



2007 ANNUAL REPORT



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The Ohio River Valley Water Sanitation Commission (ORSANCO) is an interstate water pollution control agency created in 1948 by the State of Illinois, the State of Indiana, the Commonwealth of Kentucky, the State of New York, the State of Ohio, the Commonwealth of Pennsylvania, the Commonwealth of Virginia, and the State of West Virginia with approval of the Congress of the United States. The Commissioners of ORSANCO respectfully submit the following report of activities for 2007 to:

THE HONORABLE ROD R. BLAGOJEVICH, *Governor of Illinois*

THE HONORABLE MITCHELL E. DANIELS, JR., *Governor of Indiana*

THE HONORABLE STEVEN L. BESHEAR, *Governor of Kentucky*

THE HONORABLE ELIOT SPITZER, *Governor of New York*

THE HONORABLE TED STRICKLAND, *Governor of Ohio*

THE HONORABLE EDWARD G. RENDELL, *Governor of Pennsylvania*

THE HONORABLE TIM KAINE, *Governor of Virginia*

THE HONORABLE JOE MANCHIN III, *Governor of West Virginia*

AND

THE HONORABLE GEORGE WALKER BUSH, *President of the United States*

CHAIRMAN'S MESSAGE

Native Americans originally called the Ohio River “Oyo,” which was translated to “La Belle Riviere” or “the beautiful river” by French settlers in 1669. The word “Oyo” has captured the sense of beauty and greatness of the Ohio River, both then and now. Today, its beauty is well known by those who boat, fish, hike, travel, or live along the river. Its greatness is demonstrated not only by its size, which spans nearly 1,000 miles in length, but by the fact that it provides drinking water to more than five million people in the Ohio River Valley. The river serves as an economic focal point for many communities and is a valuable transportation corridor and commerce cornerstone for many across the region. Because of the Ohio River's importance to millions of people and the nation at large, ORSANCO's programs and activities are periodically evaluated to keep pace with future challenges in water quality improvement. ORSANCO strives to maintain a river that is both great and beautiful as well as beneficial to many.

2007 is the eve of the 60th year of the Ohio River Valley Water Sanitation Compact, with ORSANCO as its implementing agency. Coincidentally, 2007 also marks the 35th anniversary of the Federal Clean Water Act. Both ORSANCO and the Federal Clean Water Act have similar goals and strategies for water quality. As a result, tremendous improvements have been achieved in water quality not only for the Ohio River, but across the entire United States. This milestone also coincides with a review of the Commission's *Strategic Plan*, which outlines strategies and objectives that guide the Commission in its efforts to implement the Compact. This process has included input from all

Commissioners and the environmental agencies from each of the eight compact states. ORSANCO's funding needs, as well as all programs and activities, are being evaluated. It is imperative that funds are spent on programs and activities that will have the greatest impact on improving the water quality of the Ohio River. ORSANCO's interaction with the public in the Ohio River Valley is also fundamental to achieving this goal.

To this end, we have asked the Public Interest Advisory Committee (PIACO) to re-evaluate its role and membership, with the goal of improving working relationships with environmental advocacy groups and watershed organizations. Internally, staff is also working to improve administrative operations. The results of these efforts will guide ORSANCO activities over the next few years.

During 2007, ORSANCO continued its public outreach with education programs across the watershed, from small programs in local classrooms to large-scale, community-wide events. Work on a bacteria

Total Maximum Daily Load (TMDL) continued with 140 tributaries being sampled. Many surveys have been initiated in 2007, including studies on microbial source tracking, recreational use, and fish consumption for the Ohio River. Work also continued on temperature criteria revisions and nutrient standards. ORSANCO's world-renowned Organics Detection System (ODS) continued to improve its operational efficiency to protect drinking water intakes along the Ohio River. Our 19th annual Ohio River Sweep was again a huge success, and the Life Below the Waterline mobile aquarium made many appearances at public events in the Ohio River Valley. Our many successful programs would not be possible without the cooperation of the local, state, and federal agencies that work



together on a daily basis. Recent highlights include a roundtable meeting with the Ohio River Basin Commission to further explore the “water quality/water quantity” relationship. ORSANCO was also pleased to play a role in a three-state water agreement, whereby the compact member states of West Virginia, Kentucky, and Virginia pledged to improve water quality in the Big Sandy River Basin.

I invite you to learn more about our programs in the following report. Does the Ohio River live up to its original names, “Oyo” and “La Belle Riviere”? In the following pages, you will discover the many ways in which ORSANCO strives to keep the Ohio as beautiful as its namesake suggests.

Stuart F. Bruny
Stuart F. Bruny



Chairman Bruny presents state flags to former chairman Lee Servatius



OUR MISSION

The Ohio River Valley Water Sanitation Commission, ORSANCO, was created in 1948 with the signing of a Compact by the Governors and appointed Commissioners of eight states – Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia, and West Virginia. That Compact, which was also approved by the United States Congress, pledged the signatory states to cooperative action to abate current pollution and prevent future pollution of the waters of the Ohio River Basin. The Compact established the Commission as a corporate body to coordinate and support the states in carrying out their responsibilities.

As stated in the ORSANCO *Strategic Plan*, “The mission of the Commission is to implement the Ohio River Valley Water Sanitation Compact through direct action and by coordinating the actions of the member states.” Realizing the goals of the Compact requires collaboration by the states, local governments, industry, federal agencies, and several individual stakeholders. ORSANCO carries out a number of important programs of its own, but just as important, it provides a forum for collaboration.

OUR PARTNERS

Since the Compact is an agreement among eight states, the Commission’s primary partners are the states and their respective environmental protection agencies that carry out the obligations articulated in the Compact. The head of each of these agencies serves as an ex officio ORSANCO Commissioner. The U.S. Environmental Protection Agency (U.S. EPA) serves as an important partner to the Commission; one of the three federal Commissioners to ORSANCO is a U.S. EPA Regional Administrator.

Coordination of ORSANCO activities with those of the states and U.S. EPA is accomplished primarily through ORSANCO’s Technical Committee (TEC) which is made up of a senior staff member from each of the state water quality agencies and from U.S. EPA, as well as three other federal agencies, including the U.S. Army Corps of Engineers, the U.S. Coast Guard, and the U.S. Geological Survey, that conduct programs essential to the Commission’s mission. The Technical Committee also includes representatives from four Commission advisory committees representing drinking water utilities, wastewater treatment utilities, the power industry, and the public. The Committee meets three times each year in conjunction with regular meetings of the Commission and provides recommendations on technical programs carried out by ORSANCO, and also

serves as a mechanism for the participating agencies to report to each other on their efforts to reduce water pollution in the Ohio River Basin.

In addition to the state, federal, and local agencies represented on the Technical Committee, ORSANCO benefits from partnerships with a number of other entities including: agricultural, health and natural resource agencies; industries; and local environmental and conservation groups. Indeed, partnerships are the key to all of the Commission’s successes.



Table 1: State Agencies

<p>Illinois Environmental Protection Agency Division of Water Pollution Control 1021 North Grand Avenue East P.O. Box 19276 Springfield, IL 62794</p> <p>Indiana Department of Environmental Management Office of Water Management P.O. Box 6015 Indianapolis, IN 46206</p> <p>Kentucky Environmental and Public Protection Cabinet 500 Mero Street 5th Floor, CPT Frankfort, KY 40601</p> <p>New York Department of Environmental Conservation Division of Water 625 Broadway Albany, NY 12233</p> <p>Ohio Environmental Protection Agency Division of Water Pollution Control 122 S. Front Street Columbus, OH 43215</p> <p>Pennsylvania Department of Environmental Protection Bureau of Water Quality Management P.O. Box 2063 Harrisburg, PA 17105</p> <p>Virginia Department of Environmental Quality P.O. Box 10009 Richmond, VA 23240</p> <p>West Virginia Department of Environmental Protection 601 57th Street Charleston, WV 25304</p>
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Table 2: U.S. Environmental Protection Agency

<p>U.S. EPA Region 3 1650 Arch Street Philadelphia, PA 19103</p>	<p>U.S. EPA Region 4 Sam Nunn Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303</p>	<p>U.S. EPA Region 5 77 W. Jackson Blvd. Chicago, IL 60604</p>
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Table 3: Technical Committee

Chairman: Charles Duritsa	
<p>Illinois Marcia Willhite Bureau of Water Illinois Environmental Protection Agency</p>	<p>Ohio George Elmaraghy, Acting Chief Division of Surface Water Ohio Environmental Protection Agency</p>
<p>Indiana Dennis Clark, Chief MC 65-40-2 Assessment Branch, Office of Water Quality Indiana Department of Environmental Management</p>	<p>Pennsylvania Ronald Schwartz Acting Assistant Regional Director Pennsylvania Department of Environmental Protection</p>
<p>Kentucky Tom VanArsdall Division of Water Department for Environmental Protection Kentucky Environmental & Public Protection Cabinet</p>	<p>Virginia Allen J. Newman Department of Environmental Quality Southwest Regional Office</p>
<p>New York Gerard A. Palumbo, Regional Water Engineer New York State Department of Environmental Conservation</p>	<p>West Virginia Randy Sovic, Technical Analyst Department of Environmental Protection Division of Water & Waste Management</p>
<hr/>	
<p>Federal</p> <p>Deborah Lee, P.E. U.S. Army Corps of Engineers Great Lakes & Ohio River Division</p>	<p>William R. Guertal, Ph.D., Director USGS Indiana Water Science Center Marine Safety Division Eighth Coast Guard District</p> <p>Edward Ambrogio U.S. EPA Region 3</p>
<hr/>	
Ex Officio	
<p>Chairman, Power Industry Committee James Stieritz Duke Energy</p>	<p>Chairman, Publicly Owned Wastewater Treatment Works Advisory Committee Mike Apgar Sanitation District No. 1 of Northern Kentucky</p>
<p>Chairman, Public Interest Advisory Committee Ron Riecken Inland Marina</p>	<p>Chairman, Water Users Advisory Committee Mary Armacost, Water Quality Manager American Water</p>



Dissolved metals and bimonthly sampling on the Big Sandy River near Louisa, KY

STRATEGIC PLAN REVIEW

In 1994, the Commission adopted its first *Strategic Plan*. The intent of the plan was to provide an approximate five year framework for the Commission to set its objectives and plan its activities. The *Strategic Plan* provides a longer term setting for the Commission's annual work plan that is developed in conjunction with the annual budget.

A major revision of the *Strategic Plan* was completed in 2003. The format of the plan was changed to include a vision statement and associated objectives for each of the 11 articles of the Ohio River Valley Water Sanitation Compact. A Statement of Public Accountability was included to set forth the obligation of ORSANCO, as a public agency, to provide opportunities for the public to participate in its activities.

In order to maintain the five year horizon of the *Strategic Plan*, a review was initiated in 2007. The review began with an appraisal of the current plan and the development of three overarching goals by the Commission:

- Carry out the directives of the Compact.
- Fulfill the obligations of grants received by the Commission.
- Support the efforts of the states to fulfill their obligations under the Compact.

The Commissioners then held a “brainstorming” session to identify important current and emerging issues. The session resulted in several proposed revisions to the current plan, and identified several emerging issues that were not envisioned when the Compact was written. Continued discussion of these emerging issues, including climate change, sustainable infrastructure, and the nexus between water quality and quantity, will likely lead to additional revisions to the plan. Another discussion likely to lead to changes in the plan involves the Commission's outreach activities, including how information on Ohio River water quality and associated issues is reported to the public. It is anticipated that the updated plan will be finalized in 2008.



MONITORING

Protecting the water quality of the Ohio River requires information to answer basic questions, such as:

- Is the river safe for use as a source of drinking water?
- Is it safe to swim in the river?
- Can I eat the fish I catch from the river?
- Are the fish in the river threatened by pollution?
- What are the water quality problems, and what needs to be done to address them?
- Is water quality improving?

ORSANCO conducts several monitoring programs to provide the answers to these questions. Those efforts include:

Ambient Monitoring

Sampling is conducted every other month at 17 stations on the Ohio River mainstem and 14 tributaries. Mainstem sites are usually at dams with access to main channel flows. Tributary sites are selected to assess conditions near the Ohio River confluence. Surface water grab samples are collected and sent to a certified laboratory for analysis. Samples are analyzed for chlorides, nutrients, phenols, cyanide, suspended solids, hardness, and total organic carbon, among other constituents. Special monitoring, using “clean” collection techniques, is conducted at Ohio River sites for metals analyses.

Bacteria Monitoring

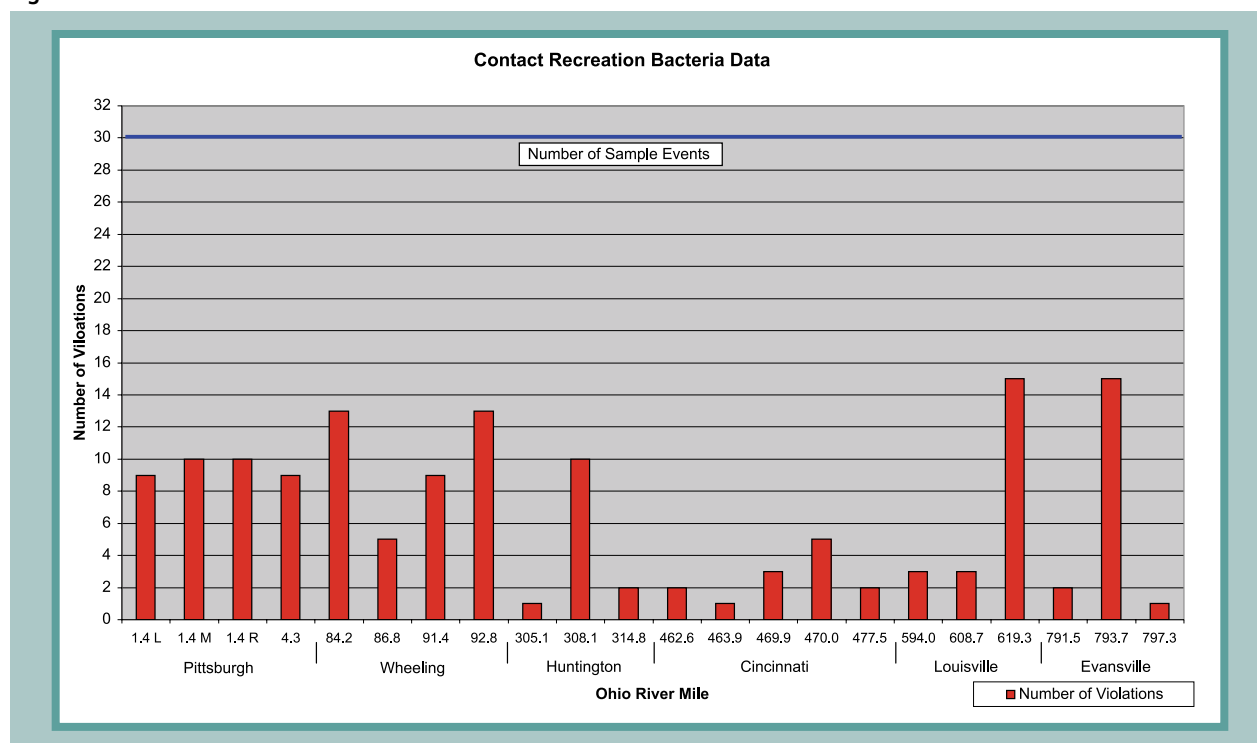
Bacteria sampling is conducted in six major urban areas with Combined Sewer Overflows (CSOs) to evaluate support of the contact recreation use. Sampling is conducted five times per month from May through October. Surface grab samples are collected at three site-specific locations in Huntington, Louisville, and Evansville. There are four site-specific locations in Pittsburgh and Wheeling. This year, two new sampling sites were added across from Cincinnati on the Kentucky bank, resulting in five site-specific locations in that area. Each sample is analyzed for fecal coliform and *Escherichia coli* (*E. coli*). Such bacteria indicate the possible presence of pathogens that can cause intestinal illnesses in humans.

All six river areas experienced violations of the water quality criteria, causing the contact recreation use to be classified as impaired. Impacts from CSOs during and after precipitation events have the greatest effect on water quality. *Figure 1* illustrates the number of violations in each of the six CSO communities for 2007.

Biological Studies

The Commission conducts biological studies to measure the attainment of aquatic life goals. ORSANCO is in the forefront of efforts to develop methodologies for monitoring and assessing the aquatic communities of large rivers.

Figure 1: Bacteria Violations for the Ohio River in 2007





Biological sampling on the Ohio River

Ohio River Fish Index

The Ohio River Fish Index (ORFI_n) is a tool developed by ORSANCO to provide numerical scores that relate to the health of fish populations. Such studies can be used to identify the extent that rivers meet aquatic life use designations. Just as the air quality index is an easily understood single number derived from measurements of several complex aspects of air quality, the ORFI_n incorporates 13 attributes, or metrics, of the fish community. These 13 metrics take into account several different aspects of the fish population, including diversity, abundance, feeding habits and reproduction, pollution tolerance/intolerance, and fish health. When compiled, these metrics provide an accurate representation of the overall condition of the Ohio River fish community.

Fixed Station Monitoring

Over the past four years, ORSANCO has monitored fish communities at 18 fixed sampling stations on the Ohio River. Sampling these fixed locations each year allows an assessment of longitudinal and temporal changes in the biological community from year to year. Additionally, the sites are distributed along the entire 981 miles of the Ohio River to observe trends or variations between different sections of the river. Four consecutive sampling seasons have revealed no significant trends. However, fixed station monitoring has enabled biologists to identify factors that affect fish populations. For example, in years with above average rainfall and river flows (2004 and 2006), lower, more variable ORFI_n scores were reported (*Figure 2*). In the future, fixed station monitoring will also include macroinvertebrate sampling, measurements of riparian condition, and water quality analysis.

Pool Assessments

In addition to sampling at fixed stations, five Ohio River navigational pools were surveyed as part of a rotating assessment that focuses on different sections of the Ohio River each year. In each pool, fish and macroinvertebrate populations were monitored to assess the biological condition.

In 2004, ORSANCO developed a long-term monitoring and assessment strategy that divides the Ohio River into 20 different biological assessment units from which 15 random sites are sampled. In most instances, a single pool serves as an assessment unit. Typically, four pools are assessed each year with the goal of achieving a complete river-wide survey every five years. In 2007, the five pools assessed were: Emsworth, Pike Island, Meldahl, Cannelton, and Newburgh pools (*Figure 3*). The Cannelton pool survey was initiated in 2006, but adverse weather conditions did not allow crews to complete the sampling. In 2007, it was added to the schedule and the survey was completed.

Fish Tissue Monitoring

As part of the pool assessments, samples of fish tissue are collected to assess the presence of certain contaminants. Results are provided to state agencies, which are responsible for issuing fish consumption advisories when necessary.



Various sampling techniques and analyses determine water quality of the Ohio River

Figure 2: Ohio River Fixed Station ORFI Scores; 2004 - 2007

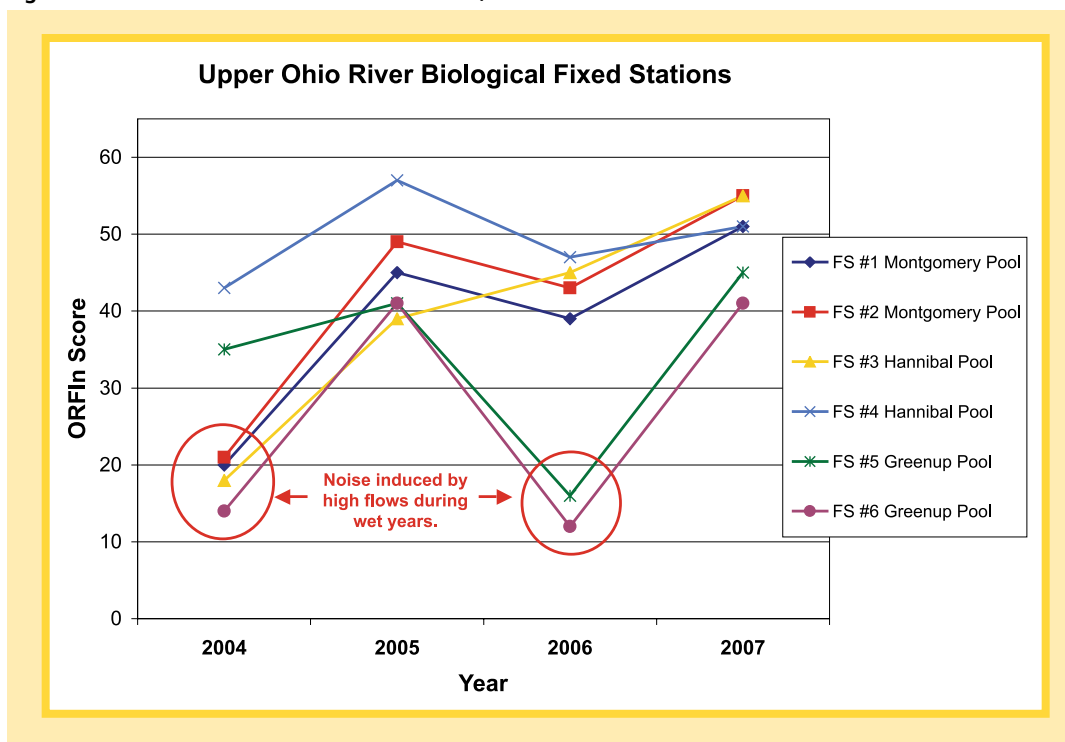
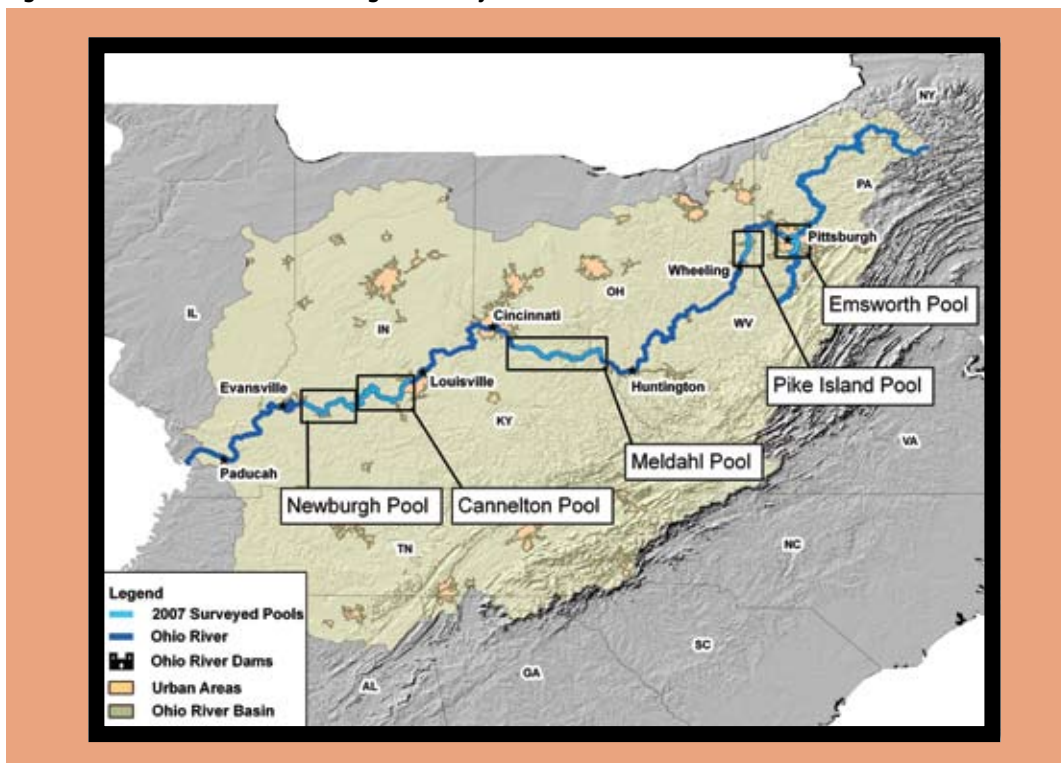


Figure 3: 2007 Ohio River Pool Biological Survey Locations



PROTECTING OHIO RIVER USES

Protecting Drinking Water

Source Water Protection

The Ohio River is the drinking water source for more than five million people. Commission programs that help preserve, protect, and improve its water quality are vital to the protection of public health. ORSANCO programs that support source water protection goals include water quality monitoring and assessment; Pollution Control Standards development and administration; and the Commission's Emergency Response programs, including the Organics Detection System (ODS). These program areas collectively ensure that the Ohio River remains a safe extraction source for potable water treatment.

Source water protection programs connect watersheds, water users, and water consumers by identifying potential sources of contaminants and activities that could lead or contribute to water quality problems. Once such risks have been identified, special precautions can be taken and communication networks established so essential information can be provided to ORSANCO and concerned utilities. ORSANCO's communications network provides *early* notification to drinking water utilities which, in turn, enables them with the time and opportunity to develop countermeasures to protect consumer drinking water quality.

Spill Response

ORSANCO receives incident reports from the National Response Center for spills that occur in all counties along the Ohio River which are evaluated for their potential to impact drinking water utilities. More than 800 spill reports were received and evaluated in 2007. Over 300 of these reports required some level of notification to drinking water utilities. Of particular note in 2007:

- During high water, a barge loaded with cumene (isopropyl benzene, used as a thinner for paints, lacquers, and enamels and as a component of high octane fuels) became impaled on a submerged mooring cleat at lock and dam #52. Approximately 5,000 gallons of the 200,000 gallons in the barge were released. Due to high flow conditions, downstream drinking water utilities did not experience treatment problems.
- Methyl methacrylate, a compound used in the manufacture of resins and plastics, was detected by two ODS sites 190 river miles apart. No source for this compound was discovered, and no treatment problems were reported.

Rising Sun, Indiana, a community located along the Ohio River near Cincinnati, Ohio



- During high flows, a barge loaded with urea, an ammonia-based granular agricultural and residential nitrogen fertilizer, broke loose from its mooring and became lodged on a dam gate at McAlpine locks and dam near Louisville, Kentucky. The full contents of the barge, 1,450 tons, were lost to the river. ORSANCO supported efforts to monitor for the ammonia at downstream locations. Due to near flood stage conditions, the urea dissipated in the river water and did not create a problem for downstream utilities.

Organics Detection System

The Organics Detection System, ODS, is a series of 13 detection stations located at drinking water utilities and industrial intakes along the Ohio River and major tributaries. The detection equipment is owned by the Commission but operated by utility and industrial personnel. The system functions to detect volatile chemicals in river water. River water samples are collected and analyzed daily to assure the absence of, or detect the presence of, certain volatile organic chemicals. ORSANCO provides the oversight to the system and facilitates communication and follow-up activities in the event of detections.

In 2007, the ODS was crucial in detecting volatile organic chemicals in the river and, in one case, instrumental in locating a persistent source and discharge of a specific organic chemical.

On April 14th, methylene chloride was detected in Ohio River water by the ODS. Subsequent field sampling identified a reach of the Ohio River where the chemical seemed to originate (*Figure 4*). Working with state water quality program personnel, the source of the chemical was identified and the discharge was stopped. Detections of the methylene chloride in the Ohio River were reported by the ODS 265 miles downstream of the discharge site.

The vigilance provided by the ODS resulted in the detection, source identification, and elimination of this harmful chemical to the environment. Without the detecting capabilities of the ODS, this release would have gone undetected, putting several communities and more than one million people at risk.

The ODS detected several other volatile organic chemicals in Ohio River water in 2007. Each detection allowed a drinking water facility to take appropriate actions to assure the production of safe, quality drinking water to its consumers.

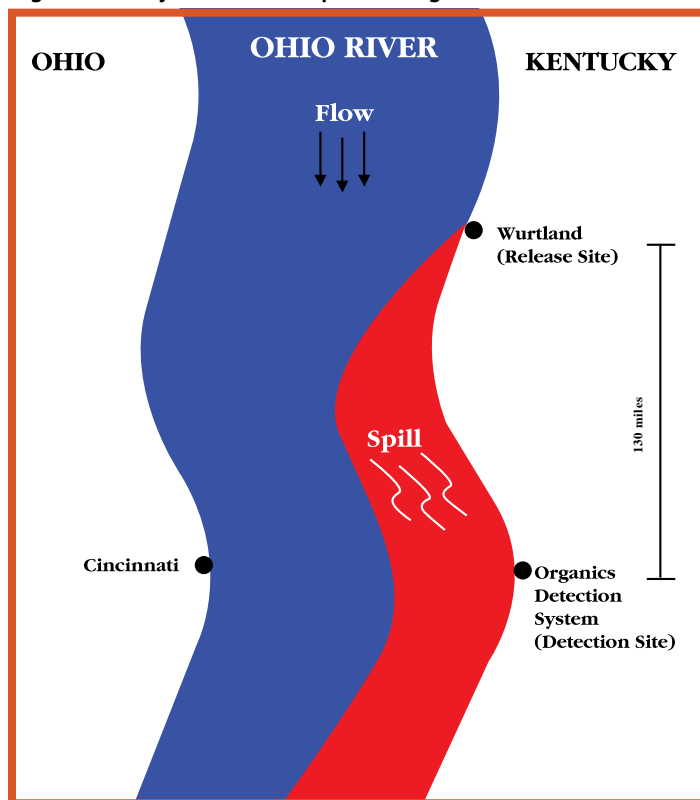
Protecting Contact Recreation

Results of ORSANCO's bacteria monitoring are conveyed to local health departments, which are responsible for notifying the public when conditions are unsafe for contact recreation. In 2007, the Commission initiated a study of contact recreation on the Ohio River. The study will collect information on when, where, and what forms of recreation take place on the river. The results of this survey will allow ORSANCO and its partner agencies to provide better protection of recreational users.

Protecting Fish Consumption

Under ORSANCO's leadership, the Ohio River Fish Consumption Advisory Panel continued its efforts to develop a standardized Ohio River protocol to determine when and where advisories are necessary. Currently, state agencies issue advisories independently of one another, often using different techniques to report on the same data. This sometimes leads to inconsistent information being relayed to the public, as two states may issue different advisories for the same species from the same section of the Ohio River. The use of a single river-wide protocol for determining when advisories should be issued will enable agencies to send a more consistent message to the public.

Figure 4: Methylene Chloride Spill Tracking



TOTAL MAXIMUM DAILY LOADS

ORSANCO coordinates efforts by the states to develop Total Maximum Daily Loads (TMDLs) for the Ohio River, and carries out monitoring and assessment activities to support TMDL development. TMDL support activities in 2007 focused on four main areas: 1) monitoring bacteria to support a TMDL modeling effort, 2) initiating a microbial source tracking (MST) study for the Ohio River, 3) characterizing sources of PCBs, and 4) developing a study to quantify recreational use of the Ohio River and to evaluate fish consumption rates.

Monitoring Bacteria

ORSANCO has conducted extensive bacteria monitoring since 2003 to assess the entire 981 miles of the Ohio River. Nearly half of the river (475 miles) has been listed as impaired by bacteria as a result of this monitoring effort. The Commission is working with U.S. EPA and the six states bordering the Ohio River (PA, OH, WV, KY, IN, and IL)

in a cooperative effort to develop a pathogen TMDL. Additional ambient monitoring was conducted in 2007 to support the development of a water quality model that will be used in the TMDL analysis. The monitoring included three rounds of sampling on more than 120 tributaries and one longitudinal survey covering the full length of the river with samples collected approximately every five miles.

Characterizing PCB Sources

Previous ambient monitoring has revealed that polychlorinated biphenol (PCB) levels in the Ohio River and many of its tributaries exceed water quality standards. As a result, a PCB TMDL must be completed for the entire Ohio River. Identifying specific sources and quantifying the source loadings, however, is extremely challenging for persistent pollutants such as PCBs. Due to the difficulty in characterizing the various sources of PCBs, the Commission formed a special task force to develop a comprehensive PCB reduction strategy.

In 2007, the Task Force reviewed the available data for each of the major source categories. This process identified data gaps and recommended collecting additional information. These recommendations include: 1) evaluate existing data to identify tributaries that contribute significant PCB loads to the Ohio River, 2) conduct an in-depth review of existing discharge and stormwater data collected in other areas of the country that might be comparable to Ohio River sources of PCBs, 3) evaluate potential impact of stormwater discharges from rail yards, 4) estimate loadings from Superfund sites, 5) conduct influent/effluent monitoring at municipal wastewater treatment plants, 6) estimate PCB loads from combined sewer overflows, 7) conduct additional ambient monitoring at sites with poor correlation of PCBs to stream flow, 8) review existing atmospheric deposition studies, 9) characterize the sediment-water interaction to quantify loadings from contaminated sediments, and 10) consider establishing a routine monitoring program for PCBs.

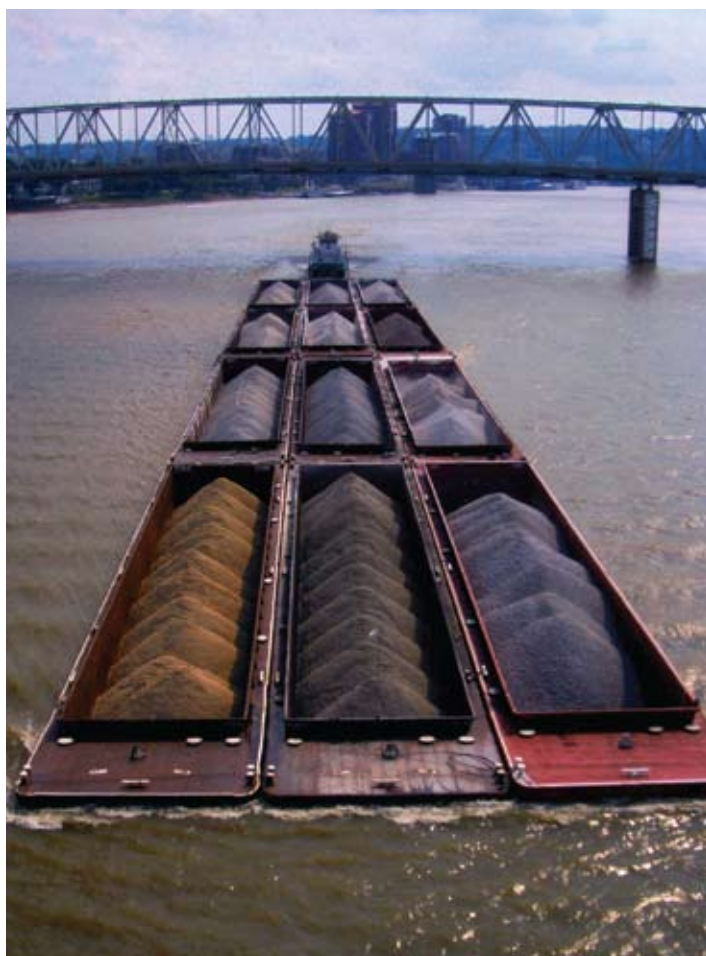


Photo taken by Ken Burger, Cincinnati, Ohio

RESEARCH

In developing its programs to monitor and assess the water quality of the Ohio River, ORSANCO has found that the current understanding of large river ecosystems is incomplete. The Commission has developed methods for monitoring both biological and physical/chemical characteristics of the Ohio River that can be used on large rivers elsewhere. The success of these efforts has attracted interest from other organizations addressing similar challenges in large river monitoring, and has led to federal grants supporting further research in this area.

Great Rivers Ecosystem Study

In 2004, U.S. EPA began one of the most comprehensive surveys ever conducted, focused on the great rivers of the central United States. The U.S. EPA's Environmental Monitoring and Assessment Program (EMAP) - Great Rivers Ecosystems (GRE) study will assess the condition of these rivers.

In 2007, ORSANCO continued to serve on U.S. EPA's GRE Science Advisory Committee and Technical Committee, providing technical guidance and data review. ORSANCO also initiated a \$2.4 million cooperative project comparing sampling methods, testing multiple biological indicators (fish, macroinvertebrates, and algae) and examining the effects of stressors at various spatial scales. The five-year project will include data from 15 of the 18 navigational pools on the Ohio River.

Endocrine Disrupting Compounds

Endocrine Disrupting Compounds (EDCs) and other emerging chemical threats are gaining notoriety in both the scientific and general news media. The extent and persistence of their occurrence in surface waters of the United States remains unclear. In 2005, ORSANCO initiated a project to investigate the presence and effects of EDCs within the Ohio River. Results of water samples analyses confirmed the presence of multiple hormones and other EDCs. Caged fish were set out to examine the genetic level response of male fish to the EDCs in the water column. Results were varied, but seemed to indicate that some male fish were expressing a gene that should only be expressed by females, a response caused by exposure to EDCs. The reproductive health of native male and female fish was also examined. The study did

not find any severe cases of reproductive complications (e.g., cross-gender fish), but other abnormalities did provide evidence of exposure to EDCs. ORSANCO plans to continue working with U.S. EPA to further this research.

Large River Tributary Studies

In 2007, ORSANCO concluded two separate large river tributary studies. One study began in 2004 to compare different fish sampling techniques conducted on larger river tributaries.

The study concluded that variation in sampling results is more influenced by variations in sampling equipment than how the equipment was employed in the field.

The focus of the second study was to survey land use (e.g., agriculture, natural forest), instream habitat (e.g., woody cover), riparian condition (e.g., bank erosion), and fish community attributes (e.g., species diversity, the presence of endangered and exotic species) to compare conditions within and between a select group of Midwestern rivers. An Index of Biological Integrity (IBI), which is a score given to a particular site or river based on its relative biological condition, was generated from these data to facilitate comparisons. The new IBI, similar to ORSANCO's Ohio River Fish Index (ORFI_n), not only made a large scale regional assessment possible but also allowed for comparisons to existing state agency IBIs. The new IBI showed slightly less sensitivity to variations within each river and consistently scored rivers lower than the individual state IBIs. Overall, the study produced a useful regional assessment tool and revealed a trend of decreasing sensitivity as the scope (i.e. range of data included) of the index increases. These findings could have implications for proposed national surveys.



Bimonthly sampling on the Licking River, a tributary of the Ohio River

EDUCATION AND OUTREACH PROGRAMS



Now in its 18th year, River Sweep continues to be one of the largest annual cleanup events for the Ohio River and several tributaries. On June 16th, 2007, more than 22,000 volunteers collected nearly 9,000 tons of trash and debris along 3,000 miles of shoreline in the Ohio River Watershed. The collected materials, such as tires, plastics, appliances, and other items, are recycled when possible or placed in approved landfills.

Prior to the event, ORSANCO conducts a poster and t-shirt contest for students in kindergarten through 12th grade living within the Ohio River Basin. In 2007, the grand prize poster winner was Xin Qui, an 11th grade student from Rising Sun High School in Rising Sun, Indiana. The t-shirt design winner was Andres Barragan, an 11th grade student from Signature School in Evansville, Indiana. Both the poster and t-shirt designs were used to promote the River Sweep event.

2007 River Sweep Corporate Sponsors

AEP River Transportation
AK Steel
American Commercial Lines
American Electric Power
Arch Chemical
Ashland Inc.
Babst, Calland, Clements, Zomnir
BASF
Bayer
Bristol-Myers Squibb
Cargill

Casino Aztar
Dayton Power and Light
Dominion Foundation
Dow Corning
DuPont Washington Works
Duquesne Light
E.ON U.S.
Gallatin Steel
The Home Depot
Kentucky River Authority
Koppers

Louisville and Jefferson County MSD
Massac County Soil and Water
Neville Chemical
Nova Chemical
Pittsburgh Plate Glass (PPG)
Rivertown Breakdown
Rumpke
Sanitation District
No. 1 of Northern Kentucky
Toyota
West Virginia American Water



Life Below The Waterline

Life Below the Waterline, a 2,200-gallon mobile aquarium, is used to demonstrate the abundant and diverse aquatic life of the Ohio River and its relationship to water quality. The aquarium displays Ohio River fish at festivals, educational fairs, and other special public events in communities throughout the Ohio River Valley. Fish are obtained close to the area of display and are held in the aquarium during the event, allowing the public an opportunity to learn about the aquatic life and biodiversity in their area. They are released back into the river following the event.

Life Below the Waterline 2007 display locations

Earth Day Festival at Sawyer Point in Cincinnati, OH
Tanners Creek Watershed Project Water Festival in Lawrenceburg, IN
Louisville Water Company's Water Wows Festival in Louisville, KY
Ohio River Way Paddlefest Kids Ex-Stream Expo in Cincinnati, OH
ALCOSAN Open House in Pittsburgh, PA
Great Outdoor Weekend and World Water Monitoring Day Event in Newport, KY





Volunteer Monitoring Program

The RiverWatchers Volunteer Monitoring Program began in 1992 as a pilot program to promote

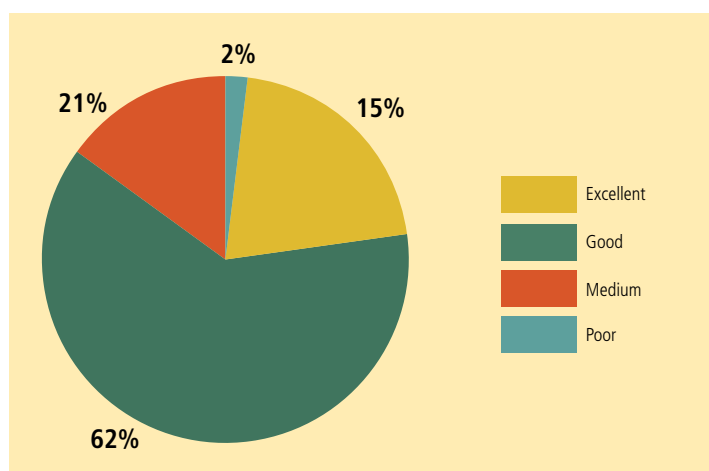
stewardship of the Ohio River and its tributaries and increase public awareness of water quality, particularly in schools. Currently, 27 schools, environmental groups, and/or private citizens collect data for RiverWatchers. These volunteers monitor the Ohio River Watershed in six states, including Indiana, Kentucky, New York, Ohio, Pennsylvania, and West Virginia. Outfitted with chemical test kits, a basic knowledge of water quality, and a desire to learn more about the effects of pollution on rivers and streams, participants collect samples and conduct tests to evaluate the health of local waterways. Data collected are sent to ORSANCO where they are evaluated and entered into an online database. Each sample is analyzed according to a Water Quality Index (WQI) Score that evaluates the health of the water on a scale ranging from poor to excellent. In 2007, 77% of the scores fell in the good to excellent range, while only 2% were in the poor water quality category (*Figure 5*).

Sampling leaders are trained throughout the year to participate in the program. In 2007, teacher training workshops were held in Cincinnati, OH and Jamestown, NY. RiverWatchers also participated in various educational events to promote volunteer monitoring in the Ohio River Valley. Several RiverWatchers groups participated in World Water Monitoring Day, a global event that encourages water monitoring groups to collect data and enter their results into an international watershed database.



Students from Mater Dei HS (above) and Daviess County HS (below) monitor the Ohio River

Figure 5: RiverWatchers Water Quality Index (WQI) Scores for 2007



2007 RiverWatchers Groups

Indiana

Ivy Tech Community College*
Mater Dei HS
Switzerland County HS

Kentucky

Daviess County HS
Newport HS*
Paducah Middle School
Raceland HS
River Ridge Intermediate School
Worthington Elementary

New York

Cassadaga Valley Middle/HS
Cattaraugus-Little Valley Central
Clymer Central
Maple Grove HS
Randolph Central HS
Southwestern Elementary

Ohio

Cincinnati State College
Interested Citizen*
Kings Junior High
Marietta HS
New Richmond HS
Waterford HS*

Pennsylvania

Interested Citizen
Rankin Intermediate School
Warren County
Conservation District*

West Virginia

Leon Elementary
St. Francis Xavier School
Wahama HS

*Indicates a new RiverWatchers group or individual participant in 2007.

ADVISORY COMMITTEES

Since its inception, ORSANCO has relied on input from advisory committees for input and assistance concerning its mission and programs. These committees represent specific river-related interests. Currently, four such committees are active.

Water Users Advisory Committee

The oldest of the Commission's advisory committees is the Water Users Advisory Committee comprised of representatives of utilities that use the Ohio River and its tributaries as sources of drinking water. This group meets several times each year to evaluate Commission programs and provide input to improve or enhance the use of the river as a public water supply. Issues this committee has presented to the Commission in the past year include: re-evaluating the Commission's ammonia criteria to protect drinking water production; including notification procedures in wastewater discharge permits to facilitate communication between dischargers and water suppliers in a timely and efficient manner; addressing issues of disconnect between the Clean Water Act and the Safe Drinking Water Act; and creating a template to assist Ohio River utilities in developing Source Water Protection plans.

POTW Advisory Committee

Representatives of municipal wastewater treatment utilities comprise the ORSANCO POTW Advisory Committee. The Committee seeks to improve the operation of municipal facilities through technology transfer and recognition of exemplary operators. Members also provide input to the Commission on issues relating to treatment of municipal wastes. The Committee has been at the forefront of discussions of urban wet weather issues in the past three years.

Power Industry Advisory Committee

For many years, ORSANCO has also worked with industry advisory committees. The Power Industry Advisory Committee has been the most active industry committee in recent years. Currently, the committee is reviewing Ohio River temperature criteria. The committee is also active in studies of Ohio River aquatic life.

Public Interest Advisory Committee

The Public Interest Advisory Committee (PIACO) is the major means by which the general public can provide input into the Commission's activities. PIACO is composed of one regular member from each of the signatory states and four at-large members who represent various river interests such as marinas, fishing, and floating restaurants.

REGISTRY OF DISTINGUISHED WATER AND WASTEWATER OPERATORS

In 1986, the Commission created a Registry of Distinguished Water and Wastewater Operators to recognize those water and wastewater operators in the Compact District who have demonstrated exceptional expertise in operating their facilities, exemplifying a commitment to quality drinking water and clean streams. Election to the Registry involves a rigorous examination of the candidate and the facility he or she operates. Since the inception of the program, 24 individuals have been elected to the Registry. In 2007, the Commission elected Mr. Richard C. Pohlman into the Registry. Mr. Pohlman is the Supervisor of Treatment at the Richard Miller Water Treatment Plant for Cincinnati Water Works and has more than 20 years experience in the drinking water industry. He has been at the forefront of many new initiatives during his tenure at this facility.



Photo by Jack Ryan, Niles, Ohio, ORF Boat on Ohio River

SPECIAL EFFORTS

Ohio River Basin Commission

The Ohio River Basin Commission (ORBC) was established in 1962 and serves to facilitate coordination and information exchange on water and related land resource issues for the Ohio River Basin. Given the significant impact that water resource, or “water quantity,” issues can have on water quality, ORSANCO has often worked closely with ORBC. In 2007, the two commissions held a joint meeting to explore issues of mutual concern, including climate change and improved modeling of river flows. The two commissions will hold regular meetings and work cooperatively to address these issues.

Big Sandy River Basin Coalition

In 2003, ORSANCO was contacted by a group of citizens from the Big Sandy River Basin who had formed the Big Sandy River Basin Coalition to seek support in the Coalition’s efforts to improve water quality. The Big Sandy River is a tributary to the Ohio, and its watershed lies in three states – Kentucky, Virginia, and West Virginia. The objectives of the Big Sandy River Basin Coalition are parallel to those of the Ohio River Valley Water Sanitation Commission. ORSANCO has worked closely with the Coalition for the past four years, seeing the partnership as an excellent opportunity to address water quality concerns in an important interstate tributary watershed. In 2007, the secretaries of cabinet level agencies in the three states signed an agreement to work cooperatively to address the water quality problems of the Big Sandy River Basin. ORSANCO will continue to work with the Coalition and the states to carry out that agreement.

Gulf of Mexico Hypoxia Abatement

Each summer, a hypoxic zone or “dead zone” of low oxygen forms in the Gulf of Mexico, threatening the nation’s largest commercial fishery (*Figure 6*). The cause of this zone appears to be nutrients from the Mississippi River. In 1997, a Mississippi River/Gulf of Mexico Watershed Nutrient Task Force was convened to address this problem. Chaired by U.S. EPA, the Task Force consists of representatives of nine Mississippi River states and nine federal agencies. Recognizing that nutrients from the Ohio River contribute to the problem, the member states charged ORSANCO to attend meetings of the Task Force and to coordinate any needed efforts on the part of the Ohio River states.

The Task Force produced an Action Plan in 2001. The goal of that plan was to reduce the size of the hypoxic zone to 5,000 square kilometers. It was believed that reducing nitrogen loads by 30% would meet this goal. Since 1995, nitrogen loads have been reduced by approximately 20%. However, in 2007, the hypoxic zone was one of the largest ever measured. Recent studies estimate that both nitrogen and phosphorous loads will have to be reduced by 45% to meet the goal. These studies also estimate that the Ohio River and its tributaries contribute 41% of the nitrogen load and 38% of the phosphorous load to the Mississippi River. The Task Force is now in the midst of revising the Action Plan in light of scientific advances in understanding the causes of hypoxia.

The Action Plan calls for Sub Basin Teams on each of the major tributaries to the Mississippi, recognizing that no single plan for nutrient reduction would be appropriate for the entire Mississippi River Basin. ORSANCO convened the Ohio River Sub Basin Team in 2004 and has worked with representatives from state agricultural, environmental, and natural resource agencies to develop strategies to reduce nutrients in the Ohio River basin. In 2007, the Ohio River Sub Basin Team hosted a Task Force meeting in Cincinnati, Ohio, which helped bring attention to this important sub basin of the Mississippi River.

Figure 6: Hypoxic Zone in the Gulf of Mexico



FINANCIAL REPORT

OHIO RIVER VALLEY WATER SANITATION COMMISSION

Statement of Activities

Year Ended June 30, 2007

Program Expenses

Salaries, benefits and taxes	\$ 1,606,714
Travel	336,694
Supplies	256,913
Contractual services	787,324
Lab fees and delivery	237,756
Office and utilities	52,365
Repairs and maintenance	30,413
Telephone	32,677
Printing and reproduction	13,317
Educational	99,369
Depreciation	183,186
Interest	53,805
Total program expenses	<u>3,690,533</u>

Program Revenues

Operating grants and contributions restricted to specific programs:	
Federal, state, and local grants	2,481,405
Contributions	<u>5,326</u>
Total program revenues	<u>2,486,731</u>

Net program expenses (revenues)	<u>1,203,802</u>
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General revenues:	
Grants and contributions not restricted to specific programs:	
State	1,260,800
Other assistance	<u>61,615</u>
Total general revenues	<u>1,322,415</u>

Increase (decrease) in net assets	118,613
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Net assets, beginning of year	<u>1,617,611</u>
Net assets, end of year	<u>\$ 1,736,224</u>

A detailed statement can be found in the June 30, 2007 audited financial statements.

ORSANCO STAFF

Alan H. Vicory, Jr., P.E., BCEE, Executive Director & Chief Engineer
Peter Tennant, P.E., Deputy Executive Director
Tracey Edmonds, Administrative Assistant

Administrative Programs & Human Resources

David Bailey, Director of Administration and Human Resources
April Adams, Administrative Assistant
Donna Beatsch, Data Processing Specialist
Joe Gilligan, Comptroller
John Klear, Data Systems Administrator
Paul Spires, Sr., Maintenance

Source Water Protection & Emergency Response

Jerry Schulte, Manager of Source Water Protection
& Emergency Response
Travis Luncan, Environmental Chemist
Lila Xepoleas Ziolkowski, Analytical and Environmental Chemist

Biological & Research Programs

Erich Emery, Manager of Research,
Ohio River Users & Biological Programs
Dan Phirman, Aquatic Biologist
Rob Tewes, Aquatic Biologist
Jeff Thomas, Senior Biologist
Contractual Biological Research:
Ryan Argo, Aquatic Biologist
John Spaeth, Aquatic Biologist

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Steve Braun, Environmental Specialist
Stacey Cochran, Environmental Specialist
Sam Dinkins, Environmental Specialist
Eben Hobbins, Environmental Specialist
Elizabeth McGuire, Environmental Specialist
Greg Youngstrom, Environmental Specialist

Public Information Programs

Jeanne Ison, Manager of Public Information/Education Programs
Melissa Mann, Public Information/Education Specialist
Alexandra Stevenson, Public Information/Part-time Publication Writer

COMMISSIONER MILESTONES

The following ORSANCO Commissioners have served their individual states and the Commission for a total of 104 years of service. ORSANCO appreciates the dedication of these individuals:

JOSEPH HARRISON, *Evansville, 26 years, representing Indiana*
Melvin Hook, *Pittsburgh, 22 years, representing Pennsylvania*
Ronald Potesta, *Charleston, 21 years, representing West Virginia*
Philip Morgan, *Danville, 18 years, representing Illinois*
Douglas Conroe, *Maple Springs, 17 years, representing New York*



MEMBERS OF THE COMMISSION*

Officers

Chairman: Stuart F. Bruny, P.E.

Secretary/Treasurer: Jeffrey A. Eger

Vice Chairman: David M. Flannery

Executive Director & Chief Engineer: Alan H. Vicory, Jr., P.E., BCEE

Illinois

Constance H. Humphrey

Phillip C. Morgan, Director/Treasurer
Danville Sanitary District

Douglas P. Scott, Director
Illinois Environmental Protection Agency

Pennsylvania

Charles Duritsa

Melvin E. Hook

Kathleen McGinty, Secretary
Pennsylvania Department of
Environmental Protection

Indiana

Thomas Easterly, Commissioner
Indiana Department of
Environmental Management

Joseph H. Harrison, Sr.
Bowers Harrison, LLP

Vasiliki Keramida, Ph.D., President & CEO
Keramida Environmental, Inc.

Virginia

David K. Paylor, Director
Virginia Department of Environmental Quality

Robert H. Wayland III

West Virginia

David M. Flannery
Jackson & Kelly, PLLC

Ronald R. Potesta, President
Potesta & Associates

Stephanie Timmermeyer, Cabinet Secretary
West Virginia Department of
Environmental Protection

Kentucky

Jeffrey A. Eger, Director
Sanitation District No. 1
of Northern Kentucky

Teresa Hill, Secretary
Kentucky Environmental &
Public Protection Cabinet

Stephen Pence, Lieutenant Governor

Federal

Stuart F. Bruny

Kenneth S. Komoroski,
Kirkpatrick & Lockhart Nicholson Graham, LLP

Donald S. Welsh, Regional Administrator
U.S. Environmental Protection Agency, Region III

*as of December 31, 2007

New York

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Chautauqua Institution

T. Lee Servatius

Denise Sheehan, Commissioner
New York State Department of
Environmental Conservation

Ohio

Chris Korleski, Director
Ohio Environmental Protection Agency

Paul Tomes

Amy H. Wright, Director,
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