



CHESAPEAKE ENVIRONMENTAL PROTECTION ASSOCIATION, INC.
P.O. Box 117, Galesville, Maryland 20765

NEWSLETTER

Spring 2014

PRESIDENT'S MESSAGE

By Al Tucker, President, 2014



Is Maryland's Water in Jeopardy?

That is the lead question on the Maryland Geological Survey Website. Unfortunately, the answer remains unknown for lack of information needed to forecast the sustainability of supplies. As a state we've ignored decades of warnings from past droughts and looming water issues related to growth, as well as the underfunding of relevant research that would shed light on the answer. These areas of concern only become exposed during extended periods of drought, which seem to occur every one or two decades in Maryland. The last major drought lasted four years, from 1998 to 2002. During that time, reservoirs and domestic surface wells ran dry, extensive water restrictions as well as building moratoria were put in place, small streams dried up, and fish kills were extent. Those events mirror California today; it was Maryland then.

And that drought was not a one-time occurrence. The drought of 1985-1986, along with scares of contamination, prompted the legislature to pass a resolution mandating that the forerunner of the Maryland Department of the Environment (MDE) publish an annual groundwater report. It required "an analysis of any contamination or substantial depletion of groundwater supplies and the potential for contamination or depletion of groundwater in the future." These annual reports do not paint an encouraging picture for the present or future. One wonders if our legislators actually read them. For example, aquifers are suffering from saltwater intrusion and excessive drawdown. Saltwater intrusion now occurs on Annapolis Neck, Kent Island, and Ocean Pines. Typically saltwater intrusion occurs when aquifers are overpumped and not allowed to recharge. Excessive drawdowns have led MDE to restrict water allocations to prevent contamination entering aquifers. Both Indian Head and Waldorf areas have required restrictions and reallocations. When these sources become unusable, often the solution is to drill a deeper well. However, water from deeper aquifers costs more in energy to pump and requires further treatment for hardness and removal of iron.

But what happens, when a community has tapped its deepest aquifer, and it is not productive? Charles County, one of the
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**Chesapeake Environmental Protection Association
2014 Forum**

The Future Supply of Drinking Water in MD

Friday, May 30 7:00 PM

Calvary United Methodist Church, 301 Rowe Blvd, Annapolis

Do you know where your drinking water comes from when you turn on the tap, or how clean or safe it is to drink? Do you think it will always be plentiful and safe? Consider that:

- Aquifer levels in Maryland's Coastal Plain are dropping at an average of two feet per year.
- Southern Maryland aquifers are among the most stressed from over pumping, poor water quality, and ability to produce sufficient water.
- Saltwater intrusion has been detected in aquifers in Kent Island, Annapolis Neck, and Ocean City
- Water quality diminishes as deeper aquifers are tapped



Drought Conditions, Pretty Boy Reservoir, Baltimore County

The forum will feature experts and decision makers who manage and protect groundwater resources in Maryland. Topics will include sustainability, alternative sources, and the challenges of population growth and climate change.

CEPA's DISTINGUISHED 2014 PRESENTERS:

SAEID KASRAEI, Director Water Supply Program, MD Dept. of the Environment
DAVID BOLTON, Chief Hydrologist, MD Geological Survey

FOR MORE INFORMATION: WWW.CEPAONLINE.ORG or DR. AL TUCKER – ALTUCKER@CEPAONLINE.ORG

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fastest growing counties, is currently facing this issue. Will they limit growth or will they seek sources other than aquifers for water?

The drought of 1998-2002 drew an even more intensive response from the legislature: it established the Advisory Committee on the Management and Protection of the State's Water Resources. In 2008 the committee concluded "Maryland's inadequate investments in water resources management have left the state without an accurate picture of the long-term viability of the State's water resources, that demands and stresses on our water resources will increase, and that the State needs more comprehensive data to plan for the future." The economic downturn and the absence of drought put many of the recommendations on the back burner, out of sight and out of mind until the next drought.

Meanwhile, the population of Maryland continues to grow, and the impact of climate change on water supplies adds another layer of uncertainty. By 2040 the population of Maryland will increase by 20%. While water-saving devices have helped to limit demand, the state will either have to find more water or institute stricter demand reductions. Smartgrowth that includes new technologies to reduce demand for water should be considered. However, current smartgrowth regulations do not include objectives for either water conservation or water reuse. Many towns and cities in Central Maryland, for example, have made commitments to provide water beyond the capacity of their existing supplies in times of drought.

Yet, the fastest growing water-use is not driven by the number of people, but by agriculture. It accounted for eighty-three percent of the permits issued for more than 10,000 gallons per day during April 2012 to April 2013. Agricultural irrigation by spraying represents one of the most flagrantly inefficient usages of water, losing most of it to evaporation. As temperatures climb, this use will place inordinate demands on Eastern Shore aquifers, which will further impact cities there.

For more than a decade the Chesapeake Environmental Protection Association (CEPA) has worked with legislators and policymakers to raise awareness of these issues of source water for Maryland. With population growth and the urgency of climate change bearing down on us, it is time to raise the issue of water sustainability to a higher priority for Maryland. Rising sea levels and overpumping of aquifers will exacerbate saltwater intrusion. We will need sound policies to guide the management of existing water resources, consistent data retrieval and analysis to plan for the foreseeable impacts of climate change, population growth and agricultural demand. Without science, observed data, and in-depth analysis, we will not be able to make the tough decisions to insure Maryland will not run out of water. Please come to the forum on Friday, May 30th to learn more about these issues. Public awareness and public advocacy is critical to changing the status quo.

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DIMENSIONS OF THE CHESAPEAKE

By Richard L. Dunn

Canals



In today's world, questions of permitting industrial development for energy production and transmission, potential environmental dangers from infrastructure projects like dams on the Susquehanna, and determining how to finance needed development or remediation loom large as issues related to the Chesapeake Bay region. Infrastructure developments, means to

finance them, and their various impacts on society and the environment have long been with us. In this article we look back at developments that were once the subject of much political debate and private and public risk taking, but are little discussed today – the Chesapeake Bay's canals.

Before profiling three canals – Chesapeake & Ohio, Chesapeake & Delaware, and Dismal Swamp – it is worth considering: why canals? At the founding of our country the Chesapeake and its rivers were busy water ways, perhaps Maryland's primary means of communication and commerce. For the United States as a whole, westward expansion, extending the country across the mountains to the Ohio Valley and Great Lakes was a large issue. The early days of the Republic were also the early days of the Industrial Revolution. Steam power was being put to use but steam locomotives and steamships were still in the future.

Americans were familiar with developments in Europe in the Eighteenth Century, where important canal projects had already occurred in France and Britain. In Denmark, a canal connected the Baltic Sea with the North Sea. One of the visionaries in America was none other than George Washington who was a founder of the Potowmack Company which built five canals to skirt the falls of the Potomac River. The river was an important means of transportation. Commercial traffic above the fall line was mostly downstream. It was also Washington who upon a visit to the Great Dismal Swamp suggested draining the swamp to dig a canal to open access between the Chesapeake and Albemarle Sound.

Any discussion of canals would be deficient if it failed to mention the impact of the Erie Canal. From an engineering viewpoint, the 363-mile canal, built 1817-1825, connecting the Great Lakes with the Hudson River at a time when there was not one professionally trained civil engineer in America, was a marvel. Its impact on the economy, the world of finance and politics were as profound as its engineering. The driving force behind the canal was DeWitt Clinton ("Clinton's Folly") mayor of New York City and later the state's Governor. Federal funding was expected to finance the project but President James Madison vetoed the funding bill in 1816. Clinton enlisted the temporary aid of a political rival and future President Martin Van Buren to garner support in the New York legislature to back revenue bonds to finance the project. John Jacob Astor purchased a large block of bonds and the public followed suit. The rest as they say is history. The price of goods dropped dramatically. New York City became the financial capital of America and overtook Philadelphia as the largest city of America. The bond holders were all repaid.

C&O Canal. If we date the beginning of the C&O Canal to Washington's Potowmack Company all three of the canals described in this article antedate the Erie Canal. However, the

Erie Canal actually spurred the full 185-mile C&O project. To southerners, the Erie project looked like northern merchants were out to steal a march on the south in opening up western expansion. First plans were drawn up in 1820 when the Erie Canal was under construction. A bill authorizing the canal was signed by President Monroe in 1825. Revenue bonds were used for financing. Ground breaking took place in 1828. Benjamin Wright who had supervised engineering of the Erie project was appointed Chief Engineer. The first section of the canal from Little Falls to Seneca opened in 1830. It remained in use almost a hundred years. Over its length the canal rose 605 feet from the tidal Potomac to Cumberland, included 74 canal locks, 150 culverts, major aqueducts, and a tunnel at Paw Paw. Its depth was six feet and width was 68 feet. Motive power was supplied by mules on a tow path built adjacent to the canal.

Originally the canal barges transported general commodities and passengers in addition to agricultural products. In its early decades, despite setbacks caused by damaging floods and eventually competition from the railroad, the canal thrived. The entire trip between Cumberland and the District of Columbia could take seven days. The canal was in need of repairs and rehabilitation as the Civil War approached. During that war the canal was repeatedly damaged and often closed.

The success of the canal was remarkable considering that it soon had competition. The Baltimore and Ohio Railroad Company was formed as a way to recover trade diverted from the port of Baltimore by the Erie Canal! Construction began the same year as did construction on the C&O canal. By 1830 its first 14-mile section (Baltimore to Ellicott Mills) was opened with ponies as motive power. The first experimental steam engine was introduced later in the same year. Steam locomotives proved to be a success and became the standard source of power. In 1835 a branch reached Washington, D.C. and in 1842 the railroad reached the canal's terminus at Cumberland. The railroad was laid north of the Potomac to Harper's Ferry and south of the river from there westward. From Cumberland the railroad continued west reaching St. Louis in 1857. The political war between the canal and the railroad is a story in itself.

Despite competition and the adversity of the Civil War, the canal's heydays were actually ahead of it. With renewed investment and improvements, the canal was very much in business in the decades after the war. The character of goods transported on the canal began to change. Bulk cargo replaced general commodities and passengers. After 1891 its primary cargo – in the form of coal – was energy for the homes and factories which could be reached via the Potomac River, Chesapeake Bay, and a growing land based transportation infrastructure. The cost of the canal's upkeep and its slow speed eventually resulted in decline. The canal's final year of commercial operation was 1924. The condition of the canal thereafter went seriously downhill until it was finally restored as the National Park with which many of us are familiar. Today its towpath is filled with hikers, joggers and bikers.

Dismal Swamp Canal. The canal through the Great Dismal Swamp was the earliest of the Bay's canals. George Washington's comment about the swamp being the possible location for a canal has been mentioned. Construction of the canal actually began when Washington was President of the United States in 1793. Although the canal was modest in length, depth and width, its financing was uncertain and construction was slow. Its labor force consisted mainly of slaves hired out by local land owners. It was completed in 1805. It connected the southern branch of the Elizabeth River

to the upper reaches of Pasquotank River above Elizabeth City, North Carolina.

The canal had local implications but it never accommodated ocean going vessels nor did it affect the national westward expansion of commerce. Local populations and commerce were limited so the canal's significance was as well. It did, however, spur the development of several connecting canals including canals connecting the Dismal Swamp Canal to Suffolk via Lake Drummond. This gave planters in the Suffolk area access to markets in the Norfolk area, Chesapeake Bay region and wider world as well to markets throughout the North Carolina sounds. Reciprocal commerce was likewise enabled.

As in the case of the C&O canal, railroads affected the Dismal Swamp Canal. Before the Civil War, railroads connected Suffolk with both Norfolk and Petersburg. From Suffolk, rail lines ran southwest through New Bern down to Beaufort and across the greater South. The canal's limited importance became even less as these connections were made.

Hampton Roads, close to the mouth of the Elizabeth River was the site of the famous naval battle between the Monitor and the Merrimack in March 1862. Federal troops controlled Fortress Monroe and facilities at Norfolk. After the failure of the North's Peninsula campaign, those locations remained in Federal hands. Numerous local actions occurred over the next three years and some of these were along the canal. Insults to the canal through combat and sabotage resulted in deterioration and destruction. It was not until 1892 that the canal was rehabilitated.

Today the canal is picturesque and an integral part of the intra-coastal waterway. Some readers of this article have probably transited the canal boating their way south and then returning. Nowadays its proposed construction would bring questions of invasive species and a variety of other environmental concerns. It remains a legacy of a past where different concerns were in the fore; and, a seasonal boater's treasure.

C&D Canal. The earliest idea of a canal between the Delaware Bay and Chesapeake Bay was probably articulated by Augustine Hermann, the German speaking native of Prague who was an influential figure in the development of the upper Eastern Shore in the Eighteenth Century. There was an attempt to build such a canal as early as 1804. Lack of financial backing halted construction after two years. Again, the Erie Canal provided inspiration and a new attempt began in 1824. By 1829 a \$3.5 million canal funded with revenue bonds was built starting at what is now Delaware City and connecting to the Elk River. It included locks, was 14 miles long, ten feet deep and 66 feet wide. This type canal could accommodate barges and small coastal craft but was obviously not suited for transit of ocean going vessels between the two bays, that is, between Philadelphia/New York and Baltimore. The U.S. Army Corps of Engineers provided informal consultation on the construction and improvement of the canal.

As in the case of the other canals discussed, the development of railroads had an impact on the C&D canal. However, as late as the start of the Civil War, there was no direct rail connection from New York and Philadelphia down to Baltimore. Rail cars had to be ferried across the Susquehanna. In April 1861 Massachusetts troops ferried across the Susquehanna, were then taken by train to President Street Station in Baltimore, and were then required to detrain and march to Camden Station in order to reach Washington. The Sixth Massachusetts Regiment found itself confronted by an anti-union mob on Pratt Street and, after being pelted with rocks, fired into the crowd

killing a number of Maryland citizens. Hence, Maryland's state song *Maryland My Maryland* with lines that recount "patriotic gore" and "Northern scum."

For a considerable time after this, trains with Union troops stopped at the eastern shore of the Susquehanna and were ferried to the "naval school" at Annapolis and thence by train to Annapolis Junction in Howard County and down to Washington. Clearly a canal capable of transiting large troop carrying ocean going vessels would have been a great boon. In commercial terms, ocean going vessels in route to Philadelphia or New York also wishing to call at Baltimore had to travel a circuitous route around the Delmarva Peninsula and enter the Chesapeake via the Virginia Capes.

These conditions brought little change to the tiny C&D canal until in 1919 the federal government purchased the canal. Initial improvements were modest. By 1927 more serious improvements began. A major reconstruction began during the years 1935-1938. The canal, now entirely at sea level without locks, was widened to 400 feet and deepened to 27 feet. Later in the 1960's and 70's it became 35 feet deep and 450 feet wide. The C&D canal today sees not only recreational boaters, watermen, and small commercial vessels passing through but large ocean going commercial ships.

Thoughts on the canals today. Each of the canals described is worth a visit whether by boat or automobile. Via the C&D canal, it is a relatively easy cruise to Cape May, New Jersey, points north along the Delaware River, or other points in the Delaware Bay and beyond. The marinas and Canal House Restaurant at Chesapeake City provide convenient refreshment as well as a great view of canal traffic. Despite its name, much of the Dismal Swamp canal is surrounded by natural beauty and worth a visit or an enjoyable passage. The C&O canal provides miles of scenic terrain for a stroll or a serious bike ride. In fact, by connecting with other trails it is possible to bike from Washington to Pittsburgh with hardly a car or truck to dodge.

Lurking within the history of these canals may be a message of growing importance for the present day with its distressed government discretionary (non-entitlement) budgets. The Erie Canal and other public works, the C&O canal being another, were early examples of using revenue bonds to finance important projects. Today such bonds are routinely used to finance public works; highways and bridges, but also office buildings and industrial facilities. Unlike in the past where bonds were repaid solely from project revenues, today many bond funded projects are repaid by a stream of future full or shared Federal funding with repayment accomplished many years after the completion of the project. Bond markets understand how to assess the risk of non-appropriation of future government funding. By having full funding upfront, the projects are completed more quickly and with less administrative overhead than if executed incrementally as annual funding became available.

An interesting thought is "what if" this approach was applied in areas important to environmental concerns such as research and development projects that reduce pollution or improve remediation. In fact the use of taxable revenue bonds and other innovative financing techniques to improve America's technological innovation is being advocated by a non-profit group called the Innovation Financing Roundtable. The techniques advocated by the group have garnered interest in the financial community and also by the White House's Office of Science and Technology Policy. The initial focus of these efforts has been on bio-technology, primarily speeding

research and time to market, and on reducing the cost of new life saving therapies. However, there is no reason why revenue bond financing and other techniques being developed into an innovation financing eco-system cannot be applied in areas relevant to the environment. Although such an approach would be new (something bureaucrats do not always welcome) and involves several "moving parts", all the necessary legal authorities for Federal agencies exist.

COVE POINT

By Gary Antonides



Dominion Resources plans to convert the existing LNG import facility at Cove Point to an export facility. This is one result of the natural gas boom in this country, made possible largely by the hydraulic fracturing (fracking) process used to extract the gas. Like the fracking process itself, the proposed export facility has generated much publicity, and many claims and counterclaims. In this article, we take a look at some

facts and some of the claims. We can't judge the legitimacy of many of the claims, but hopefully, future studies and the passage of time will clarify most of the issues.

Dominion, on their website, www.dom.com, says we have the opportunity to create many thousands of good-paying U.S. jobs while aiding allied nations in need of clean energy. We can sell a portion of our natural gas overseas and have ample supplies at home to keep prices affordable. They say President Obama encourages the development of a global market for natural gas in his "Climate Action Plan" as a way to promote the move to cleaner fuels and that political support comes from both sides of the aisle.

Dominion's Cove Point project in southern Maryland is one of four liquefied natural gas (LNG) facilities thus far to receive approval from the U.S. Department of Energy for exports. Before construction, the project must also pass rigorous environmental and other state and federal reviews.

Dominion says the Cove Point project has the smallest environmental footprint for a facility of its kind. The facility will make use of the current pier, existing tanks and other infrastructure put in place when Cove Point was built nearly 40 years ago. The new equipment needed to liquefy and export natural gas will be placed within the existing footprint of the facility, leaving the surrounding 800 acres untouched as a nature preserve.

Dominion expects the project to create more than 3,000 construction jobs during a three-year period. There will be 175 full-time once the facility is operating. Dominion claims that up to another 14,000 jobs are expected to result from the project in other businesses ranging from pipe manufacturers to accounting firms.

Dominion also expects Cove Point will generate \$1 billion a year in new local, state and federal revenue. In the first five years after the project is in operation. Calvert County is to receive an additional \$45 million a year on average. Maryland, other states and the federal government will also benefit from taxes generated by a variety of economic activity related to the project (It is not clear whether this is included in the \$1 billion).

Dominion says this one project could reduce the nation's trade deficit by up to \$7.1 billion annually and it would help two important allies—Japan and India—meet their urgent clean energy needs. A delay in the project could send them to other countries for their natural gas supplies. Natural gas exports will provide the U.S. with strong geopolitical benefits by giving friendly nations in Europe and Asia a new stable supply option.

Dominion dismisses claims by those who say that if the project is not built the natural gas will stay in the ground, because other proposed export projects could take Cove Point's place.

The website www.wikipedia.org gives some of the history of Cove Point. The facility was originally built for the purpose of importing Algerian LNG. It received LNG from Algeria from 1978 to 1980. Then the Algerians demanded an unacceptable price increase, and the terminal fell into disuse. In 1994, the facility was transformed into a facility to store domestic natural gas. Following the construction of an additional LNG storage tank, imports resumed in 2003.

On 1 April 2013, Dominion, who acquired the facility in 2003, filed an application for expansion of the Cove Point facilities for gas liquefaction and export. The proposed expansion is projected to cost \$3.4 billion to \$3.8 billion.

Controversies surrounding Cove Point are not limited to its proposed expansion. In 2001, when the plant was scheduled to reopen, many local residents were concerned about the proximity to Calvert Cliffs Nuclear Power Plant (3 miles), and the damage that could be caused by an attack or an explosion.

Because the LNG from Cove Point contains a higher heat content than domestic natural gas, a local gas utility which receives LNG from Cove Point complained in 2005 that its customers were adversely affected by this "hot" gas. As a result, the heat content was limited by diluting it with nitrogen.

Residents using Cove Point gas in Prince Georges County experienced a 16-fold increase in gas leaks. These leaks came from couplings that contained rubber gaskets. It was claimed that the Cove Point gas contained more heavy hydrocarbons than does domestic natural gas, which causes the gaskets to dry out and leak. Cove Point disputes these claims and says that, although the areas in the District of Columbia and Northern Virginia served by their gas will increase, it will not cause additional leaks.

Now, of course, Dominion is coming under fire for their plan to convert Cove Point from an import facility to an export facility. Opponents of the plan say that increased demand for natural gas would cause a fracking boom across the mid-Atlantic. They also argue that exports will lead to a spike in gas prices.

Capital News Service, www.cnsmaryland.org, describes the facility. The imported natural gas is carried by pipes that begin on a pier in the Chesapeake Bay. The pipes then descend underground and underwater and run for more than a mile alongside a dimly-lit bicycle tunnel that workers use to travel from the dock to shore. Coming out of the ground, they pass acres of trees and connect to seven storage tanks from which the gas ultimately travels to consumers.

Cove Point is slated to become the first operational gas exporting facility on the East Coast. Dominion plans to begin construction by the end of the year and be operational by 2017. Many Marylanders fear the expansion will lead to the use of the controversial fracking method within the state, exposing us to alleged environmental and health risks.

On the Dominion property, the main change will be the addition of a liquefaction plant that will cool the natural gas and turn it into a liquid at 260 degrees below zero. The process reduces the gas volume for transport. This involves a heat exchange system, a turbine, compressors and cryogenic equipment.

The crisis in Ukraine has led the Obama administration to develop a strategy to more quickly deploy the United States' natural gas and undermine Russia's influence over Ukraine and Europe in the future. Though the United States was a major natural gas importer until a few years ago, the gas supply in basins like the Marcellus, and the new methods for extracting it, such as fracking, now enables the U.S. to wield political and economic influence as an exporter. In the case of Ukraine, Russia supplies the majority of their natural gas, but recently announced it would no longer do so at reduced prices.

Fracking in Maryland is currently not allowed due to an order issued by Gov. Martin O'Malley's that prevents the approval of drilling permits until the end of an ongoing scientific study examining fracking. However, the study is planned to be finalized later this year. Mike Tidwell, director of the Chesapeake Climate Action Network (CCAN), said he fears a gas export facility in Cove Point will lead the state government to allow fracking in Maryland. CCAN and other organizations such as the Sierra Club, have held statewide protests against Cove Point.

Not everyone in Western Maryland objects to gas production in their region. State Delegate Wendell Beitzel, R-Garrett, said he remembers growing up on his father's farm and flares going off on nearby land when workers struck natural gas. Beitzel said there were never any problems with contamination. That was before fracking was used, but Beitzel says that fracking enables drilling multiple wells from one location, and would cause less of a disturbance to nearby land. He thinks those who oppose American fracking should recognize that the extraction process has to be done somewhere.

In addition to environmental concerns, there are economic concerns. The website www.cnsmaryland.org quotes a representative of CCAN as saying that because demand for natural gas is rising in the United States and many coal-fired power plants are being shut down, residents could expect higher prices if Maryland began exporting natural gas. But a chief economist with the American Petroleum Institute said the supply of American gas is high enough to handle the demand without affecting consumer prices in Maryland.

According to a report by the consulting group National Economic Research Associates, exports will not drive up domestic prices to the level foreign countries pay for American imports because the cost of transportation, liquefaction and turning the LNG from liquid to gas at the import site ensure that domestic prices will be lower. The report also points to an improved U.S. trade balance.

Tidwell, of CCAN, said that he believes Dominion would create more jobs if the company invested in wind and solar energy projects in Maryland and Virginia. However, in addition to natural gas exports, Dominion is already moving forward with some mid-Atlantic wind energy investments. Dominion filed a request in February to bid on a lease of about 80,000 acres of land off Maryland's coast to develop wind turbines. In September, Dominion paid \$1.6 million to lease 112,800 acres of land off the Virginia coast for offshore wind energy. Dominion expects the first turbine for the Virginia project to be installed in 10 years if it is approved by the state.

PROFILE OF A TRUSTEE

Mike Lofton



Mike joined the Board of Trustees of CEPA in 2009 bringing a wealth of experience in environmental and local governmental matters. He is a Past President of the Harwood Civic Association and serves on the Board of the West &

Rhode River Keeper. Earlier this year he was elected founding Chair of the Growth Action Network of Anne Arundel County. He also founded and chairs the Anne Arundel Public Water Access Committee.

Previously, he was a Board Member of a number of organizations: Leadership Anne Arundel, where he was awarded their Community Trustee Award; United Way; Londontown Foundation, where he was Interim Executive Director; Junior Achievement, Scholarships for Scholars; and University of Maryland-Maryland Industrial Partnerships, and the Annapolis Economic Development Corp.

He has also served on numerous committees including the General Development Plan Steering Committee, School Maintenance & Renovation Taskforce, Taskforce on Year-Round Schools, Bob Neall Transition Team (Annapolis), and the Anne Arundel County Chamber of Commerce, where he is in their Hall of Fame.

He was Founding CEO of the Anne Arundel Economic Development Corporation, Deputy Secretary of the Maryland Department of Economic & Employment Development, and Executive Director of the Maryland Economic Development Association.

He received a B.A. in Economics from Transylvania University in Lexington, Ky. He attended the Economic Development Institute at the University of Oklahoma. He is certified as an Economic Developer, CEcD, by the International Economic Development Association.

He and his wife, Sherrie have lived in Harwood since the early 1970s. They raised two "wonderful" children, Daniel and Amanda. Sherrie is a regular substitute teacher in all the South County elementary schools. They are both devoted animal lovers with a current population of two dogs and one cat. Mike spends as much time on the water as possible, usually fishing on his Parker 21 center console. He also manages a few trips each year to fish and camp in the Everglades. Mike assures us the fish shown was a catch and release situation.

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