacts on Disproportionately Impacted and Overburdened Communities to Support Various Decision Contexts	Traditional Ecological Knowledge and Riparian Functional Assessments to Inform Cumulative Impacts to Tribes	Case studies would be shared with United South & Eastern Tribes (USET) for potential inclusion into the T-FERST decision-support tool to guide Tribes on how to implement Tribal-specific Cumulative Impact Assessments (CIAs).	Partner with Tribes and Tribal-owned organizations; work with Tribal Science Council (TSC) and Region 9 Regional Tribal Operations Committee (RTOC).	Region 9
		Exploring Cumulative Environmental Impacts on Native American and Alaska Native Community Health through Authentic Engagement and Culturally Relevant Participatory Methods	The inclusion of Tribal/Indigenous knowledge systems and environmental domains in the design of this community-engaged collaboration and associated research outcomes will lead to better, more wholistic environmental decisions and inform future approaches to work with Tribal and indigenous communities.	Partner with the Bad River Band of the Lake Superior Tribe of Chippewa Indians, Great Lakes Inter-Tribal Epidemiology Center (GLITEC), Great Lakes Indian Fish & Wildlife Commission (GLIFWC), Region 5, and US Geological Survey (USGS).	Region 5

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
<p>Cumulative Impacts and Community Resilience</p>	<p>To Support Community Decision Making for Resilience through Cumulative Impact Assessments, Characterize and Quantify Social, Natural, and Built Environment Stressors and their Interaction with Climate Change and Associated Hazards for Disproportionately Impacted and Overburdened Communities</p>	<p>Tribal Partnerships to Improve Community Resilience, Sustainability, Education, and Community Science</p>	<p>Improved Tribal and community capacity to apply these tools and approaches to improved resilience planning through education, dissemination of decision support tools and materials, and development of community science capabilities.</p>	<p>Partner with the Choctaw Nation, the Chickasaw Nation, and the Lumbee Tribe of North Carolina.</p>	<p>Any</p>

Safe and Sustainable Water Resources (SSWR) Research Program

EPA ORD Strategic Research Action Plans FY 2023-2026 Tribal Consultation Commitment Products

Relevant Tribal Needs: Climate, Drinking Water, Harmful Algal Blooms (HABs), PFAS, Translation Tools, Tribal Lifeways, Water Management, Water Modeling (6PPD), Water Resources

Potential for Co-creation with Indigenous Knowledges

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Watershed Assessment	Stressor-response and Multiple Stressor Impacts	Development and Assessment of Stressor-response Relationships for Climate and Related Stressors	Improve bioassessment informed by expected climate impacts.	Share results with National Tribal Water Council (NTWC).	Any
	Water Quality Benefits and Modeling	Water Quality Modeling and Data Synthesis	Improved usefulness of water quality modeling and observational data to assess the impacts of federal, state, Tribal, and local decisions to achieve water quality goals.	Share results with National Tribal Water Council (NTWC).	Any
Ecosystem and Community Resilience	Water Mapping and Functional Analyses	Development of Open Access Data and Tools to Support Surface Water Analyses	Enhance the usefulness of water quality data, analyses, and assessments for states, Tribes, municipalities, agriculturists, educators, and commercial enterprises.	Share results with the National Tribal Water Council (NTWC).	Any

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Advanced Ambient Water Quality Research	Aquatic Life Guidelines for Chemicals	Field-Based Water Quality Databases, Methods, and Tools	The usefulness of water quality data, analyses, and assessments will be enhanced and made more compelling. Design and outreach will encourage exploration by the environmental community and public.	Empower Tribes in developing field-based water quality criteria e.g., Region 5 and Grand Portage Band of Lake Superior Chippewa. Provide training on use of tools, models and datasets.	Region 5
Assessment and Management of Harmful Algal Blooms (HABs)	Health Effects and Toxicity	Expanding the Scope of Biological and Chemical Methods to Characterize HABs and Associated Cyanotoxins	Standard operating procedures and other guidance documents added to EPA cyanohabs website . Support of partners via collaborative studies on the impact of cyanotoxins on human health and the wider ecology.	Share results with National Tribal Water Council (NTWC) and provide technical support and webinars.	Any

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Assessment and Management of Harmful Algal Blooms (HABs)	Science of Harmful Cyanobacteria Bloom Forecasting	Forecasting of System Vulnerability to HABs, HAB Spatiotemporal Dynamics, and HAB biotic and Metabolic Profiles across Freshwater Ecosystems	Improved stakeholder ability to track movement of HABs due to prevailing winds, predict shoreline conditions causing or caused by HABs, identify HABs triggers besides excess nutrients, and compare and utilize individual predictors/indicators of HAB occurrence and toxicity.	Share results with National Tribal Water Council (NTWC).	Regions 5 & 7
Nutrients	Nutrient Impacts and Tools to Support Nutrient Criteria Development	Modeling to Assess Nutrient-related Stressors and Ecosystem Recovery in Freshwater and Coastal Ecosystems	Inform management decisions across a range of ecosystems and watershed scales, and within the context of future climate conditions.	Share results with National Tribal Water Council (NTWC).	Regions 1, 4, 5, 6 & 10
Alternative Water Sources for Climate Adaptation	Facilitating Implementation of Alternative Water Use Through Improved Treatment Characterization and Monitoring	Characterization of Chemical Water Quality and Applicability of Chemical Surrogates for Assessing Treatment Performance in Water Reuse	Supplemental treatment methods to remove difficult-to-treat-pollutants to support potable reuse.	Share results with interested Tribal communities and nations.	Region 9

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Drinking Water/ Distribution Systems	Lead and Copper Drinking Water Research to Support Communities	Assess and Develop Tools to Identify Lead Sources in Drinking Water and Evaluate Corrosion Control Assessment Tools	Support the Lead and Copper Rule and consider the challenges of small and disadvantaged communities.	Share results with National Tribal Water Council (NTWC) and Tribes participating in Annual EPA Small Systems Workshop.	Any
Per- and Polyfluoroalkyl Substances (PFAS)	PFAS Sources and Occurrence in Water	Site and Source Characterization of PFAS in Water	Manage PFAS risk to human health and the environment.	Share results with Tribal PFAS Working Group.	Any
Stormwater Management	Leveraging Benefits from Greenspace and Green Infrastructure While Managing Stormwater	Develop Metrics, Models and Monitoring Techniques to Determine Optimal Green Infrastructure Placement and Size for Urban Stormwater Control for Municipal Separate Storm Sewer Systems (MS4s) and Combined Sewer Communities	Municipalities can justify outlays of capital for green infrastructure.	Collaborate with Puget Sound Tribal partners: Nisqually, Tulalip, Snoqualmie Tribes and provide results to other interested Tribes through Region 10 Regional Tribal Operations Committee (RTOC).	Region 10

Research Area	Output	Product Title	Expected Impact	Partner Engagement	Relevant Regions
Stormwater Management	Recommendations and General Procedures for Monitoring and Managing Stormwater	Where the Rubber Hits the Road: Remediation of Tire-related Pollutants in Stormwater	Improved management and remediation of tire pollutants.	Provide results to interested Tribes.	Any
Tech Support for Communities	Training and Outreach	Training on Solutions for Small Drinking Water System Challenges: Annual Drinking Water Workshop and Small Drinking Water Systems Webinar Series	These outreach efforts will provide current information, resources, and training needed to assist small drinking water systems in building capacity, systems sustainably, and providing equitable access to drinking water.	Collaborate with Association of State Drinking Water Administrators (ASDWA) to produce training.	Any

Contact Information

Monica Rodia

ORD Senior Tribal Program Manager

Executive Secretary, Tribal Science Council

US EPA Office of Research and Development

Office of Science Advisor, Policy and Engagement (OSAPE)

Email: Rodia.Monica@epa.gov | Phone: (202) 564-8322

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