



## From the President

By Michael Riley

Greetings. In his last "From the President" column, David Barber stated that he was stepping down as the president after many years of service. He had threatened to do this a couple of years back, but this time it was for real. His retirement leaves us with a very large void to fill. Elsewhere in this issue you will find a tribute to David for all his hard work.

So, at the annual meeting in Ohio, I was chosen by the board to be the new president of the American Canal Society. I won't bore you with the details of my biography, but I have been doing the "canal thing" since about 1990 when I discovered an overgrown lock along the Enlarged Erie near Rotterdam, New York and sought to find out more about it. I have found that the study of canals and history to be a great hobby that can lead to many discoveries, lots of travel and many new friends.

We can see the great interest in history as we travel about the land. An example of this is the annual Parks and Trails NY Cycle the Erie Canal bike tour that brings in over 600 riders who spend a week immersing themselves in canal history. An economic impact of the Canalway Heritage Corridor shows

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*The Shannon Blueway Floating Boardwalk was a popular feature of canal tours during the World Canal Conference. WCC coverage starts on page 9 – Photo by Christine Holdsworth*

# American Canals

BULLETIN OF THE  
AMERICAN CANAL SOCIETY

Managing Editor: Steve Dean  
Contributing Editor: David G. Barber

## www.americancanals.org

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For CANAL CALENDAR items and news of local, state, and regional canal societies: c/o Steve Dean, PO Box 132, Saint Leonard MD 20685; 301-904-9068; 184.5\_miles@comcast.net

The objectives of the American Canal Society are to encourage the preservation, restoration, interpretation, and use of the historical navigational canals of the Americas; to save threatened canals; and to provide an exchange of canal information. Manuscripts and other correspondence consistent with these objectives are welcome.

An annual subscription to *American Canals* is automatic with ACS membership. Regular Single Membership, \$25; Dual Membership, \$35; Sustaining (no change) \$35; Patron, \$50; Life Membership \$500.00.

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**Other Publications:** *The Best from American Canals; American Canal Guides*, William E. Trout III, editor and publisher

**DEADLINE:** Material for our next issue must be on the editor's desk no later than January 15, 2019. Send to Steve Dean, PO Box 132, Saint Leonard MD 20685, Editor, American Canals; 301-904-9068; 184.5\_miles@comcast.net

Material submitted to *AMERICAN CANALS* for publication should be typed and double-spaced or sent by email in WORD format. You may send actual photographs (which will be scanned and returned), or digital versions may be emailed or sent on a CD.

Editorials, articles expressing opinions, and book reviews reflect the opinion of the writer/reviewer and not necessarily those of the editor or ACS board.

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Historic American Canals Survey, David G. Barber, chair

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## *American Canals* Indexes Updated

Thanks to some hard work by David Barber, the index for *American Canals* is now updated to reflect the full 45 year history, from 1972 to 2016. Separate indexes allow searching by article, author and photographs. The indexes are available at the following link: [www.americancanals.org/AC%20Indexes/AC\\_Indexes.htm](http://www.americancanals.org/AC%20Indexes/AC_Indexes.htm)

Additionally, past issues of *American Canals* through 2014 are now available. They can be found at: [www.americancanals.org/AC\\_Issues/American\\_Canals.htm](http://www.americancanals.org/AC_Issues/American_Canals.htm)

# American Canal Society Sales

The Society has the following items for sale:

Best from American Canals #2	published 1984	\$4
Best from American Canals #5	published 1991	\$4
Best from American Canals #6	published 1993	\$5
Best from American Canals #7	published 1996	\$5
Best from American Canals #8	published 1998	\$6
American Canal Guide #1: West Coast	published 1974	\$1
American Canal Guide #2: South, NC to FL	published 1975	\$2
American Canal Guide #3: Lower MS & Gulf	published 1979	\$3
American Canal Guide #4: WV, KY, Ohio River (Photocopy)	published 1988	\$3
American Canal Guide #5: DE, MD, VA	published 1992	\$3
20 year American Canals Index 1972-1992	published 1992	\$3
Canal Boat Construction Index (12 pages)	published 1992	\$2
Picture-Journey Along the Penn. Main Line Canal	published 1993	\$10
ACS Burgee (blue on white cloth)		\$15
ACS cloth sew on patch (2" x 3" red, white & blue)		\$3

## Special Offers – while stocks last

Back issues of American Canals - free to members – enquire for a list of available copies and mailing cost.

An ACS bumper sticker (“Support Your Local Canal” or “Restore Your Local Canal”) will be sent **free** with each order

**Shipping and handling:** Orders can also be sent by mail with a check payable to American Canal Society to 24 Northview Terrace, Cedar Grove, NJ 07009. **Include \$3 postage for first item and \$1 for each additional item** for Media Mail within USA. Enquire for other destinations and expedited delivery. Allow for your order to take up to 4 weeks to dispatch. Email [Sales.AmericanCanals@gmail.com](mailto:Sales.AmericanCanals@gmail.com) for further information.



that tourism spending is over \$307 million annually. Yet in spite of this, the groups that staff and fund the small museums and parks struggle to find volunteers to help welcome these visitors, or dig into history, or clean the parks and trails. It is a problem for all of us, and it isn't limited to a region, or a state or village. No, it is everywhere.

A lot has been written and said about the younger generations, and what they like, and don't like. It is clear that few find volunteering rewarding. The result is that our membership base continues to age upward, and our ranks continue to thin. It is likely many of you can recall the days when you looked around the room at many 40 and 50 year old. Now the same group is 70, 80 and 90. There are few 40 and 50 year old folks joining and no one younger. This issue is getting to the crisis level for many organizations as they struggle to stay relevant. And for the organizations who host groups of 600, what will they visit as museums and parks close due to a lack of volunteers? I am the president of a small historical society here in Port Byron, NY, and I have watched for years as people leave and the society is forced to do less and less. And once that rock starts rolling downhill, it is hard to stop. Less activities mean less exposure and that only leads to fewer people finding you and offering to help or join. There was an excellent book written in the 1990s called "Bowling Alone" in which this decline of volunteerism was detailed. It hasn't changed. At our annual meeting, the Indiana Canal Society spoke about how they have had to turn to mostly doing their work through the website. This rang so true for me as I have had to do the same with my group.

With the American Canal Society, we are at a unique place. Whether this is a good or bad thing has yet to be learned.) I am sure you have all heard of

the SWOT analysis, where you lay out your strengths, weaknesses, opportunities and threats. In terms of a strength, we have a very wide and diverse group, and a very encompassing mission. The mission statement of the ACS reads; "to encourage and advocate the preservation, restoration, interpretation and usage of the canals of America." Our weakness is that we have a very wide and diverse group. It is very difficult to get together and have discussions face to face. It is even more difficult to have an impact. Our opportunity is that there are many canal sites that need our help. You can likely think about small parks and sites that exist without any formal group overseeing the care. Our threat is that we might simply age out of existence.

When I was asked to take on the role of president, I asked the nominating committee what it was that the ACS did. I had served on the board for years and had never been asked to do anything. And aside from our excellent publication, we don't seem to be doing anything that would encourage all of you to join or continue your membership. As the new guy, I need to hear about what we need to be doing to help you. Perhaps more importantly, let's hear about what you are doing that can be shared with the canal community to help them grow and attract new members.

A couple things right off. David has been working for years on the website and has recently had to migrate the site to a new platform. So, if you haven't visited the ACS website, take a look. Also, we now have a Facebook page. When I took over the Canal Society of New York State Facebook, the "likes" were around 177. It is now over 2500. As I say, there is an interest. So, let's start there. If you have never done it, hop on and take a look at Facebook sites of the ACS, and other canal groups. Like them and share them. Click like when you see something you enjoy.

Until next time – Mike

# A Special Thanks to David Barber

By Michael Riley

You may have noticed a new name on the “From the President” column in this issue. Dave Barber held true to his word and decided to retire after many years of serving as the president of the American Canal Society. At our ACS annual meeting that was held along with the Canal Society of Ohio, many of us got to talking about David and Audrey and all they had done. And historical organizations are typically horrible about recording their own history, so this is a fitting place to look back at what David has accomplished.

First, he was the fifth president of the ACS, and has served in that role for 16 years. (Past presidents were Tom Hahn, Bill Shank, Bill Trout, Terry Woods) As any of you who have served on a board or as an officer, the president takes on a lot of work as they deal with the day to day workings of the organization. If you have read his messages or seen him speak, you know he is passionate about the preservation and reuse of the old canals and loves the engineering aspect that can be learned from these old works. I found many articles and writings where he is asking “why can’t we put water back into that canal?”

He served as the president of the Blackstone Canal Conservancy and lead efforts to get that canal cleaned up and trails built. In 1997, he led the efforts to bring the World Canal Conference to the Blackstone River Valley.

I was first introduced to David as the guy who walked every mile of the Delaware and Hudson Canal

and wrote a step by step guide. He has also written a guide of the Lehigh Canal, the Switchback Railroad and Ashley Planes. I found out that David and his wife Audrey hiked the Appalachian Trail and climbed 100 of the highest peaks in New England.

David took on the responsibility for designing the first website for the ACS and has recently had to learn how to use Word Press so he could migrate the old website to a new host. The new website is now up and running, and David continues to work on it. On the website, you will find postings of the older American Canals so you can catch up on all the canal news. This is a fascinating archive for the canal community. As part of this, he created an index to all the issues of American Canals.

He took on the daunting task of filing for the 501c3 not for profit designation. As you might imagine, filing all the paperwork with the IRS is not an easy task, and most organizations leave this up a lawyer, but it can be done on your own. And it saves a lot of money. So, the ACS can thank him for that.

And I know that Audrey and David love to travel. My wife and I attended a tour of southern Germany that Audrey and David were on, and I have read with interest of his travels to many canals around the world. I hope they now have more time for such travels.

In short, he has left a very large legacy that will be difficult for anyone to follow. When you see him, thank him for all he has done.

# Preservation Award for the Montezuma Heritage Park

By Michael Riley

The Montezuma Historical Society (MHS) and the Town of Montezuma, NY, were given a preservation award for their work on the Montezuma Heritage Park, a 186 acre park built around the remains of three old canals and the present day Barge Canal. The Preservation Association of Central New York ([www.pacny.net](http://www.pacny.net)) hands out yearly awards to individuals, groups, and municipalities for their preservation efforts. The MHS has been working on the project since 2010, and with its volunteers, has cleared numerous canal remains and miles of walking trails throughout the Park. The town has supported these efforts by providing funds to meet the match on grant awards, and by way of the Highway Department, who help to mow the trails and provide trucks and manpower as needed.

In 1820, the land that makes up the Montezuma Heritage Park was at the western end of the new Erie Canal. In 1817, construction began on Clinton's Ditch at Rome and two years later in the fall of 1819, the

canal was 90 miles in length, and was filled with water as to be put into use the following spring. By passing through a lock, boats could enter the Seneca River and head south to Cayuga Lake, or west along the Clyde River. Montezuma served in this capacity until 1822.

The park has a lock pit from the old Clinton's Ditch lock along with remains of the first canal, the well preserved prism of the enlarged Erie and seven arches from the enlarged Montezuma Aqueduct, the remains of a two bay dry dock, remains of the enlarged Cayuga Seneca Canal, and the best preserved lock from all the C&S locks. The present day Barge Canal runs along the western edge of the Park, making this the only Park where you can see 4 canals. Well signed trails and guides will lead you along the miles of walking paths. The main trailhead also has a Dawn Jordan mural and a butterfly garden with small gazebo. Information can be found at [www.montezumahistoricalsociety.org/friends-of-the-park/](http://www.montezumahistoricalsociety.org/friends-of-the-park/)

## The American Canal Society is now on Facebook

Thanks to the efforts of Mike Riley, the American Canal Society is now on Facebook. Facebook is a great way to share information. Use of Facebook also gives the Society more media exposure to make the public aware of its mission and efforts.

If you're already a Facebook user, look for @AmericanCanals and like the page. You can share relevant canal content about projects or events you are aware of, or so provide updates on canal association or park activities and news.

If you're not a Facebook user, you can still visit the page at [www.facebook.com/AmericanCanals/](http://www.facebook.com/AmericanCanals/). You can join Facebook to continue to follow the Society's posts.

# 2018 World Canals Conference, Athlone, Ireland

By Rod Mackler and Christine Holdsworth

North America was well-represented among the 320 or so canal buffs attending the World Canals Conference September 10 - 12 in Athlone, Ireland. They included a large group from Parks Canada (active and retired), 10 members of the C&O Canal Association, and members of the New York State and Pennsylvania Canal Societies. Roger Squires, a member of the ACS board, made a presentation on the restoration of “lost canals.”

Athlone is in the center of Ireland, astride the River Shannon and near the point where east/west canals meet the north/south Shannon-Erne navigation. Waterways Ireland and the Inland Waterways Association of Ireland hosted the conference.

Waterways Ireland is an all-island body, a creation of the 1998 Good Friday agreement. Waterways Ireland is generally responsible for the navigable waterways of the island. 85 percent of the agency’s funding comes from the Irish Republic, 15 percent from Northern Ireland, roughly the proportion of navigable waterways in the two parts of Ireland. The agency’s logo is in three languages: besides the English, it reads “Uiscebhealaí Éireann” in Irish and “Watterweys Airlann” in the Ulster Scots of Northern Ireland.

The Inland Waterways Association of Ireland is the voluntary organization for Ireland, again in both the Republic and in Northern Ireland. Local chapters are responsible for the historic canals in their areas. They perform maintenance and repairs and lobby local governments for assistance to reopen waterways that fell into disuse in the 20<sup>th</sup> century. We were par-

ticularly impressed to be shown a steel lock gate on the Newry Canal that had been fabricated entirely by volunteers.

The conference was supported by over 100 employees of Waterways Ireland, ubiquitous in their blue polo shirts and very handy rain jackets with hoods. More than one conference participant asked if they could buy one of those jackets. At every site on the “heritage canals,” half a dozen members of the local branch of the Inland Waterways Association were available to interpret the site and answer questions.

The first day of the three-day conference was spent in presentations, with an evening reception in

Athlone Castle, hosted by the town’s mayor. After the opening plenary, participants divided into three tracks – heritage, water management or engaging the audience – according to interest.

On the second day we took one of three field

trips, to visit canal projects and cultural sites east, west or north of Athlone. The trip east included a visit to a lockhouse on the Grand Canal, the shop where Waterways Ireland fabricates lock gates, the Tullamore distillery (lunch stop, tour and tasting), the Clonmacnoise religious center from the sixth century, and a boat ride on the Shannon, passing cattle, sheep, swans and herons. As on the C&O Canal, the lockhouse on the Grand Canal had a number (#26), but also the name of the last family of lockkeepers, Boland’s Lock; new owners had updated the 19<sup>th</sup> century lockhouse to the appearance of a French chateau.



*Waterways Ireland - Photo by Rod Mackler*





Canals and Waterways of Ireland – Cartography © David Edwards-May, TRANSMANCHE CONSULTANTS 2018



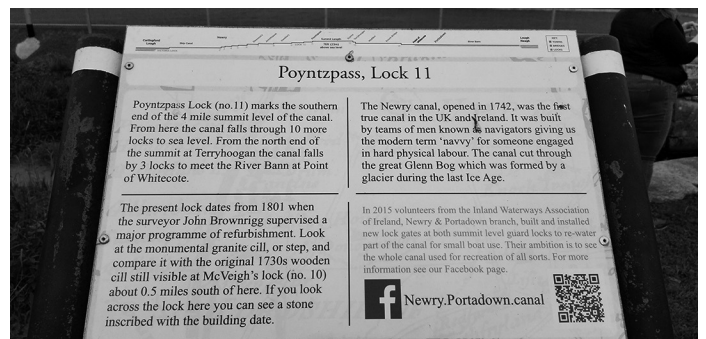


*Above – Lock 11 of the Newry Canal, in Poyntzpass. The lock gate was fabricated in 2015 by the local branch of the Inland Waterways Association of Ireland, a voluntary organization. Below – The wayside at Lock 11. – Photos by Rod Mackler*

The north tour started with a boat trip on the River Shannon complete with tea, coffee and scones. Participants then visited Drumshanbo where they took a short walk along the Lough Allen Canal, part of the Shannon Blueway. The highlight of this walk was the floating boardwalk on Acres Lake. Lunch and a craft gin tasting followed. After lunch they visited an electro-hydraulic lock along the Shannon-Erne Waterway at Kilclare. Waterways Ireland staff demonstrated the operation of the lock which requires a smart-card to activate the control panel. The final stop was at a nearby pub, adjacent to the canal, for tea, coffee and homemade pies, scones and other treats.

On the final day, we began in break-out sessions and finished in plenary, capped by a gala dinner. The dinner featured Irish music and dance.

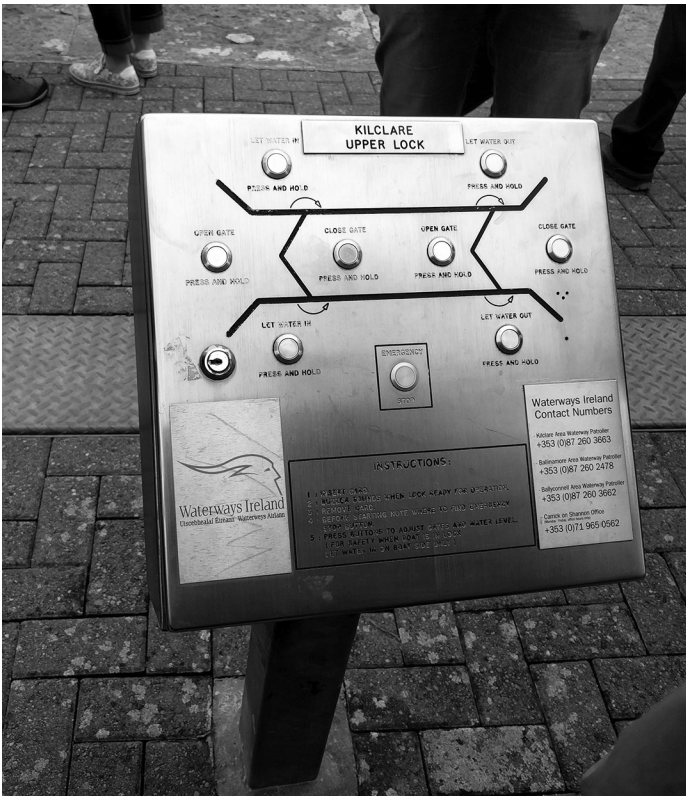
A key leitmotif of the conference was climate change. The keynote address at the opening session was given by Catherine Sheridan of the Canals Corporation of New York, detailing the damage to the Erie Canal caused by “extreme weather events,” which are increasing in frequency and severity. She explained



the canal’s risk assessment and showed the improvements the state corporation is making to lock gates and other structures to make them better able to withstand flooding. The President of Ireland Michael Higgins addressed the final session of the conference, giving a passionate plea to address climate change, not only to protect navigable waterways, but more broadly to save the earth for future generations.

Between these two bookends, in one of the break-out sessions, Lauren Small of Parks Canada gave one of the talks most relevant to our park, addressing the steps her country’s national parks are taking to mitigate the impact of climate change. She had





*Lock control panel at Kilclare – Photo by Chris Holdsworth*

just returned from a conference on climate change in Los Angeles, where she had met with former Vice President Al Gore. Canada’s cabinet has a Minister of Environment and Climate Change, whose portfolio includes Parks Canada. The C&O Canal National Historical Park similarly has a “Climate Action Plan,” laying out steps our park should take to reduce greenhouse gas emissions and to increase climate change education and outreach.

The Irish canals are celebrated in the island’s literature, music and art. On the initial boat ride on the Grand Canal in Dublin, our cruise started near the home of the poet Patrick Kavanagh, whose statue sits on a park bench on the side of the canal. One of the hosts from Waterways Ireland read the poem from the top deck. We also heard several times the song “The Auld Triangle” attributed to playwright Brendan Behan. It has been covered by singers as diverse as the Clancy Brothers, U2, Justin Timberlake and Bob Dylan. The refrain refers to the Royal Canal, but it is not a happy tune – Behan was imprisoned in Dublin’s



*Grand Canal in the heart of Dublin – Photo by Rod Mackler*

Mountjoy Prison, “along the banks of the Royal Canal.” Finally, two art shows accompanied the conference in Athlone.

C&O Canal Association President Bill Holdsworth gave a presentation on the current restoration efforts at Williamsport. He gave listeners a quick

history of the C&O Canal. He talked about the restoration of Conococheague Aqueduct. He described the park's vision to create the single most complete canal boat experience in North America, operating launch boats over the restored stone aqueduct, under a railroad lift bridge, and through a lift lock.

During this session on Restoration and Heritage Management, Bill shared the stage with an Irish engineer, who discussed the maintenance of heritage lock gates, and the managing director of the Göta Canal Company in Sweden.

Finally, the closing session included a hand-over ceremony, from this year's Irish hosts to the 2019 hosts in Yangzhou, China. Leipzig will host in 2020 and, it was announced at this conference, the C&O Canal will host the World Canals Conference in Hagerstown, Maryland in 2021, the 50<sup>th</sup> anniversary of its designation as a National Historical Park.

The hosts also offered pre- and post-conference tours. The pre-conference tour started in Dublin with a cruise on the Grand Canal and ended in Athlone, providing a way to get to the conference venue, as well as making relevant stops along the way. It included a visit to the site of the 1690 Battle of the Boyne, where the Protestant forces of William of Orange defeated those of the Catholic King James II, setting the stage for the next 300 years of history in Great Britain and Ireland. Within walking distance of the battlefield, the local chapter of the Association was working on the River Boyne navigation, with three locks in various stages of restoration. The high point of the pre-conference tour was a visit to Newgrange, a 5,000-year-old burial site. We spent the night in Enniskillen, in Northern Ireland, the headquarters for Waterways Ireland. Enniskillen is on the southern end of Lower Lough Erne, part of the north/south Shannon-Erne waterway. (The Irish word "lough" has the same meaning and pronunciation as the Scots "loch.") The tour made several stops at canal sites along the waterway on the way south to Athlone.

There are currently no border controls between the Republic of Ireland and the United Kingdom of Great Britain and Northern Ireland. Distances in the south are in kilometers and expenses are in euros. In the north, they use miles and pounds Sterling. The people in Northern Ireland voted against Brexit – they fear what will happen if a "hard border" is re-established. The people we met considered themselves Irish, with little distinction between the north and the south. Several of them had two passports, keeping their options open.



*Vegetation clearing at Boland's Lock, lock #26, on the Grand Canal. The first boat cuts the vegetation in the canal with a blade that looks like a giant hedge trimmer. The second boat rakes up the cut vegetation. – Photo by Rod Mackler*

The post-conference tour conveniently got participants back from Athlone to the Dublin airport. Again, it mixed waterway and cultural sites, in particular the Titanic museum in Belfast. As an option, some visitors took a "black taxi" to tour the relics of "The Troubles:" the sectarian murals on peace walls and memorials to those killed in the violence. Twenty years after the Good Friday accords, "peace gates" between the two communities are still closed at dusk and police keep an eye out from watch towers. At the end of the post-conference tour, on the way back to Dublin airport, we stopped at the Lagan Navigation, between Belfast and Lough Neagh, the largest lake in the British Isles, took a boat ride to an island in the lake, and explored the outlet to Newry, with lunch with the local chapter of the Association.



# C&O Canal to Host the 2021 World Canals Conference

C&O Canal Association President Bill Holdsworth announced that the Association will team with Visit Hagerstown to host the 2021 World Canals Conference in Hagerstown, Md. He made the announcement at a media event October 18 at Cushwa Basin in Williamsport.

Kevin Brandt, superintendent of the C&O Canal National Historical Park, and Dan Spedden, president of Visit Hagerstown, also participated in the announcement. Barbara Sheridan represented Inland Waterways International, which sponsors the conference every year. She is a member of the IWI governing council.

Up-to-date information about the World Canals Conference will be in Hagerstown's *Herald-Mail* newspaper, [www.heraldmillmedia.com](http://www.heraldmillmedia.com); WDMV-TV in Hagerstown, [www.localdvm.com](http://www.localdvm.com); and at Washington County's Facebook page, [www.facebook.com/WashingtonCountyMD](http://www.facebook.com/WashingtonCountyMD).

Every year the World Canals Conferences brings together canal enthusiasts, professionals, and scholars from around the world to discuss a variety of topics related to canals. Ireland hosted the 2018 WCC. Syracuse was the venue in 2017. The C&O Canal last hosted the conference in 1992.

The 2021 conference is scheduled for August 30 through September 2. The first three days will feature morning presentations on canal-related topics and afternoon study trips to visit canal or local

history sites such as Cushwa Basin, Conococheague Aqueduct, Paw Paw Tunnel, Monocacy Aqueduct and Antietam battlefield. The fourth day will have a morning session. Pre- and post-conference tours will be offered.

IWI president David Edwards-May, based in France, notes that the WCC is coming to the United States for the first time in 15 years on a historic canal that is only partially in water and operated. "The C&O Canal is an inspiration for canal enthusiasts, historians and professionals throughout the world, as living testimony to the unique engineering and economic heritage of America's towpath canals," he wrote.



Left to right – Dan Spedden, Visit Hagerstown; Barbara Sheridan, Inland Waterways International; and Kevin Brandt, Chesapeake and Ohio Canal National Historical Park Superintendent. – Photo courtesy of Visit Hagerstown

# History, Heritage and EWRI Achievements Symposium

May 19 - 23, 2019, Pittsburgh, PA

## Twenty Years Of Ewri History At Pittsburgh (1999-2019), With Pittsburgh Called The First Gateway To The West

### PROPOSED SESSIONS:

#### National Historical Landmarks in Pittsburgh and Western Pennsylvania

- “Extending the Lewis and Clark National Historic Trail to Pittsburgh, Where the Expedition Started in 1804-06,” John McNulty musiclanguage@ yahoo.com and Gregory F. Scott, P.E., F. ASCE, Buchart Horn Engineers, Liberty Technology Center, Suite 300, 2200 Liberty Avenue, Pittsburgh, PA 15222-4502, (412) 567-2235 www.bucharthorn.com
- “Pennsylvania’s Historic Civil Engineering Landmarks”- 2015- Andrew Rose, androse@pitt.edu
- “Davis Island Lock and Dam and Tygart Lake – Introducing the Nation to Inland Navigation and Multipurpose Reservoir Projects,” Werner Loehlein, P.E., M. ASCE, D. WRE, University of Pittsburgh (412) 383-5727 w\_loehlein@yahoo.com

#### Outstanding Pennsylvania Engineers and Water Engineers

- “John Roebling’s Development and Use of Wire Rope in Western Pennsylvania,” Andrew Rose, androse@pitt.edu
- “Edward Manning Bigelow (1850-1916), Known as the “Father of Pittsburgh’s Parks,”” Jerry Rogers, Ph.D., P.E., D.WRE, Distinguished M.ASCE, 12127 Old Oaks Dr., Houston, TX 77024 (713)468-6170 rogers.jerry@att.net :
- “William Kelly (1811- 1888)- Pittsburgh Engineer and Henry Bessemer on Steel Making,” Jerry Rogers, Ph.D., P.E., D.WRE, Distinguished M.ASCE, 12127 Old Oaks Dr., Houston, TX 77024 (713)468-6170 rogers.jerry@att.net

#### Pennsylvania ASCE History

- “Civil Engineers, ASCE and the Pittsburgh Region: Highlights of the Pittsburgh ASCE Section Centennial History Book: *Engineering Pittsburgh*,” History Press, by N. Catherine Bazán-Arias, Ph.D., P.E., DiGioia Gray & Associates, LLC, Cathy@DiGioiaGray.com (724) 472-4285
- “Connections in Central PA: A History of ASCE Central PA,” Gary D. Garbacik, P.E., LEED Green Associate, Gannett Fleming, Inc., 209 Senate

Avenue, Camp Hill, PA 17011, (717) 763-7211 ext. 2655 | ggarbacik@gfnet.com

- “ASCE Philadelphia Section History”: Invite abstract: EWRI Chair: eric.lindhult@gmail.com

#### Special History Session

- “Overview of Bridges in the Pittsburgh Area” (Centennial) Todd Wilson, T.Wilson@gaiconsultants.com; Chair- ASCE Pittsburgh History & Heritage” Pittsburgh’s Bridges takes a comprehensive look at the design, construction, and, sometimes, demolition of the bridges that shaped Pittsburgh, ranging from the covered bridges of yesterday to those that define the skyline today.
- “The 1889 Johnstown Flood Revisited,” Andrew Rose: androse@pitt.edu and Larry Magura: maguralm@comcast.net

#### Canal Historical Landmarks

- “Documenting How “Clinton’s Folly” Became the “Eighth Wonder of the World: the Erie Canal and the Historic American Engineering Record “-Tonja Koob, Gaea Consultants, LLC, 536 Washington Ave., New Orleans, LA 70130-2057 tonja.koob@gaeaconsultants.com and ASCE National Symposium, Sept. 8, 2018, RPI, New York.
- “Western Pennsylvania Historic Landmark Canals (from Pittsburgh Section ASCE Centennial Book),” David L. Wright, P.E., Allegheny County Public Works Department, 501 County Office Building, 542 Forbes Avenue, Pittsburgh, PA 15219, (412) 350-6645 Dwright@alleghenycounty.us
- “The Augusta Canal: An ASCE National Historic Civil Engineering Landmark ,” Mark Lorah, P.E., F. ASCE, Johnson Laschober & Associates, 1296 Broad Street, Augusta, Georgia 30901, (706) 724 5756, mlorah@theJLAGroup.com and Thomas H. Robertson, President, Cranston Engineering Group, P.C., Augusta, GA

#### Pittsburgh Area Civil Engineering & Technology Departments, History and ASCE Student Chapters

- The educational history of selected Pittsburgh colleges:



- Carnegie Mellon University,
- University of Pittsburgh, and:
- University of Pittsburgh- Johnstown)

Civil engineering department history, and ASCE Student Chapters will be highlighted with years of major developments and contact information, including water, environmental and civil engineering research centers. ASCE Student Chapter competitions will illustrate the Pittsburgh college teams participating in ASCE concrete canoes, ASCE steel bridges, geowall and other contests.

### **From an ASCE Task Committee to an Institute: The Development of EWRI”**

- “The Formation of the Environmental & Water Resources Institute of the American Society of Civil Engineers,” Dale Jacobson, P.E., BCEE, D.WRE, F. ASCE, F.EWRI, F.WEF djacobson@mac.com 10838 Old Mill Road, Suite A, Omaha, Nebraska 68154, Cell (402)203-4921 and Conrad G. Keyes, Jr., ScD, PE/PS, DistrictM.ASCE, CM WMA, F.NSPE, cgkeyesjr@q.com : The ASCE TC to form EWRI was chaired by Conrad G. Keyes, Jr. and included Thomas M. Rachford, Philip H. Burgi, Neil S. Grigg, Norman L. Buehring, Kenneth D. Reid, James R. Groves, Ahmad Habbian, Jerry R. Rogers, and Brian Parsons.

The purpose of this presentation is to inform and educate EWRI Congress delegates about the activities that led to the formation of the Environmental & Water Resources Institute of the American Society of Civil Engineers.

The formation of Institutes within ASCE had been previously authorized by the Board of Direction and had resulted in the formation of Structural Engineering Institute in 1996, the Geo-Institute in 1996, and the Architectural Engineering Institute in 1998.

The ASCE Task Committee for the formation of EWRI was appointed in February 1997 by President Ed Groff. The Task Committee was chaired by Conrad G. Keyes, Jr. and included Thomas M. Rachford, Philip H. Burgi, Neil S. Grigg, Norman L. Buehring, Kenneth D. Reid, James R. Groves, Ahmad Habbian, Jerry R. Rogers, and Brian Parsons.

The impetus for establishing a new organization within ASCE to better serve the environmental and water resources community emerged from a strategic planning retreat held in 1996. At the conclusion of the retreat, there was a strong potential for creating an institute that could serve as an integrator for ASCE members and others

active in the fields of water resources and the environment. Major stakeholders within ASCE included the Environmental Engineering Division, the Water Resources Engineering Division and the Water Resources Planning and Management Division. The Task Committee was charged with developing a business plan, bylaws, a transition plan and an operations plan. The initial business plan included a Vision Statement, a Mission and list of benefits to the members and ASCE. A Governance plan was presented as well as pro forma statements projecting revenue and expenses for the first five (5) years of operation. In 1999, the ASCE Board approved the formation of EWRI and an EWRI founder’s celebration was held at the Charlotte, NC Annual ASCE Conference.

- “History of EWRI Newsletters, including *Currents*”  
John L. Weiland, P.E., M. ASCE (jweiland@wadetrim.com),  
Michael T. Buechter, P.E., D. WRE, M. ASCE (mtbuec@stlmsd.com),  
William F. Ritter, Ph.D., P.E., F.EWRI, F.ASCE (writter@udel.edu)
- “History and Highlights of EWRI Congresses,”  
CRISTIANE QUEIROZ SURBECK, P.E., Ph.D., ENV SP, EWRI Past President, The University of Mississippi, School of Engineering, P.O. Box 1848, University, MS 38677-1848, (662) 915-5473, csurbeck@olemiss.edu
- “Publication Accomplishments of ASCE-EWRI Standards Committees from 1999-2018,”  
Kathlie S. Jeng-Bulloch, Ph.D., P.E., D.WRE, CFM  
Kathlie.Bulloch@houston.tx.gov Office of City Engineer, Houston Public Works, City of Houston, Houston, Texas, (832) 394 – 9138 and Conrad G. Keyes, Jr., ScD, PE/PS, DistrictM.ASCE, CM WMA, F.NSPE, cgkeyesjr@q.com

### **AAWRE History as an EWRI Accomplishment and Photos of AAWRE Annual Diplomates**

- “The Creation and History of the ASCE American Academy of Water Resources Engineers,”  
Jeffrey B. Bradley, Ph.D., P.E., D.WRE jeffbradley@westconsultants.com, WEST Consultants Inc., 2601 25<sup>th</sup> St. S.E., Suite 450, Salem, OR 97302-1286 (503) 485-5490 and Michael A. Ports, P.E., D.WRE, PH, D.NE, BC EE, F. EWRI, F.ASCE, maports@comcast.net , Ports Engineering, 5316 Downington Drive, Jacksonville, FL 32257 (913) 544-4897.
- “AAWRE and Board Certification Today,”  
Roger Kilgore, P.E., D.WRE, F.ASCE, RKilgore@

KCMwater.com, Kilgore Consulting & Management, 2963 Ash St., Denver, CO 80207, (303) 333-1408.

- “AAWRE Early Challenges and AAWRE Ceremonies and Events Captured,” Frank Kim, Aff.M.ASCE, fkim@asce.org, ASCE, 1801 Alexander Bell Dr., Reston, VA 20191, (703) 295-6160.

The American Academy of Water Resources Engineers (AAWRE) was founded in October 2004 under the leadership and guidance of members from ASCE’s Environmental and Water Resources Institute (EWRI), and was the first Academy created within Civil Engineering Certification, Inc. (CEC) and the ASCE, as the first pilot board certification program. AAWRE launched the Diplomate, Water Resources Engineer (D.WRE) board certification program to adhere to ASCE’s Policy 465- to broaden and deepen the body of knowledge for practicing engineers and to advance the practice in water resources engineering. AAWRE’s objectives are Identifying and certifying engineers with specialized knowledge in water resources for the benefit of the public.; Recognizing the ethical practice of water resources engineering at the expert level.; Enhancing the practice of water resources engineering.; Supporting and promoting positions on water resources issues important to the public health, safety and welfare.; and Encouraging life-long learning and continued professional development.

In this special History & Heritage session on the 15 year-history of the AAWRE, original founding members of AAWRE and staff will speak about the early challenges, processes, marketing and outreach efforts in solidifying the AAWRE as a relevant and legitimate engineering organization.

#### International Water Historical Projects”

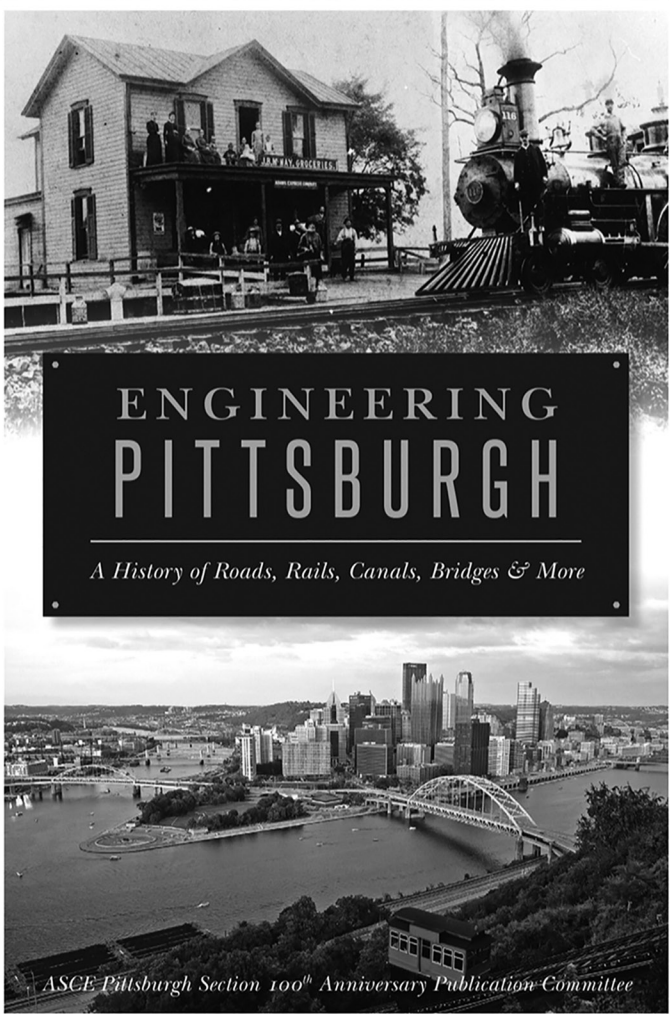
- “The Institution of Civil Engineers 200th Anniversary and Global Engineering Congress 22-26 October 2018- London”: William Bulloch, P.E., D.WRE, Utility Revenue Management, 17123 Carriage Dale Court, Houston, TX 77379, (281)320-8488 and Kathlie S. Jeng-Bulloch, Ph.D., P.E., D.WRE, CFM

Kathlie.Bulloch@houstontx.gov Office of City Engineer, Houston Public Works, City of Houston, Houston, Texas, (832) 394 – 9138 and Jerry Rogers, Ph.D., P.E., D.WRE, Distinguished M. ASCE, rogers.jerry@att.net , 12127 Old Oaks Drive, Houston, TX 77024, (713) 468-6170

- “History of the Biennial Seminar Series on Water Resources and Environmental Management,” Walter M. Grayman, Ph.D., P.E., D.WRE, F. EWRI, M. ASCE, wgrayman@gmail.com 7141 Thornhill Drive, Oakland, CA 94611 (510)808-5606

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# Preserving the Past for the Future: *Repair C&O Canal Watered Structures Locks 5-22*

By Stephanie Spencer

## Introducing the Project

If you visited the Great Falls Tavern at the C&O Canal recently, you probably noticed large cranes, orange fencing, and lots of activity along the towpath. This construction work is part of the large, ongoing *Repair Watered Structures Locks 5-22* (Locks 5-22) project that impacts eight different work areas within the first 22 miles of the towpath. The \$6.7 million contract was awarded in September 2017 to Corman Construction and is expected to end in the spring of 2019.

The purpose of this large, multi-area project is to “repair and stabilize a variety of historic structures along the Montgomery County section of the canal in order to preserve the towpath and canal for current and future visitors to experience,” as stated by the Chesapeake and Ohio Canal National Historical Park (C&O Canal NHP) staff. This preservation involves structures within the area between Lock 5/Inlet Lock 1 (Mile 5.03) and Lock 22/Inlet Lock 2 (Mile 19.64), impacting structures ranging from lock gates to canal liners.

## Summarizing the Project’s Main Goals

While the purpose of the Locks 5-22 project is to repair and stabilize structures within a particular stretch of the canal, the goals reach deeper than that. They reach into preserving historic structures, providing towpath continuity, aiding in the watered canal process, and preventing flood damage within the Great Falls area in particular. “This project, meant to preserve some of the canal’s historic infrastructure near Great Falls Tavern, is vital to the visitor experience of understanding 19<sup>th</sup> century American history and technology,” explains Pete Peterson, Palisades District Interpreter.

When water control structures do not function properly, water levels can get too high, too low or drain out completely. An example of this is the 2008 Anglers Breach along towpath Mile 12, which resulted in low water levels, stagnant water and an incomplete towpath. The 125-foot breach was caused by a failing retaining wall holding up the riverside of the towpath. A similar instance occurred in spring of 2018 when the canal-side

towpath retaining wall below Lock 19 (Mile 14.18) failed due to water erosion, causing a portion of the towpath bank to slide into the canal prism. The storms of May and June 2018 also caused damage when floodwaters washed away the footbridge and a portion of the towpath above Culvert 82 (mile 52.51).

When walls fail, culverts collapse, waste weirs crumble, and other structures reach their limits, the park and its abundance of history and recreational opportunities feel the impacts. Water is the canal’s most valuable asset but also its biggest downfall. Flooding was one of the main contributors to the canal shutting down and is still a recurring threat to the park and its historic structures.

## Explaining the Watered Canal Process

All of the impacted structures in the Locks 5-22 project play important parts in the process of a watered canal. The canal was built to generally maintain a 6-foot water depth with a 2-3 miles-per-hour current. A system of water control structures is required to maintain these conditions, particularly since the terrain varies throughout the park.

Feeder dams (1) redirect a portion of the river water into guard locks (2), which control the water entering the canal from the Potomac River. Once water flows through the guard locks, it enters the canal prism, which is the water-conveying structure most often referred to as the canal itself. Following entry into the canal, the water level is maintained by waste weirs (6) that drain excess water back into the river.

As water flows through the canal, it reaches lift locks (4), commonly referred to simply as locks, which act as a lift system to raise or lower boats to the same level as the river. Viewing the canal as a staircase up the river, these locks work as steps for the boats to climb. If water begins to back up at the locks, adjacent bypass flumes (5) reroute the water around the lock and into the next section of the canal.

Over 150 culverts (3) carry streams and creeks under the canal and towpath in order to avoid potential flood and water damage. Some of the culverts carry

roads for pedestrian or vehicle use, which allow access to riverside land and communities. Guard walls and guard gates (7), such as the ones at Miles 13.75 and 84.41, are located strategically along the canal to act as flood control by limiting water movement through portions of the canal.

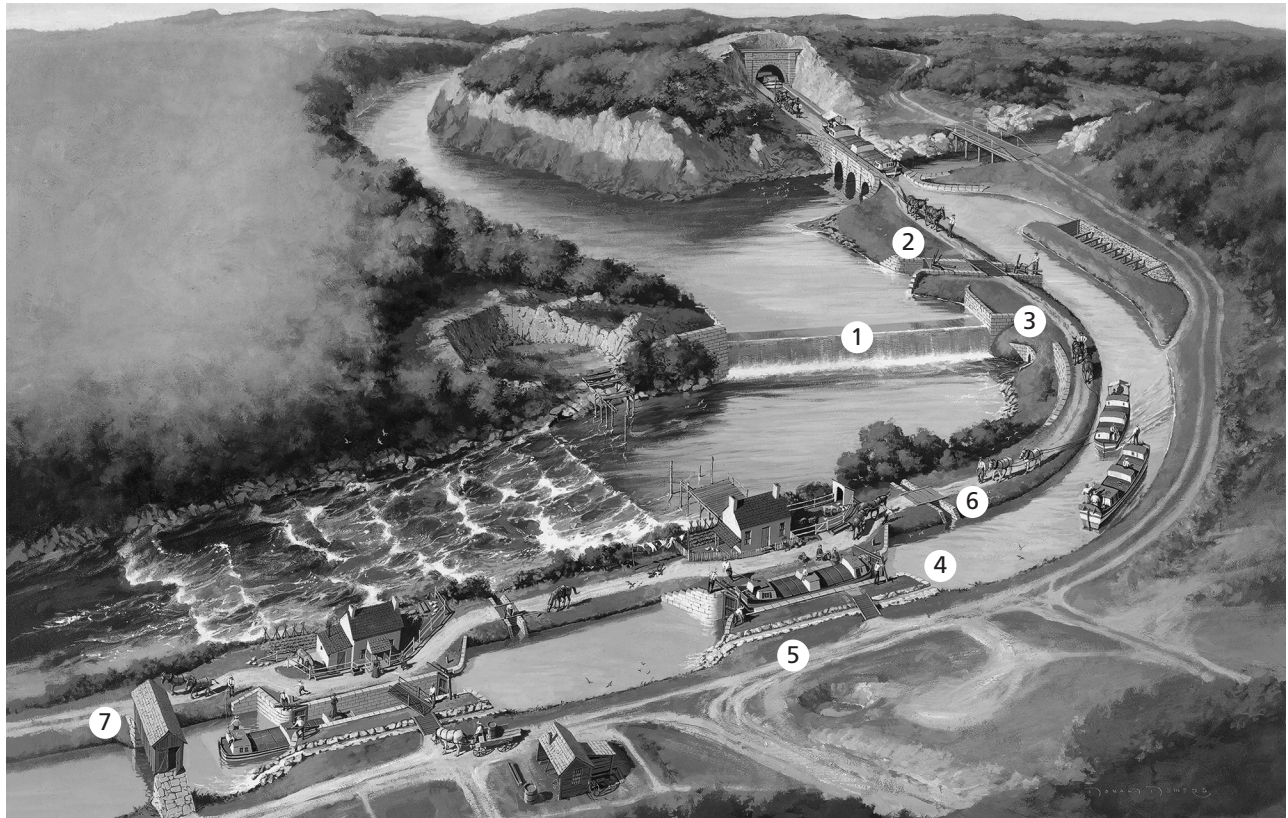
All of these structures should work together to maintain a functioning watered canal system, but there are many structures throughout the canal that are failing and not functioning properly. The Locks 5-22 project will positively impact the watered canal within the lower section of the park by repairing several of these structures and “better preserv[ing] historic structures and reduc[ing] their risk of damage during flooding,” says Joe Reed, the park’s Civil Engineer.

### Exploring Project Areas

**Water Control Structures.** Within the Locks 5-22 project area, there are several iconic historic structures being repaired in order to maintain a watered canal. Locks 17 through 19 are undergoing masonry repairs, stonework repointing and gate replacement. Both sets of gates will be replaced on Lock 17 (mile 13.99), with

masonry repairs to the lock walls. Both sets of gates will also be replaced on Lock 18 (mile 14.09), and the riverside retaining wall will be replaced. Only the lower gates of Lock 19 (mile 14.18) will be replaced, along with the vehicular towpath access bridges. The towpath retaining wall within the canal prism will also be repaired. Without stable walls and functioning gates, the locks would be inoperable during boat tours and water levels would be greatly impacted. The retaining walls play critical roles in ensuring towpath continuity and adequate water levels.

Culvert 15 (Mile 10.42) and Rock Run Culvert 12 (Mile 8.93) are also very important in maintaining water levels throughout the canal. Culvert 15, sometimes referred to as the “Car Wash Culvert” due to its many leaks, has a large sink hole in the prism above its barrel, the tunnel-like portion of the culvert. This is causing water to leak through and into the active stream below. With masonry repairs to the stonework, flowable concrete poured into the sinkhole, an underdrain system installed, and a liner put in place, the culvert will be more stable and better able to hold up the prism and towpath above it.



Reference image of a watered canal and its control structures: 1) Feeder Dam, 2) Guard Lock, 3) Culvert, 4) Lift Lock, 5) Bypass Flume, 6) Waste Weir, and 7) Guard Wall and Gates (detail shown is not typical of actual designs) – Image by Donald Demers, courtesy of the National Park Service, C&O Canal NHP



The top two-thirds of Rock Run Culvert's dry-laid stone retaining wall that holds up the towpath became unstable and slid forward. This caused an unstable rock face with the potential for towpath damage. A portion of this same wall also collapsed, causing the bank to slide into the stream below. The retaining wall is being rebuilt from the ground up using as much of the original stone as possible. There will also be additional masonry repairs inside the barrel and on the adjacent walls, and the clay liner of the canal prism above will be repaired. Once these repairs are complete, the retaining wall will once more support the towpath.

**Flood Control.** With floods having the most destructive natural impact to the canal, it is critical to maintain structures that control water levels and limit water damage. The Great Falls area is highly prone to flooding due to its proximity to the Potomac River, and there are several structures within this area that assist in controlling rising waters. If a water or flood control structure does not function properly, the impacts can be great.

The waste weir above Lock 20 (mile 14.32) was failing structurally and would have eventually given way without repairs. Reed says that the waste weir is being completely replaced in order to “create a more operable and easier to maintain structure and provide for heavier vehicles to access the towpath.” In addition to the waste weir replacement, the canal prism's liner system, or clay liner, is being replaced and the excess sediment removed.



*Construction workers pour concrete to form the walls of the Lock 20 waste weir replacement – Photo by Stephanie Spencer*

Both of these repairs will better allow for maintenance and smoother boat operations.



*Rock Run Culvert (Mile 8.93). Note the retaining wall failure on the right – Photo by Steve Dean*

Along the towpath there are two low areas for overtopping, sometimes referred to as fuse plugs, that are being installed during this project. These structures are composed of concrete slabs buried beneath the towpath surface. When water overtops the towpath, the design of the fuse plugs allows for water to erode the material down to the concrete slab. This then opens up a channel to allow for water flow out of the canal and into the river. The fuse plug at Mile 16.9 has already been installed and was tested for functionality by the flood in June 2018. It operated as expected and protected the towpath and canal from further damage. The fuse plug above Lock 7 (mile 7.03) will be installed at a later time, and the waste weir in this area will be completely replaced.

*Continued on page 20*

# CANALENDER

**May 3-5, 2019: Canal Society of Indiana Spring Tour:** View the Whitewater Canal Locks along the Whitewater Valley Railroad from Connersville to Metamora, Indiana by train with an evening dinner in the restored Oliver P Morton house. Also enjoy the historical walk through Centerville, Indiana, and tour the sites in old Metamora, Indiana where you will see the restored Aqueduct over Duck Creek for the Whitewater Canal, the canal boat "Ben Franklin III," the Grist Mill that is being run from canal water in the adjacent Lock, and perhaps a museum or two. More information in future issues of "The Tumble" and by E-mail. Be sure your E-mail address is current at CSI headquarters.

**Sept., 2019: World Canals Conference 2019, Yangzhou, China:** Dates and details to be determined.

**Sept. 2020: World Canals Conference 2020, Leipzig, Germany:** Dates and details to be determined.

**Aug. 30 - Sept. 2, 2021: World Canals Conference 2021, C&O Canal, Hagerstown, Md:** Details to be determined.

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## *C&O Canal Watered Structures Repairs - Continued from page 19*

Not included in the Locks 5-22 project are the Stop Gate and Winch House (mile 13.75), which serve as critical elements in flood control along the canal. The Winch House is a storage building for the stop gate logs, and it houses a built-in crane for log placement and removal. When floodwaters threaten the canal, the logs are lowered from the Winch House and placed on top of one another until they block passage to the lower section of the canal. A gap was built into the middle of the gate in order to allow for minimum water flow through the canal.

When the stop logs, forming the stop gate, are in place and floodwaters rise, the gate forces most of the water out of the canal, over the towpath and into the river. Without the stop gate in place, the full force of the floodwaters would funnel through the canal and flood the downstream area, causing damage to structures and the towpath and posing a repeat of the 2008 breach at Anglers.

### **Following Project Impacts**

With the Locks 5-22 project covering many well-used areas of the park, it is important to understand its impacts and how to work with these impacts. Throughout the course of the project, there will be little to no water in the canal. This dewatering is necessary to maintain construction safety, moisture content of soil, and flood

control within work areas. Sections of the towpath are closed off as each portion of the project begins, but there are local detours around the construction areas. These detours are marked with guidance and safety advisories, as extra caution is required through the detours. Bikes should be dismounted to avoid wipeouts and personal injuries.

Up until the project's completion in the spring of 2019, construction areas will be in place throughout the lower portion of the park as each structure is worked on. When planning your visit to the park, be sure to check out the park's website at [nps.gov/choh/planyour-visit/conditions.htm](https://www.nps.gov/choh/planyour-visit/conditions.htm). This "Current Park Conditions" page includes up-to-date information on closures and detours throughout the park and will better prepare you for what to expect when there.

As you come across noisy construction areas, an empty canal, and bright orange signs, remember that these are all happening in order to preserve historic structures for years to come. The noise and changes caused by the project may last for only a short time, but the memories made from the outcomes will last forever.

*Stephanie Spencer is a professional photographer and journalist from Pennsylvania who graduated from the University of Maryland University College. She currently works at the C&O Canal National Historical Park headquarters as the Maintenance Division's Facility Services Assistant.*