Chester County Water Resources Authority provides flood protection, water supply reservoir management, stormwater management and watershed planning, and water resources investigations, monitoring, information and management activities for Chester County. Created in 1961 by the Chester County Board of Commissioners, the Authority is the only water resources-focused county level agency in Pennsylvania. Over the course of those 60 plus years, the Authority planned and constructed five regional flood control dams in the Brandywine Creek watershed, and now currently owns, operates, and maintains four of those facilities to the highest national dam safety standards. These flood control facilities provide 1.1 billion gallons of flood storage to capture flood waters from seven municipalities and provide flood control for 19 municipalities located along the Brandywine Creek. In addition to flood protection offered by the dams, the Authority also manages Chambers Lake behind Hibernia Dam as a water supply reservoir, as well as over 200 acres of riparian lands and easements.

Safe and sustainable water resources are critical to the safety, health, and happiness of Chester County residents, to the economic vitality of communities, and for the protection of the natural environment, both now and into the future. This report showcases Chester County Water Resources Authority’s work and leadership during 2023 in pursuit of these goals.
Stormwater and Watershed Management Planning

Act 167 Stormwater Management Model Ordinance Update
The updated Model Ordinance was re-adopted by the County Commissioners on August 17, 2022 to incorporate responses to PA DEP’s comments. PA DEP’s 90-day review period for final approval ended on November 24, 2022. All Chester County municipalities are required to adopt the County-wide Act 167 Stormwater Model Ordinance by May 31, 2023. As of December 31, 2023, 63 out of 73 Chester County municipalities have adopted the ordinance.

Annual Municipal Stormwater Summit
CCWRA hosted the Annual Municipal Stormwater Summit virtually in September 2023. Presentations covered the recent West Chester stormwater fee court decision, the kickoff of the Brandywine Flood Study, and an update on Hurricane Ida data and CCWRA’s FloodTools website. Also featured was the official public debut of the draft Watersheds 2045 plan, as well as remarks from the County Commissioners. About 40 attendees joined the webinar, representing at least 13 municipalities and numerous nonprofit and private consulting groups.

Christina Watersheds Municipal Partnership (CWMP)
The Christina Watersheds Municipal Partnership is a group of municipal and nonprofit partners focused on developing strategies to address stormwater pollution in the Brandywine-Christina watersheds of Chester County, and to provide support to local townships, boroughs, and cities to help meet state standards for clean streams. CCWRA continues to be an active member of CWMP’s Planning Team. In 2023, the collaborative hosted a number of events, including the Municipal Officials Breakfast, a stormwater infrastructure maintenance training for public works staff, a lawn-to-meadow conversion workshop, and a webinar for municipal staff on using CWMP’s social media outreach toolkit for MS4 permit compliance.

ChesCo Chesapeake Communities Action Plan (C3AP)
CCWRA has continued to partner with Chester County Conservation District and other partners to implement the C3AP for pollution reduction in the Chesapeake Bay watershed. CCWRA staff worked with the Conservation District on the application for the 2024 C3AP Non-Ag Implementation Grant. Near the end of 2023, PADEP had awarded Chester County enough funding this year to support all agricultural and stormwater projects that applied for County Action Plan funding.
Chester County Stormwater Permit Compliance

In coordination with the Department of Facilities, CCWRA supports the implementation of the County’s NPDES stormwater (MS4) permit. CCWRA is primarily responsible for actions related to Minimum Control Measures (MCMs) #1 and #2, both of which are related to public outreach and engagement. Activities related to these MCMs that were coordinated by CCWRA in 2023 include the Government Services Center Earth Day cleanup and an employee stormwater webinar, as well as annual reporting to comply with permit requirements.

247 Land Development Plan and Municipal Code Reviews

In 2023, CCWRA staff completed twenty-nine reviews for 21 municipalities in 2023. A total of 90 reviews for 42 municipalities have been completed since the start of the current strategic planning period in 2019. CCWRA met our goal of reviews for 37 municipalities in February 2023.
Emergency Preparedness and Response

Preparedness Exercise for Hibernia Dam Emergency Action Plan

A tabletop exercise, coordinated by CCWRA, CCDES, and our consultants, brought together law enforcement, first responders, emergency management personnel, Pennsylvania Emergency Management Agency, Pennsylvania Department of Environmental Protection, National Weather Service, and Chester County Parks + Preservation and Facilities departments to discuss their perspectives on organizing and responding to a potential emergency at Hibernia Dam.

Flood Tools website

CCWRA published and maintains a web site for emergency managers, municipal decision makers, and the public to stay informed about forecasted and current stream flooding conditions throughout Chester County. The web site consolidates National Weather Service river forecasts, as well as real-time stream conditions from the U.S. Geological Survey for Chester County locations.

Brandywine Flood Study

As a result of the catastrophic flooding in the county from Tropical Storm Ida, the Brandywine Flood Study was initiated in August 2023 with CCWRA, the Brandywine Conservancy, and the University of Delaware as the project leads. The study is a coordinated effort to better understand where and why flooding occurs in the Brandywine Creek watershed, and identify the best approaches to protect our communities from future severe flooding events.
Water Use, Supply, and Flood Control

Completion of Beaver Creek Dam Rehabilitation Project
The construction portion of the rehabilitation project was completed in 2022. Financial records were closed in 2023 with over $300,000 of previously allocated funds returned to the County. Final permit and other close-out documentation was submitted to regulatory agencies in April 2023. At the completion of this large multi-year project, CCWRA staff, along with staff from the USDA-Natural Resources Conservation Service, were asked to give a joint virtual presentation to the NRCS Dams Consortium on lessons learned during the Beaver Creek Dam Rehabilitation Project.

Annual Dams Inspections
The annual dams inspections were once again conducted by Gannett Fleming with no dams safety concerns identified. This year the Authority initiated a third-party review by contracting with Schnabel Engineering to supplement the Gannett Fleming inspection, providing an opportunity to have another set of professionals offer an assessment of the condition of the dams. This useful opportunity confirmed the results of Gannett Fleming’s assessment, and offered new perspectives and insights.

Drought Conditions
Due to lower than normal rainfall in the early months on 2023, Chester County was in a state-declared Drought Watch for 126 days from June 15, 2023 to October 19, 2023. As a result, the Authority published a new web site, the Chester County Drought Dashboard, that provides up-to-date information on current water conditions, forecasts from the National Weather Service, recommendations for water conservation, and a FAQ about drought declarations.
Maintenance of Chambers Lake as a public water supply

Among other uses of Chambers Lake, such as recreation, the lake continues to be maintained as a component of a public water supply system to support the demand for water that is treated at the Coatesville Water Treatment Plant, owned and operated by Pennsylvania American Water Company, Inc. A constant release of water from Chambers Lake provides flow to the West Branch Brandywine Creek to offset the withdrawal of water at a pumping station (water intake) that feeds water to the Coatesville Plant. The Authority monitors stream conditions daily, and coordinates with Pennsylvania American Water Company to ensure that the stream flows are maintained in compliance with regulations and permits, while preserving the level of Chambers Lake as much as possible to support other uses. During dry periods, additional releases of water may be necessary to support the plant operations and maintain flows. 2023 was once such year when the Authority needed to provide an increased release of water to maintain stream flows and help meet the water treatment plant’s demand for water.
Water Resources Outreach, Education, and Information

County Watershed/Land Conservation Organizations

Staff members are active participants in watershed collaboratives across the County, including the Brandywine-Christina Task Force, the Octoraro Source Water Collaborative, the Schuylkill Action Network, and the Valley Creek Restoration Partnership, helping each group successfully achieve their program goals.

Water Quality Website

A new interactive web site was published in 2023 with the results of 2022 water quality sampling conducted at eighteen monitoring sites across Chester County. The web site also includes data from the past 25 years for biotic integrity, nitrate, phosphorus, and chloride, as well as links to the USGS website for additional information.

Public Events & Outreach

CCWRA hosted several events in 2023, including the Watersheds Roundtable, the Municipal Stormwater Summit, a county employee stormwater webinar, and an Earth Day Grounds Cleanup event to engage with different communities regarding water and conservation issues. In addition, the Authority participated in and supported events hosted by others such as the CWMP Elected Officials Breakfast, the Annual Trout Unlimited Show, the Chester County Envirothon, and multiple stream cleanup days.
Watersheds Plan Development and Implementation

**Watersheds 2045 Plan Finalization**

In 2023, CCWRA and partners completed the final draft of the *Watersheds 2045* plan, which was ultimately adopted by the Commissioners in January of 2024. This represented the culmination of several years of work by CCWRA staff, multiple County departments, and numerous external partners. In addition to serving as the County’s updated integrated water resources plan, it will also serve as the updated County-wide Act 167 Stormwater Plan (encompassing the 2022 Model Stormwater Ordinance update) and Rivers Conservation Plan.

*Watersheds 2045* has been endorsed by the CCWRA Board of Directors, the Chester County Planning Commission Board of Directors, the Chester County Conservation District, and the plan’s 30-member Steering Committee. The plan features 7 key goals that cover public education, recreation, natural resource protection, water quality restoration, municipal planning and sustainable water supply.

**Chester County-USGS Cooperative Water Resources Program**

**2023 Monitoring Program Efforts**

Since 1969, the U.S. Geological Survey (USGS) has had a cooperative water resources program with Chester County to measure and describe the water resources in the County. In addition to CCWRA, the Chester County Health Department and the Chester County Department of Emergency Services participate in this program. This partnership between USGS and Chester County, PA, provides the County with the information that it needs for sound water-resources management.

In 2023, the USGS maintained 11 stream gages, 2 lake gages, and 6 precipitation gages in Chester County. The USGS also conducted monthly water level measurements at 23 wells. Continuous water quality sensors were maintained at 4 stream locations and turbidity and sediment monitoring was conducted at 7 locations. E. coli bacteria samples were collected at 5 stations for 12 events, and discrete stream quality samples were collected at 20 locations. Work also continued on public web pages for the sediment and streams conditions program, and the USGS published a report on area peak stream flows and flooding from Tropical Storm Ida.
2023 Chester County Water Resources Authority Board of Directors

Denny L. Howell, *Chair*
Anthony L. Fernandes, *Vice-Chair*
Robert Struble, *Secretary*
Caren Andrews, *Treasurer*
Sidney Brookes
Lisa M. Donlon
Kevin Gore
Mark Lucas
Denis Newbold, PhD.

CCWRA welcomed new Board of Directors Mr. Kevin Gore and Mr. Mark Lucas who were installed by County Commissioners on March 29, 2023. Kevin brings experience in land development application reviews and code enforcement as Director of Building, Housing and Code Enforcement for West Chester Borough. He is also a Certified Flood Plain Manager. Mark is the Township Engineer for East Bradford Township and a registered professional engineer as well as a Certified Erosion and Sediment Pollution Control Plan Preparer. He also has previous experience in small dams design.

The Authority thanks Mr. Robert Struble, Jr. and Mr. A. Sidney Brookes for their many years of service and contributions to the success of the Authority. Both gentlemen resigned from the Board at the end of the year.

2023 Chester County Water Resources Authority Staff Members

Seung Ah Byun, PhD., PE
*Executive Director*
Craig Thomas
Mark Chegwidden
Kate Hutelmyer
Teresa Greenawalt
Summary of 2023 Expenses

Authority Expenditures

- Outreach, $3,285
- Water Resource Planning, $3,435
- Administration, $23,179
- Emergency Preparedness, $29,775
- Engineering Support Services, $65,327

Dams, Maintenance & Property Management, $57,464

Our Partners

The Authority appreciates the financial and technical support of our partners:

- Chester County Board of Commissioners
- Chester County Planning Commission
- Chester County Conservation District
- Chester County Parks & Preservation
- Chester County Department of Emergency Services
- Chester County Health Department
- Chester County Facilities Department
- USDA Natural Resources Conservation Service
- U.S. Geological Survey
- Pennsylvania American Water Company
- PA Department of Environmental Protection
- PA Department of Conservation & Natural Resources
- PA Game Commission
- PA Fish and Boat Commission