Plan for the Ohio River Basin
—2020 - 2025 —

DRAFT

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Introduction

The Ohio River Basin covers 204,000 square miles encompassing parts of 15 states. It is home to over 25 million people equaling 8% of the population of the U.S. and provides drinking water to three million people. It is 981 miles long and runs from the confluence at the Allegheny and the Monongahela Rivers in Pittsburgh, Pennsylvania and ends in Cairo, Illinois. The Ohio River and its tributaries run through diverse landscapes including forests, agricultural, and urban lands and is home to 160 species of fish and 50 species of mussels, including a number of endangered species.

Many functions depend on the natural resources the Basin provides. From transporting products and people to providing much needed "ecosystems services" such as flood control, recreation, and supporting diverse wildlife, the waters of the Ohio River Basin are a precious resource for all those that call it home. More than 184 million tons of cargo are transported on the Ohio River each year, with coal being the most common. The U.S. Army Corps of Engineers (USACE) owns and operates 20 locks and dams on the Ohio that enable river transport. Additionally, there are 38 power generating facilities on the river.

The Ohio River Basin faces many challenges that threaten the health and security of its ecosystems and residents. Urban runoff, agricultural activities, and abandoned mines are major causes of water pollution. Populations of wildlife are at risk. Many of the causes of this also increase flooding or the loss of wetlands. Change in hydrologic regime, loss of riparian zone, and loss of ash trees from the emerald ash borer are major threats to habitat and water quality. Emerging contaminants of concern, excess nutrients, and sedimentation also threaten the health and prosperity of the Ohio River Basin. Additionally, invasive species are an existing and growing threat to the health of ecosystems and have substantial economic impacts.

Non-native invasive species pose a significant threat to ecological resources in the Ohio River Basin. Species present within the Basin include Asian carp, zebra mussels, emerald ash borer, white-nose syndrome fungal pathogen, purple loosestrife, kudzu, and many other plant and wildlife species. These invasive species are capable of outcompeting native species for resources, altering ecosystem functions, and causing harm to the economy, environment, and human health. The impacts of invasive species on our natural ecosystems and economy in the U.S. cost billions of dollars each year, and many of our commercial, agricultural, and recreational activities depend on healthy native ecosystems.

Planning Assistance to States Study

Driven by Ohio River Valley Water Sanitation Commission (ORSANCO), and later by the Clean Water Act and other environmental regulations, billions of dollars have been invested by states, the federal government, and communities to improve water quality and restore ecosystems in the Ohio River Basin. In addition to the government initiatives, many agricultural, business, and watershed organizations have been integral to the Basin improvement. While there has been substantial progress over the past 70 years, the remaining and emerging challenges are the most difficult. Resources are likely to be adequate to continue progress if water resources and ecosystems are a high priority. Clear priorities for the Ohio River Basin were identified as a critical need by the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers (USACE), andORSANCO at their 2009 Summit.

In 2019 ORSANCO, ORBA, and USACE launched a Planning Assistance to States initiative to move from discussions into the development of a collaborative strategy for the Ohio River Basin. These three organizations and the planning process are described in Appendix 1.

Since the 2009 Summit in Covington, KY, ORBA has planned and facilitated ten collaborative summits in five Basin states.

Columbus, OH (2010)
Charleston, WV (2010)
Indianapolis, IN (2011)
Huntington, WV (2011)
Nashville, TN (2012)
Louisville, KY - with the America's Watershed Initiative (2014)
Cincinnati, OH - with the Ohio River Basin Consortium for Research and Education (ORBCRE) (2016)
Huntington, WV - with ORBCRE (2017)
Covington, KY - with ORBCRE (2018)
Athens, OH - with ORBCRE (2019)

There were no Summits in 2013 and 2015 as ORBA resources were consumed supporting the America's Watershed Initiative. This resulted in the development of the six driving goals adopted by ORBA, and the US Army Corps of Engineers' study that resulted in the report entitled: Ohio River Basin - Formulating Climate Change Mitigation/Adaptation Strategies through Regional Collaboration with the ORB [Ohio River Basin] Alliance.

To help build upon this extensive background of cooperation, ORBA proposed a Planning Assistance to States (PAS) initiative that ORSANCO, acting as the fiscal sponsor for ORBA with $150,000 from the Commonwealth of Kentucky, executed with USACE. USACE Louisville District budgeted $200,000 toward the overall $400,000 budget, and ORSANCO provided $50,000 of work-in-kind match. The $400,000 PAS facilitated broad collaboration to develop this Ohio River Basin-wide Strategic Plan with strategies to advance Ohio River Basin goals.

Key activities to establish strategic plans for each goal include:

- Holding a stakeholder webinar in which an array of state collaborations, organizations and interested stakeholders were invited to help identify gaps in collaborations, stakeholders, and strategic documents that should be included.
- Holding four webinars, each focused on two of the eight goals, in which experts representing stakeholders for the goal areas were invited to participate specifically to help ensure that there were no significant gaps in the priorities for each goal area.
- Holding eight goal-focused, facilitated discussions at the 2019 ORBA Summit to vet the strategies identified through the efforts to date, to seek any higher priorities that are missing, and to evaluate the level of consensus on the strategies for each goal.
- Following the Summit, focus groups were convened for any goal area that lacked a consensus set of goals in order to refine the goals so that consensus could be reached.
- A formal draft strategy was then prepared and circulated for comment among key stakeholders (see Appendix 3).

Vision, Ideals, and Values

Vision: Through collaboration of a diverse mix of organizations working in the Ohio River Basin, we envision a watershed that is a healthy, clean, and productive system that sustains ecosystems and provides valuable services for all, now and in the future.

Ideals for Ohio River Basin:

- The public and governments have pride of place in the Ohio River watershed that inspires a broad stewardship ethic and support for the natural resources of the Basin that, in turn, helps attract and retain a talented workforce.

- Broad stakeholder collaboration results in a holistic and sustainable systems approach, communicated in a unified voice, to further policies and funding for advancing progress on all Basin-wide priorities to protect ecosystems and improve economic vitality.

- The high quality of waters of the Ohio River Basin provide safe drinking water after reasonable treatment, accessible recreational waters, and productive fisheries free of consumption advisories.

- The diversity of aquatic and riparian ecosystems are healthy and sustainable.

- The inland waterways infrastructure is developed and maintained to support recreational boating and efficient commercial navigation/intermodal transportation, and grows the

economies enabled by these uses of water resources (understood to include water quality and quantity) consistent with sustaining healthy ecosystems.

- The establishment and spread of invasive species and recurrent/persistent harmful algal blooms are prevented.

- Development and transmission of credible knowledge, including consideration of impacts on economically or socially disadvantaged groups, underpins wise decisions impacting water resource use in the basin including the drinking water, waste water, agriculture, energy, recreation, fishing, river navigation, and manufacturing industries, as well as the ecosystems, that depend on them.

- Promotion of the history and story of the river as a primary and critical corridor of movement for our ancestors and the settlement of our country.

Values:

Through the planning process, several themes arose that crossed the boundaries between goals to provide guidance by setting the overarching values of this effort.

Comprehensive, Connected System: There is a need to consider the Ohio River Basin as a connected system; solutions should be approached from this perspective in order to impact the Basin as a whole. In the same measure, it is imperative that input be gathered from a wide array of stakeholders, including both governmental and non-governmental organizations. Having a comprehensive approach that recognizes the interconnectedness of the river system as well as the entities working within the Basin will provide solutions that address the complexity of the system and the correlated impacts of those working to improve it.

Long Term Considerations: This plan strives to incorporate long term strategic actions that ensure climate change, resiliency and sustainability are all prioritized and influence the preferred strategies. The plan will incorporate identification and preparation for slow-developing or non-linear threats, such as droughts, increased flooding, human population impacts, disruptive technologies, earthquakes, and infrastructure disturbances into all goals.

Nature-Based Considerations: Prioritize and incentivize nature-based solutions in order to take an innovative, environmentally sensitive approach to problem solving. These solutions include the consideration of positive ecosystem restoration opportunities in transportation infrastructure and flood risk management projects.

Research and Education: Ensure that research and education accelerates improvement in the Ohio River Basin, including the promotion of further academic studies of climate change to reduce uncertainty of future conditions.

Consideration of Vulnerable Populations: Prioritize the needs and vulnerabilities of at-risk, low-income or underserved communities given the history of ecological and social injustice.

Ensure that all strategic actions are just and equitable with a focus on flood control measures that help those most in need.

Goals

Nation's Most Valuable River Transportation and Commerce Corridor: Provide for safe, efficient, and dependable commercial navigation within the Ohio River Basin to ensure a competitive advantage for our goods in global and regional markets; sustain a water use system to efficiently and effectively support agricultural, industrial, and energy productivity.

Healthy and Productive Ecosystems: Conserve, enhance, and restore ecosystems within the Ohio River Basin to support natural habitats and the fish and wildlife resources that depend upon them.

Abundant Clean Water: Ensure the quality and quantity of water in the Ohio River Basin is adequate to support the economic, social, and environmental functions that are dependent on it.

World-class Nature-based Recreation Opportunities: Enrich the quality of life for people and recreation-based economies by maintaining and enhancing riverine, lake, and wetland-associated recreation within the Basin.

Reliable Flood Control and Risk Reduction: Provide reliable flood protection and risk reduction through well-managed and maintained infrastructure, including appropriate floodplain connections for water conveyance and ecosystem benefits, and management of surface and storm water runoff to better protect life, property, and economies.

Knowledge and Education to Inform Decisions: Ensure that research and education adequately inform Ohio River Basin-wide economic, social, and environmental decisions; enhance the profile of education organizations in the Basin that synergize efforts to garner effective public involvement in the stewardship and management of the Basin's resources.

1. Nation's Most Valuable River Transportation and Commerce Corridor

Challenges and Opportunities:

Commercial navigation in the Ohio River, part of the nation's Inland Waterway System, provides an economical method of transporting commodities and bulk goods. Roughly 214 million tons of grain, steel, chemicals, petroleum, construction materials such as rock or sand, and coal are transported on Basin rivers annually. A typical 15 barge tow obviates the need for about 1,000 tractor trailers on Basin roads. Electricity production from scores of power plants along the river, and the businesses and communities that utilize the electricity, rely on the efficient barge

transport of coal. With potential importance recognized by George Washington, the Ohio River navigation has been a significant economic engine for the Basin states.

The historic development of the watershed was directly attributable to the rivers and natural resources of the Ohio River Basin. With the changing characteristics of the region's economic drivers, regional approaches to development will be critical for providing jobs and raising incomes throughout the Basin. The region is considered "water rich", meaning industries requiring consumptive or non-consumptive water use can locate and grow here. Our river navigation system and ports have substantial capacity to accommodate industries that would benefit from efficient river transport.

Much of the lock and dam infrastructure is beyond its design life, and substantial maintenance, repair, and replacement is needed to ensure reliable river navigation. Recent extreme events, both flood and drought, have also imposed limitations on transportation for longer durations, and trend toward greater frequency. The Inland Waterways Users Board recently completed its annual Report to Congress that provides a comprehensive strategy for maintaining the nation's waterways infrastructure, including the infrastructure of the Ohio River Basin navigation system. While this goal focuses on transportation, maintaining pool levels sufficient for river navigation also provides other benefits by providing water for drinking, industrial use, and ecological flows.

Objective 1: By 2025, the inland waterways infrastructure is efficiently funded to consistently maintain authorized river pools and the economical transportation of goods on the inland waterways.

Strategic Actions:

- Advocate for consideration of ALL (national and regional) benefits, not just transportation rate savings, in valuation for USACE projects. All benefits include value of water supply, hydrology impacts, ecosystem services, recreation, national security, system infrastructure, and resource resilience.

- Create and maintain publicly accessible, comprehensive data on usage of locks and dams including all vessels and tonnage that harmonizes data from the Institute of Water Resources and Lock Performance Monitoring System.

- In collaboration with Waterways Council, Inc. and other stakeholders, advocate for priorities that apply to the Ohio River Basin identified in the most current Inland Waterways Users Board recommendations (IWUF 2017).

Objective 2: By 2025, compared to 2019, the five-year growth trend of water-dependent industry, recreation, and commerce has increased.

Strategic Actions:

- Facilitate and endorse regional collaboration by governments, industry, and non-governmental organizations (NGOs) to improve regional economic performance and competitiveness by creating an attractive land portfolio that addresses stream-side brownfields; strengthens water-related infrastructure; and develops a cooperative approach to attract industries that would use water resources, ports and terminals, and barge transportation.

- Advocate to establish a new federal discretionary grants program that extends eligibility to public and private ports and terminals; includes inland ports of all sizes; can be used for projects inside facility boundaries for river (non-channel), road and rail projects, and requires a 50/50 federal/nonfederal cost share (IRPT 2019).

2. Healthy and Productive Ecosystems

Challenges and Opportunities:

The Ohio River Basin drains an area of approximately 200,000 square miles with 7,000 miles of waterfront along the Ohio River and its major tributaries. The Ohio River Basin is nationally and internationally renowned for its array of ecoregions with a diversity of flora and fauna that distinguishes it from other Basins within the nation. Portions of at least 16 distinct Level III ecoregions can be identified within the Basin. A vast array of aquatic species inhabit the waters of the Basin making it one of the most diverse and productive regions in the nation. The Tennessee River and Cumberland River sub-basins are two of the richest ecological regions in the nation and are among the richest in terms of species diversity in the world. However, extensive human activity has led to the loss or modification of wildlife habitat that negatively impacts key ecosystem functions and imperils native wildlife populations. For example, of the 127 species of mussels once found in the Ohio River, 11 are extinct, and another 46 others are classified as threatened, endangered, or a species of concern. There are an additional 625 species from other taxa within the 15 Basin states that are either classified as Federally threatened or endangered.

Invasive species, e.g., Asian carp (i.e., bighead, silver, black, and grass carp) , round goby, curly leaf pondweed, hydrilla, and zebra mussels, have been documented in the Ohio River Basin and have potential to cause lasting environmental and economic damage. Whether introduced accidentally or intentionally, invasive species often grow faster, mature earlier, disperse readily, and have few natural predators. When established, they can threaten ecological stability, outcompete native species, reduce biodiversity, degrade water quality, or otherwise negatively affect commercial, agricultural, or recreational activities.

Objective 1: By 2022, Basin states and the U.S. EPA, in collaboration with ORSANCO, conservation organizations, federal agencies, and other stakeholders will develop a plan for Ohio River Basin restoration through the identification and protection of at-risk ecosystems. Examples include wetlands and riparian zones, habitat for threatened or endangered species, and other areas of ecological significance.

Strategic Actions:

- Facilitate collaboration among the Ohio River Basin Fish Habitat Partnership, the Southeast Aquatic Resources Partnership, the Nature Conservancy, the National Wildlife Federation, and other stakeholders to further cooperative development of strategic aquatic restoration opportunities.

- In coordination with U.S. EPA, states, and local organizations, encourage and advocate for funding for regional programs that restore, protect and manage valuable habitat and water resources through implementation of the Ohio River Basin Fish Habitat Partnership strategy (USACE 2009; USFW Landscape Priorities; ORBFHP 2013).

Objective 2: By 2025, secure funding to initiate a federal geographic program for the restoration of the Ohio River Basin that is appropriate to the need identified by the states and U.S. EPA, in collaboration with ORSANCO, conservation organizations, federal agencies, and other stakeholders.

Strategic Actions:

- Taking guidance from similar federally-funded geographic restoration initiatives (i.e., the Great Lakes Restoration Project, Chesapeake Bay Program, and Columbia River Restoration Program), establish a novel basin restoration initiative through efforts that seek to find and gather support for a legislative champion(s), develop formal governance procedures, define formal restoration goals and milestones, and establish advisory committees and advocacy groups that, together with public outreach efforts, build a diverse coalition that works to protect and preserve the Ohio River Basin.

- In collaboration with the States and interested water resource groups, advocate with Congress and Federal agencies to invest in a robust restoration economy that restores floodplains and connectivity, protects existing high quality habitat, restores and protects native aquatic populations, strategically leverages water resources to strengthen local economies, and positions the Ohio River Basin as an attractive site to draw and retain workforce (USFW Landscape Priorities; ORBFHP 2013; USACE/ORBA 2017).

Objective 3: In collaboration with state and Federal agencies and other stakeholders, develop and implement strategies to eradicate, control, and manage invasive species within the Ohio River Basin. Management and control strategies should be comprehensive in application and proactive in nature by utilizing sound scientific data designed to analyze and assess risk, develop and utilize effective control methods, limit dispersal, reduce the effects of invasive species, and focus conservation efforts on high-priority ecosystems within the Basin. Management and control efforts should also include the public sector via the development and implementation of education and outreach programs designed to increase the understanding of the potential ecological, economic, and social impacts of invasives within the Basin.

Strategic Actions:

- Similar to existing entities, i.e., Aquatic Nuisance Species (ANS) Task Force, develop and implement a basin-specific program designed to coordinate efforts to monitor, control, and study invasive species.
- Advocate for full funding of $25 million for the Asian Carp National Plan with the goal of $9 million being allocated for the Ohio River Basin by 2021 (inclusive of the Tennessee and Cumberland Rivers) (USACE 2009; MICRA 2018; OFHP).

3. Abundant Clean Water

The Ohio River Basin's abundant supply of clean, fresh water is vital to the regional economy and the health of its natural and human communities. Recognizing this, federal and state laws have been designed to ensure that water quality is sufficient to allow for a safe and sustainable public water supply, water-dependent economic activities, agriculture, healthy fish and wildlife populations, and water-related tourism and recreation. Additionally, water quality is increasingly linked to water quantity, in particular as governments address the threat of water shortages.

Basin states and the U.S. EPA, in collaboration with ORSANCO, Cumberland River Compact, Tennessee Valley Authority (TVA), conservation organizations and federal agencies have made significant progress, yet work remains to fully restore our waters. Challenges, such as non-point source pollution and emerging contaminants remain. Non-point source pollution, exacerbated by impervious surfaces and flashy streams, conveys soil and associated contaminants into the Basin's waters on a routine basis. Dredging, in support of navigation, can negatively impact aquatic habitat and biological communities by suspending sediments into the water column for downstream transport. However, operational strategies exist and have been practiced that can lessen these impacts by directing flow away from critical communities..

Harmful Algal Blooms (HABs) are a routine and documented item of concern in USACE reservoirs. HABs are not only an issue because of the cyanotoxins they produce but because they can also be harmful to aquatic ecosystems (e.g. dissolved oxygen depletion). Each USACE District in the Ohio River Basin has a HAB Response Plan that has been coordinated with state agencies, and other agencies, as necessary. This allows for prompt and consistent response to HAB events as they occur. Of late, two bloom events have occurred in the Ohio River (2015, 2019). In response, ORSANCO organized communication and monitoring activities, utilizing its HAB monitoring and response plan that included state, federal, and local agencies and utilities. These efforts proved to be critical in obtaining the data necessary to properly advise the public of HAB risk.

Hydropower at USACE projects is an opportunity to produce and provide clean energy for the Ohio River Basin residents. As part of requirements of Federal Energy Regulatory Commission (FERC) licensing agreements, hydropower facilities collect water quality data. This provides the USACE, and other stakeholders, real-time water quality data from the Ohio River. Additionally, hydropower activities improve local economies by providing jobs for native residents.

Within the Ohio River Basin, episodes of drought and flooding events have occurred, however historically these have been isolated and infrequent. Generally, the Basin is considered to be a "water-rich" system (Adler et al. 2003) due to its numerous major rivers and impoundments. It is of concern that climate change will increase the number of extreme weather events, testing the existing operating schemes and infrastructure. Specifically, it has been noted that improvements in water quantity modeling of the Ohio River, especially during low flow conditions could be of benefit. It is critical that the U.S. Geological Survey (USGS) Stream Gauge System be maintained and expanded to be able to accurately measure flow in Ohio River Basin Rivers.

While many challenges to water quality and quantity exist, the Ohio River Basin possesses numerous and qualified professionals that are able to turn these challenges into opportunities. Water resource professionals in the Basin are qualified to address needs, possess great technical expertise and regularly conduct research to answer questions that arise. Additionally, strong and longstanding partnerships exist in the Basin between state agencies, ORSANCO, U.S. EPA, USACE, TVA, other Federal agencies, universities, utilities, and other stakeholders. This provides a strong foundation and leverage for new efforts.

Objective 1: Organizations and states, enabled by the Clean Water Act will work collaboratively to demonstrate measurable improvements for the number of water bodies meeting the Clean Water Act's drinkable, swimmable and fishable water quality uses by 2030 as compared to 2020.

Strategic Actions:

- Secure financial and other necessary resources through an Ohio River Basin Restoration Initiative and other appropriate Federal Funding mechanisms to support all Strategic Actions under this Objective.

- Develop and maintain a comprehensive Ohio River Basin geographic information system (GIS) platform to support Clean Water Act related initiatives such as water quality monitoring and assessment, location of critical assets, water quality use attainment and other related initiatives.

- Support state, federal, interstate and other Ohio River Basin organizations actions to implement the Clean Water Act requirements; Basin state water quality protection efforts; implement the Ohio River Valley Water Sanitation Compact; implement Ohio River Basin watershed organizations' missions to improve water quality for water bodies within the Ohio River Basin leading to improved use attainment.

- Support the development of a Basin-wide inventory of Acid Mine/Rock Drainage sites and Coal Ash Ponds, prioritized based upon risk of failure, and develop a reclamation strategy to address inventoried, high priority locations.

- Support state, federal, interstate and other strategic organizations' efforts to monitor and assess the presence and health risks of Contaminants of Emerging Concern, such as Per- and polyfluoroalkyl substances (PFAS).

- Stabilize and expand the USGS super gauges in regards to installation and maintenance for Ohio River Basin rivers and critical watersheds to enable the ability to perform change analysis and support Clean Water Act related flow monitoring.

Objective 2: By 2025, develop effective strategies to support existing Ohio River Basin source water protection programs and utilize best practices from these strategies to build collaborative programs to protect Ohio River Basin drinking, industrial, surface and ground water supplies that do not currently have source water protection programs.

Strategic Actions:

- Secure financial and other necessary resources through an Ohio River Basin Restoration Initiative and other appropriate federal funding mechanisms to support all Strategic Actions under this Objective.

- Develop and maintain data layers for inclusion in the comprehensive Ohio River Basin GIS platform to support source water protection related initiatives such as mapping source water protection areas, contaminant source inventories, contaminant spill locations, source water protection risk zones and other related initiatives.

- Maintain and expand ORSANCO's Ohio River Organic's Detection System to help detect and respond to volatile organic compound spills both reported and unreported that may impact the Ohio River and its tributaries as a drinking and industrial water supply.

- Utilize ORSANCO's source water protection program template as well as other identified Basin source water protection templates to build collaborative wource water protection strategies for all water bodies within Basin that serve as a drinking water or industrial water supply.

- Identify and expand existing source water protection collaborations within the Ohio River Basin to help ensure the protection of water supplies to drinking water and industrial water customers.

Objective 3: By 2025, identify priority waters with high incidences of Harmful Algal Blooms (HABs) and convene stakeholders to prepare an Ohio River Basin wide strategy to help respond to HABs in the Basin and that will result in measurable reduction in HAB occurrence by 2030 as compared to 2020 priority areas.

Strategic Actions:

- Secure financial and other necessary resources through an Ohio River Basin Restoration Initiative and other appropriate Federal Funding mechanisms to support all Strategic Actions under this Objective.

- Develop and maintain data layers for inclusion in the comprehensive Ohio River Basin GIS platform to map water bodies that have HAB occurrence to support the Basin wide effort to achieve measurable reduction in HAB occurrences.

- Support state, federal, interstate and other Ohio River Basin organizations HAB monitoring and response strategies to maintain safe recreation and drinking water for Ohio River Basin citizens.

- Inventory, communicate and implement nutrient reduction best management practice strategies to support reductions in nutrient contributions to Ohio River Basin water bodies.

- Support the December 2016 Federal Hypoxia Task Force Strategy as it relates to nutrient contributions from the Ohio River Basin.

Objective 4: By 2025, The Ohio River Valley Water Sanitation Commission (ORSANCO) will convene water quantity managers Basin-wide to establish common goals directed at identifying Basin-wide problems affecting water quantity management and recommend strategies to address these goals.

Strategic Actions:

- Secure financial and other necessary resources through an Ohio River Basin Restoration Initiative and other appropriate Federal Funding mechanisms to support all Strategic Actions under this Objective.

- Develop and maintain data layers for inclusion in the comprehensive Ohio River Basin GIS platform to support Water Quantity related initiatives such as mapping flood risk areas, drought mitigation planning areas, water supply deficit areas and related initiatives.

- Build upon ORSANCO's Water Quantity initiatives developed through its Water Quantity Committee to convene Ohio River Basin Water Quantity Stakeholders to develop strategies to meet Water Quantity related challenges within the Basin.

- Collaborate with water quantity-related commissions in the U.S. and abroad to share information, exchange strategies, incentivize conservation, and advance common goals directed at solving problems affecting water quantity and leveraging them as vital Ohio River Basin assets.

Objective 5: By 2025, inventory drinking and wastewater system infrastructure needs for the Ohio River Basin and develop a strategy to maintain these systems Basin wide.

Strategic Actions:

- Increase financial and other necessary resources through the Water Infrastructure Financing and Innovation Act (WIFIA), State Revolving Loan Fund (SRF), and other appropriate federal infrastructure funding mechanisms to maintain aging drinking and wastewater infrastructure systems.

- Develop and maintain data layers for inclusion in the comprehensive Ohio River Basin GIS platform to inventory drinking and wastewater system infrastructure needs for the Ohio River Basin.

- Leverage the USEPA Water and Wastewater Infrastructure Needs Assessment Survey to develop a communication strategy for the need to address these aging infrastructure assets on an Ohio River Basin wide basis that details the urgency associated with increased infrastructure failures.

4. World-class Nature-based Recreation Opportunities

Challenges and Opportunities:

Today's continuing economic prosperity owes much to the ecosystems and natural resources of the Basin. The streams, rivers, mountains, and forests attract outdoor recreation and potential for growth of related tourist attractions and hospitality industries, as seen in Gatlinburg and Pigeon Forge, TN. The Ohio River Basin, with its diverse ecosystems and natural amenities, offers a broad range of outdoor recreation opportunities, many world class. These range from hiking the peaks of the Mount Mitchell to paddling Class V rapids of the Upper Gauley, biking along the Little Miami Scenic River, hunting elk in Kentucky, or fishing for trout in the headwaters in Pennsylvania, Kentucky, Tennessee, West Virginia, and Ohio. These outdoor recreation opportunities are often on public lands - federal and state forests, USACE and Tennessee Valley Authority reservoirs, and federal, state and local parks.

These activities that are dependent on functioning ecosystems also generate economic benefits. Small businesses play a role in these benefits as well as larger corporations. In the five states that are primarily in the Basin - Indiana, Kentucky, Ohio, Tennessee, and West Virginia - outdoor recreation generates $74.4 billion in annual consumer spending, 670,000 direct jobs, $21.4 billion in wages, and more than $4.7 billion in state and local tax revenue. Because of the fragmented nature of the recreation industry, it is often overlooked as an important potential engine of economic growth.

The Ohio River Basin is a unique place rich in history and beauty, full of opportunity for recreational activities that bring people close to nature and the culture of the region. Access to nature is known to improve health and quality of life. By ensuring that all people, including those that are underserved such as low income and minority groups, have safe access to the river and

its surrounding natural areas, we can improve the lives and health of millions. In order to accomplish this, there is need for clear, comprehensive communication to the public on nature opportunities and events in the Basin, recreational safety issues, and the importance of the protection of our waters and lands.

The Ohio, Tennessee, and Cumberland Rivers provide a large variety of options when it comes to recreation such as fishing and boating, trails and bike paths, nature viewing, or camping. These large rivers are recreational assets, but we cannot forget about the tributaries, lakes and reservoirs that offer access to calmer waters that can be used more easily by paddlers and kayakers. Thinking beyond the main stem of the Ohio allows us to think on a smaller scale and how the river reaches beyond its banks into the smaller towns and allows more people to be connected to it.

Objective 1: From 2021 - 2025, grow the Basin's outdoor recreation economy at a rate that exceeds the national average.

Strategic Actions:

- Facilitate collaboration and advocate for funding to establish multipurpose terrestrial and water trails (Greenways and Blueways) along the Ohio River interconnecting with Tennessee RiverLine and tributary trails, and increase access, to promote nature-based recreation, corresponding economic growth and to provide diverse recreation options for different types of users.

- Encourage collaboration among water trail organizations to engage relevant river cities, agencies, businesses, associations, and NGOs on approaches and plans to promote outdoor recreation with particular emphasis on reaching new participants, including providing easy opportunities to "try out" activities such as boating or camping.

- Encourage Mayors along rivers to collaborate on the local or regional strategies that are being pursued in their area, in order to create a more comprehensive and coordinated approach.

- Identify existing operating, abandoned or vacant federal and state lock houses and grounds that could be used or expanded for river access, camping and day use educational activities.

- Advocate for policies and funding supportive of fishing, hunting, and paddle sport education to expand nature-based recreation and economic growth, and to encourage the stewardship of natural resources that make such recreation possible.

Objective 2: By 2025, create a basin-wide communication plan for recreation that encompasses recreation safety as well as the benefits to public health and quality of life.

Strategic Actions:

- Pursue funding for expansion of geographic coverage of the OKI digital guide for the ORB recreation opportunities and amenities that includes comprehensive information such as mapping and access points, difficulty levels, average length of time to complete the activity, etc.
- Continue outreach to public to share information on existing trails, events, points of interest, and safety related to outdoor recreation.

- Advocate for funding to locate and remove low head dams throughout the basin to restore ecological flows, to reduce danger to boaters and improve recreational access and connectivity, and inform ecological flows/ecological resilience.

5. Reliable Flood Control and Risk Reduction

Challenges and Opportunities:
Efforts to reduce flood risk in the Ohio River Basin began with land owners in the 1800's. Federal interest began with the River and Harbor Act of 1917. The 2009 USACE Ohio River Basin reconnaissance report stated:

"The current Ohio River Basin system consists of 83 reservoirs (including 5 single- purpose reservoirs), 95-plus major local protection projects, and numerous small flood control projects. Although these projects were justified economically and analyzed for effectiveness in reducing flood damages, they were not regarded as components of a system during their individual formulation. (…) Recent flood events in January 2005 and May 2008 have highlighted some of the deficiencies in the existing infrastructure. There is an extensive Basin stream gage network operated by USGS, USACE, NWS, and other Federal and state agencies."

Since that study, additional flood records have been established by flood events impacting the Basin, particularly in 2011, 2018, and 2019.

The National Weather Service's Integrated Flood Observing and Warning System is an initiative that receives data from more than 1,000 stream gages to provide flood warning and forecasting information. The US Geological Survey maintains approximately 318 gauges within the Ohio River Basin reporting on a number of water quantity and quality parameters. While these programs exist to provide adequate warning to the public, there is room for improvement in order to reach more people and do so in a more efficient and effective way in order to prevent damages and loss of life.

Almost 200 of the Basin's reservoirs and local flood protection projects are about 80 years old. Issues with aging structures as well as degradation from natural events, such as erosion of earthen dams, need to be considered as we work to maintain and update flood infrastructure. Coupled with this concern, precipitation and flooding patterns may be shifting due to climate change, as has been observed anecdotally, but also as reported in the Climate Preparedness and Resilience Community of Practice's Recent US Climate Change and Hydrology Literature synthesis for the Ohio River region. With more than ten billion dollars in infrastructure and half

a million lives protected by this infrastructure, it is important to ensure on-going effectiveness. The high damage risks combined with the observed extreme events are changing the thought process relative to developing floodplains and unintended creation of potential damage areas. Engineering best practices and new technology are also improving the understanding of these aging structures' integrity. Risk analysis methods continue to evolve to identify if dangerous conditions exist and prioritize limited repair and maintenance dollars. Watershed management practices can indirectly affect the performance and integrity of a flood control structure; sediment and runoff balances can affect available channel area to pass flow, reduce available storage volumes for peak flow reduction, or conversely lead to undermining of critical infrastructure. Yet watershed management regulation is largely within the purview of entities other than those maintaining and operating the infrastructure.

The USACE's Flood Risk Management Program (FRMP) was established in May 2016 and is made up of 19 relevant sub-programs or agency bodies which all have avenues or expertise pertaining to reducing flood risk. This includes the Continuing Authorities Program (CAP), Floodplain Management Services Program, Rehabilitation Program (see PL 84-99 [33 USC 701n]), the Silver Jackets Program, and Specifically Authorized Projects (Investigations) from Congress. Additionally the Corps develops groups such as the Engineer Research and Development Center (ERDC), Hydrologic Engineering Center (HEC), and the National Nonstructural Committee.

During the outreach effort, there were a two themes that were highlighted by stakeholders regarding FRM. One being a holistic approach to flood risk management; an approach that considers the unintended consequences within a large system such as the Basin. It is important to consider how upstream actions impact downstream conditions. Innovative solutions such as green infrastructure also persisted throughout the planning process. Bio swales, green roofs, man-made wetlands, and native planting efforts are all strategies that work with nature and are better designed to handle changing climate patterns.

Objective 1: By 2025, prepare a Basin-wide investment plan that addresses high flood risk areas, including areas where dams and local protection projects exist.

Strategic Actions:

- Advocate for USACE to prepare a Basin-wide reinvestment plan that addresses the existing Corps-designed and constructed flood risk management structures including both single-purpose dams and multi-purpose reservoirs and local protection projects operated by third parties (USACE 2009).

- As part of a future PAS study, examine high risk areas that may benefit from a USACE led feasibility study and structural or non-structural measures, with an emphasis on wetlands and floodplains, that could reduce risk within those areas.

- Advocate for USACE to consider divesting un-needed infrastructure (dams and levees) and potentially target for green spaces and ecosystem restoration efforts.

Objective 2: By 2025 USACE, USGS and NWS will jointly prepare a Basin-wide plan to update and expand components of an adequate flood warning system incorporating climate change considerations.

Strategic Actions:

- Advocate for operation and maintenance financial support for USACE, NWS, and USGS to update and expand components of the current flood warning systems, such as stream gages and other early warning systems.

- Advocate for USACE and FEMA, to incorporate climate change considerations into flood frequency estimates and related outreach efforts (USACE 2009).

- Advocate for the update of the USACE climate change adaptation report by 2025.

Objective 3: Hold regular collaborative stakeholder meetings to discuss and identify opportunities and issues with flood control and increase overall communication between Flood Response Groups.

Strategic Actions:

- Encourage the Basin wide Silver Jacket collaboration to pursue funding for a future PAS study, which would provide county Emergency Management Agencies below dams and other flood prone areas with best practices and template warning messages to ensure timely evacuations following flood warnings.

- Encourage Silver Jackets to facilitate a multi-state, collaborative approach to flood risk management that accounts for downstream impacts of rain events and explore and promote projects that consider sustainable flood risk management opportunities such as wetland restoration and removal of impervious surfaces.

- Annually USACE will sponsor Basin-wide Silver Jackets workshops to identify collaborative opportunities for flood risk management and to share information on flood risk and flood control methods with focus on pre-disaster mitigation through non-structural methods.

- Create a centralized location for stakeholders to share data that is developed for flood related purposes.

- Advocate for Silver Jackets to encourage pre-disaster mitigation through FEMA and promote non-structural measures for flood risk management such as basin-wide riparian tree planting and other green infrastructure, buy-outs and controlled development within the flood plain.

6. Knowledge and Education to Inform Decisions

Challenges and Opportunities:
Technical problems are those for which optimal solutions can be pursued. Selection of efficient and effective solutions depends on the quality and availability of knowledge at the time the decision is made. Performing and reporting on research related to priorities of the Basin and providing effective formal and informal education for the public and for decision-makers will provide timely, state-of-the-art knowledge to inform decisions.

Research is needed to inform technical problems in each of the other goals of this strategy. Examples of needed research and education include:

- Forinforming river navigation decisions - the economic value of water uses in the Basin, and the dams and reservoirs that ensure the adequacy of the water;
- For ecosystem restoration and protection decisions - effective and efficient means of preventing and reversing impacts of invasive species;
- For abundant clean water - efficient and effective means of keeping nutrients on fields and out of waterbodies;
- For nature-based recreation - methods of assessing the benefits and costs of low head dam removal;
- And for flood risk reduction - modeling of the flood protection projects and reservoirs of the Basin as a system to understand interactive impacts on flooding.

Collaboration among organizations involved with relevant research and partnerships with decision makers addressing Basin-wide priorities is needed to ensure that research and education receives focus and funding necessary to solve technical challenges and inform decisions. The sharing of research and data is also vital to prevent the duplication of efforts, resulting in efficient and thorough data collection.

Public education plays a major role in the success of the Basin. Conveying the unique history and attributes of the Basin to the public at large, particularly children, increases pride and fosters stewardship of natural lands. While this is a powerful tool to improve the basin, it can also be taken a step farther to include the public in research. Volunteer surveys and citizen science such as bird counts provide valuable data and encourage the public to invest in their natural surroundings.

Objective 1: Regularly facilitate collaboration among stakeholders to identify and prioritize Ohio River basin challenges that need to be addressed through research and/or education.

Strategic Actions:

- Hold an annual symposium for basin stakeholders to present Ohio River Basin challenges that need to be addressed through research and/or education.

Objective 2: By 2021, establish coalitions to address basin-wide research needs.

Strategic Actions:

- Facilitate collaboration and pursue funding to establish a comprehensive Long Term Ecological Research (LTER) program at basin scale to support SOA modeling, with broad participation of both research and comprehensive colleges and universities.

- Encourage ORBCRE to facilitate regional forums and collaboratives working to develop effective invasive species prevention and control. Incorporate non-linear threats such as climate change in all restoration and preservation projects.

- Identify and develop collaborative approaches to deliver Ohio River Basin education opportunities to underserved geographical areas within the watershed.

Objective 2: By 2025, create a basin wide communication/marketing plan that will unify the basin, educate the public on the value of natural resources and increase pride in the Ohio River Basin.

Strategic Actions:

- Encourage research, disseminate information, and collaborate with regional leaders to quantify the economic value of the ORB water resources, the return on investments in environmental restoration and water-related infrastructure, the ecosystem benefits and services generated by the waters of the ORB and the quantitative value of ORB nature based recreation; advocate for funding to support the development of science-based tools and practical applications that quantify the value of the ORB.

- Promote water wealth for development by showing value of water to businesses, recreation, and culture in the basin through a detailed water budget and a study or Supplemental Environmental Project to document economic impacts of river usage including recreation projects.

Conclusion

Throughout this study, it has been a goal to reach out and get thoughtful input from various organizations working throughout the basin to improve water quality, transportation and economy, ecological well-being, and other various aspects of watershed health. The planning process for this study began with discussions between USACE, ORSANCO and ORBA to create a comprehensive list of existing basin wide and multi-state collaborations to secure their priorities. Through an extensive year-long outreach effort that included both remote and in-person meetings as well as the collection of relevant documents, the objectives and strategies of this study were created.

The goals of this study set the long range aspirations of a collective group of stakeholders actively working to improve the Basin. The objectives aim to set clear, measurable and attainable priorities while the strategic actions can be executed by members of the Basin collaborative in order to achieve the objectives. It is the hope of the ORBA, ORSANCO, USACE and many other organizations that completing these projects is a step toward a healthy, productive Ohio River Basin.

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Appendix 1: Organizations Facilitating the Ohio River Basin Planning

Ohio River Basin Alliance

The Ohio River Basin Alliance (ORBA), a collaboration of Ohio River Basin stakeholders and stakeholder organizations, was formed in 2009 to fill the need for an organization to speak for the Basin holistically by capturing the highest priorities of the numerous organizations of the Basin and advocating for the ecological health and economic well-being of this 'world class' watershed through sound laws, policies, and projects, and the funds to support them. ORBA is a collaboration that includes more than 200 representatives from over 80 state, local and federal agencies, industry, academia, and nonprofit organizations in the Ohio River Basin. ORBA's purpose is to foster broad collaboration to advance education and science; promote the conservation of natural resources in the Ohio River Basin; and achieve sustainable economic growth, ecological integrity and public safety across and within political jurisdictions within the Ohio River Basin.

ORBA's mission is: *To maintain a successful collaboration that will recommend strategies and coordinate actions to address complex water resource challenges and priorities in the Ohio River Basin with a unified voice.*

The main goals ORBA would like to achieve are:

- to determine and regularly re-assess the Basin's priorities,
- facilitate discussions and collaborations among Basin stakeholders,
- to inform the Ohio River Basin Congressional Caucus on critical issues, and;
- to help facilitate the development, coordination and delivery ofof projects safely and in a timely manner.

The following Guiding Principles set the standards for pursuit of ORBA's mission:

- include all Ohio River Basin stakeholders,
- leverage existing authorities, resources and capabilities to accomplish ORBA's goals,
- capitalize on existing collaborations, and;
- do not impede or infringe on the mission of any other organization.

Consistent with ORBA's guiding principle of leveraging existing authorities to accomplish its goals, ORBA signed an agreement for ORSANCO to serve as ORBA's fiscal sponsor for certain projects. ORSANCO serves as ORBA's fiscal sponsor for this PAS project.

Ohio River Valley Water Sanitation Commission

ORSANCO was established on June 30, 1948 to control and abate water pollution in the Ohio River Basin. ORSANCO is an interstate commission representing eight states and the federal government. Member states include: Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia, and West Virginia. ORSANCO operates programs to improve water quality in the Ohio River Basin, with a current focus on the Ohio River, including: setting waste water discharge standards; performing biological assessments; monitoring for the chemical and physical properties of the waterways; and

conducting special surveys and studies. ORSANCO also coordinates emergency response activities for spills or accidental discharges to the Ohio River, and promotes public participation in programs, such as the Ohio River Sweep.

U.S. Army Corps of Engineers

The mission of the US Army Corps of Engineers is to deliver vital public and military engineering services; partnering in peace and war to strengthen our nation's security, energize the economy and reduce risks from disasters. While there are four USACE district offices within the study area (Huntington, Nashville, Louisville and Pittsburg), the Louisville District is the lead office for the ORSANCO Planning Assistance to States study.

The Ohio River Basin contains numerous and diverse USACE owned and operated projects. The projects comprise both flood risk reduction infrastructure as well as navigation projects. Flood risk reduction includes approximately 83 reservoirs and more than 100 local protection projects (e.g. levees and floodwalls). Seventy-eight of the dams are multipurpose structures that store and discharge quantities of water that support human activities and ecological systems. In addition to flood risk reduction, these multipurpose projects provide water supply, hydropower, low-flow augmentation that supports downstream water quality and aquatic ecosystem purposes, recreation, fish and wildlife management and other authorized purposes (Drum et al. 2017). Navigation projects along the Ohio River are incredibly important to the economy as more than $41 billion in freight, commodities and manufactured goods transit the Ohio River system annually.

Appendix 2: Ohio River Basin Collaborative Planning Process

Stakeholder Outreach

This collaboration strives to engage all organizations in the planning process to create a strategic plan to address the myriad issues in the Ohio River Basin. While federal, state and local governments have vested interest in the river, non-governmental organizations are vital to the discussion of the needs and wishes of the people and wildlife in the basin. Through the planning process, USACE and ORSANCO/ORBA strived to include non-profits, universities, private sector organizations and tribal groups that all have unique goals and priorities.

The focal point of the outreach process for this study was ORBA/ORBCRE Summit held at Ohio State University in Athens, OH October 2-4, 2019. This is an annual symposium for non-profits, universities, government agencies, and other entities working within the Ohio River basin to come together to address regional water-related issues and stimulate solutions. The theme for 2019 was "Managing our Water in a Changing World: from Social, Environmental, and Policy Perspectives". Additionally this year, breakout groups were held during the conference to enable stakeholders to provide input for the USACE Planning Assistance to States study.

Figure 1: Digital notices were used for the five outreach webinars.

Leading up to the Summit, USACE and ORSANCO/ORBA worked together to create stakeholder lists and pertinent strategic document lists. Initial outreach efforts were accomplished through a series of webinars. This series began with a kick-off meeting that gave general information about USACE and the non-federal sponsors, provided a brief overview of the PAS study process, and began collecting input from stakeholders. Four additional webinars were held that focused specifically on goal areas. The webinars were intended to begin the engagement process and reach out to key organizations within the basin.

Stakeholder engagement was approached at the Summit by organizing eight breakout groups, each centered on one of the preliminary ORBA goals:

1. Reliable Flood Control and Risk Reduction
2. National's Most Valuable River Transportation Corridor
3. Healthy, Productive Ecosystems
4. Knowledge-Informed Decisions
5. Vibrant Economy
6. World-Class [Nature-based] Recreation Opportunities
7. Timely Change Adaptation and Resilience
8. Abundant Clean Water

Each breakout group was assigned a facilitator and a moderator to guide the discussion and keep activities within the given time frame. A scribe was also assigned to ensure that all discussion was recorded accordingly. It was explained to participants that solutions would be reached by consensus, meaning that as long as participants could "live with it" the solution or strategy should not be ruled out.

Each session was an hour long and began with a brief presentation on the study, the eight goals, and the objective of the focus goal for that hour. The facilitator then presented the existing strategic documents that the Project Delivery Team had identified and asked for feedback from participants on other basin-wide reports they were aware of. Responses were recorded by the moderator on a large flip chart.

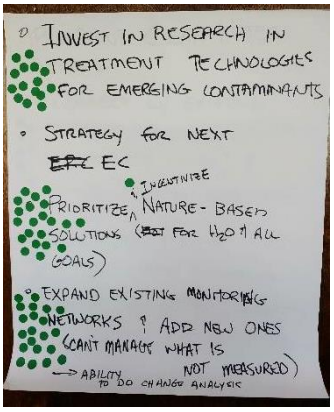

Figure 2: Dot voting was used to help prioritize strategies.

Figure 3: Participants were encouraged to discuss the strategies and then vote on their top priorities.

The facilitator then gave an overview of the existing strategies that had been either collected from the existing documentation or gathered from input during the webinars. The existing strategies were also printed on large paper set at the front of the room. The participants were asked to add strategies they felt were missing or revise any existing strategy they felt was not complete or incorrect. All changes and additions were recorded on flip charts and kept at the front of the room. Additionally, groups also voted on their top priority strategic actions with dot voting.

During the process of synthesizing the input from the Summit, the number of goals was cut from eight to six. Both the vibrant economy and adaptive and resilience goal were incorporated either within other goals or as an overarching ideal of the strategic document.

The last outreach effort of the study was a series of focus groups. During the week of January 26, 2020 focus groups were held in Pittsburgh, Cincinnati and Nashville. The intent of these meetings was to refine and revise the existing objectives and strategies that were synthesized from the previous outreach activities. The focus groups consisted of small group activities with focused discussion on objectives and strategies organized by goal. A larger group discussion was held to focus on the Knowledge and Education to Inform Decisions goal. This goal was the least fleshed out up to this point and warranted more holistic discussion.

Throughout the outreach process, stakeholder input was synthesized by USACE planning staff and incorporated into the existing draft of the strategic document. A formal draft will be submitted to key stakeholders for comment at the end of February 2020. Comments will be address by USACE and a final draft Ohio River Basin-wide Strategy is expected to be completed in March 2020.

Appendix 3: Key Organizations, Collaborations, and States of the Basin

Federal Agencies:

National Oceanic and Atmospheric Administration/National Integrated Drought Information System (NIDIS)
National Oceanic and Atmospheric Administration/National Weather Service
US Army Corps of Engineers (4 districts)
US Department of Agriculture
US Environmental Protection Agency (3 regions)
US Fish and Wildlife Service
US Forest Service
US Geological Survey - Ohio-Kentucky-Indiana Water Science Center
Tennessee Valley Authority

States and Commissions:

ORSANCO including its member states (Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia, West Virginia);
Appalachian Regional Commission; and
other states of the Basin inclusive of Alabama, Georgia, Mississippi, North Carolina, South Carolina, and Tennessee.

River Cities:

Cincinnati, Huntington, Louisville, Nashville, and Pittsburgh

Collaborations:

Appalachian Partnership for Economic Growth
Big Sandy Watershed Watch
Central Ohio River Business Association
Inland Rivers, Ports and Terminals,
KYOVA Interstate Planning Commission
Living Lands and Waters
Mississippi River/Gulf of Mexico Hypoxia Task Force
Ohio River Basin Alliance
Ohio River Basin Fish Habitat Partnership (ORBFHP),
Ohio River Fisheries Management Team (ORFMT),
Silver Jackets,
Ohio - Kentucky - Indiana Regional Council of Governments,
National Association of Conservation Districts (NACD),)
Southeast Aquatic Resources Partnership

Tennessee-Cumberland Waterways Council
Upper Ohio River Users Group
Waterways Council, Inc.,

Non-governmental Organizations (NGOs):

Eastern Brook Trout Joint Venture
Electric Power Research Institute
National Association of Conservation Districts
National Wildlife Federation
Ohio River Basin Consortium for Research and Education (ORBCRE)
Ohio River Trails Team Working Group
ORSANCO Power Industry Committee
ORSANCO Publicly Owned Wastewater Treatment Works Advisory Committee
ORSANCO Watershed Advisory Committee Members
Pennsylvania Environmental Council
The Nature Conservancy

Academic and Educational Organizations:

Carnegie Melon University
Discovery Riverworks
Foundation for Ohio River Education
Marshall University
Ohio River Foundation
Thomas More University/Center for Ohio River Research & Education
University of Cincinnati

Tribal Organizations Contacted:

(See mailing list in Appendix 4)

Appendix 4: Tribal Coordination

The Corps coordinated with Tribal Nations on the ORSANCO PAS project on January 23, 2020. Letters describing the PAS study project goals were sent to 63 tribes (see mailing list). As of February 19, 2020; the following Tribal Nations have stated they would like to be included in future consultation regarding the project: Eastern Shawnee, Miami Tribe of Oklahoma, and Pokagon Band of Potawatomi. The Sac and Fox Nation of Oklahoma do not wish to be consulted regarding the project. However the Sac and Fox Nation of Oklahoma would like to be informed in the unlikelihood of an inadvertent discovery of human remains or cultural resources that may occur during the project. Lastly, the Oneida Indian Nation, does not wish to be a participating party for the project. Tribal consultation is still on-going.

Sample Tribal Letter:

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, LOUISVILLE DISTRICT
600 DR. MARTIN LUTHER KING JR PL
LOUISVILLE, KY 40202

January 23, 2020

Planning, Programs and
Project Management Division
Planning Branch

The Honorable <Name of Tribal Chair>
<Name of Tribe>
Address
City, State

Dear:

The U.S. Army Corps of Engineers, Louisville District (Corps) is informing your tribe about a Planning Assistance of State (PAS) program of the Ohio River Valley Water Sanitation Commission (ORSANCO). The intent of the PAS study is to develop a strategic document for the development, utilization, and conservation of the water and related resources of drainage basins, watersheds or ecosystems, including plans to address water resource challenges. The area of interest includes the entire Ohio River Basin extending from Pittsburgh, Pennsylvania to Cairo, Illinois. (Figure 1). The authority to conduct the study is Section 22 of the Water Resources Development Act of 1974, as amended (WRDA 1974). This project is a cooperative effort between the Corps and ORSANCO to reach out to stakeholders to receive input on strategies to improve the basin. This PAS study is centered on the following goals:

1. Nation's Most Valuable River Transportation and Commerce Corridor: Provide for safe, efficient and dependable commercial navigation within the Ohio River Basin to ensure a competitive advantage for our goods in global and regional markets; sustain a water use system to efficiently and effectively support agricultural, industrial, and energy productivity.
2. Healthy and Productive Ecosystems: conserve, enhance and restore ecosystems within the Ohio River Basin to support natural habitats and fish and wildlife resources that depend on them.
3. Abundant Clean Water: ensure the quality and quantity of water in the Ohio River Basin is adequate to support the economic, social and environmental functions that are dependent on it.
4. World-class Nature-based Recreation Opportunities: enrich the quality of life for people and recreation-based economies by maintain and enhancing riverine, lake and wetland-associated recreation within the Ohio River Basin.

5. Reliable Flood Control and Risk Reduction: provide reliable flood protection and risk reduction through well-managed and maintained infrastructure, including appropriate floodplain connections for water conveyance and ecosystem benefits, and management of surface and storm water runoff to better protect life, property and economics.
6. Knowledge and Education to Inform Decisions: ensure that research and education adequately informs Ohio River Basin-wide economic, social, and environmental decisions; enhance the profile of education organizations in the Basins and synergize efforts to garner effective public involvement in the stewardship and management of the Basin's resources.

While there are no physical ORSANCO projects associated with this effort occurring along the Ohio River at this time, we invite your tribe to be a participating party as this PAS study progresses and request that your tribe provides a written response indicating your interest in being a participating party. Any information that you can provide will assist in our efforts to protect tribal resources that could be impacted by the study recommendations. Please be assured that we will remain sensitive to any concerns you may have regarding the confidentiality of this information.

If you have any questions or require any additional information, please contact me by telephone at 502-315-7468, or by email at jennifer.m.guffey@usace.army.mil. Please provide a response within 30 calendar days of receiving the document.

Sincerely,

Jennifer Guffey
Archaeologist and Tribal Liaison
Planning Branch

Enclosures:
1. Figure 1

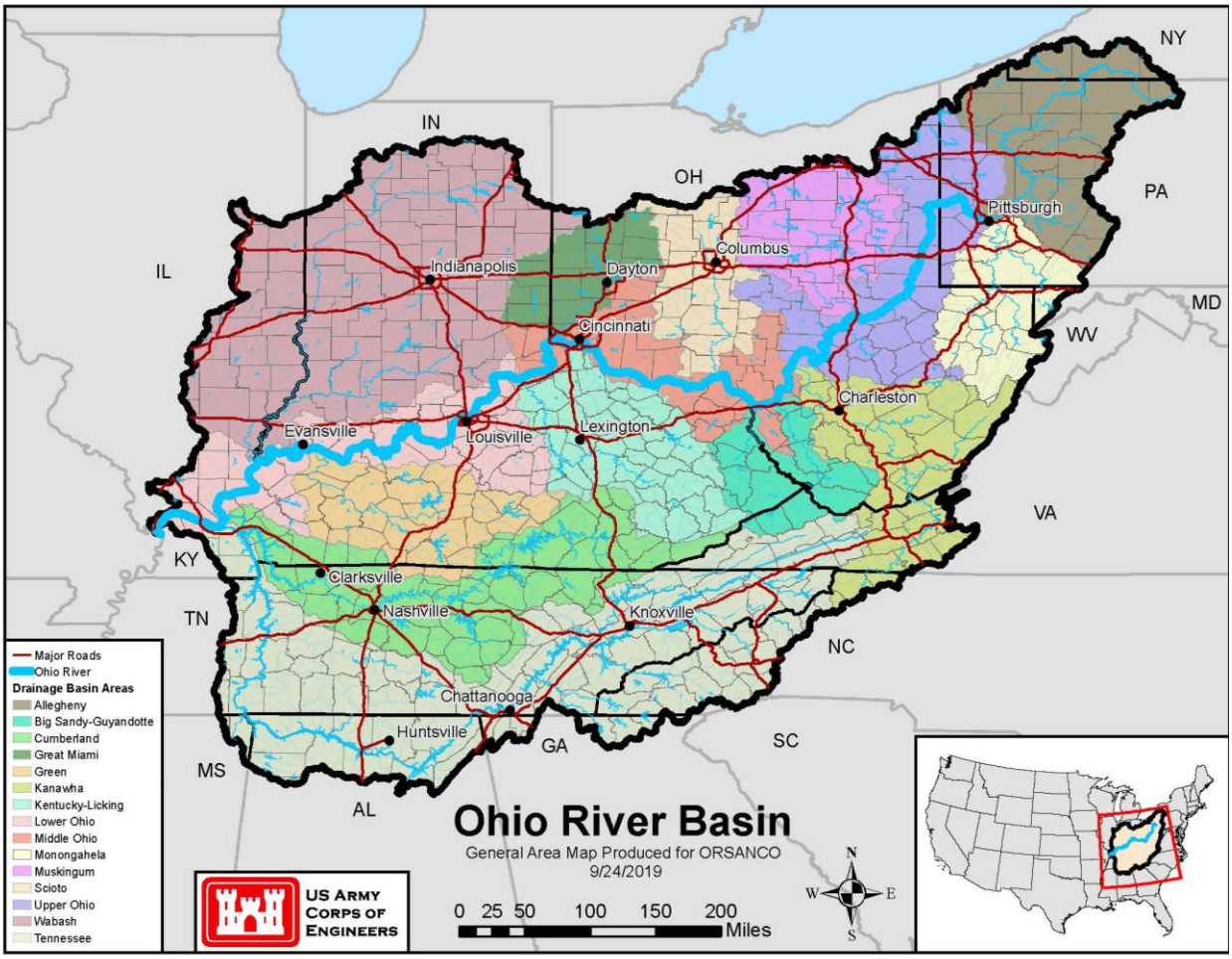

Figure 1: Ohio River Basin Study Area