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Senate Education, Health, and Environmental Affairs Committee

Testimony in SUPPORT Senate Bill 955

Federal Clean Water Act – Authority of State

Wednesday, March 11, 2020

The Clean Chesapeake Coalition supports SB 955 to the extent such an enactment by the General Assembly will gain leverage for the State of Maryland and the Hogan Administration (and subsequent administrations) in addressing the Conowingo Dam factor[1] in the context of Bay TMDL water quality improvement goals, in litigation and/or negotiations with the Dam's owner (Exelon Corporation), in asserting the State's environmental protection authority in the Federal Energy Regulatory Commission (FERC) arena, or otherwise.

While such legislation may raise an interesting separation of powers issue between the Executive and Legislative branches of State government, and the timing may be off, SB 955 brings much deserved attention to the single largest source of pollution loading to the Chesapeake Bay (the Susquehanna River). What's pending in the hands of FERC is indeed a once-in-a-generation opportunity to meaningfully, measurably and cost-effectively improve the Maryland portion of the Bay by tackling the accumulated pollution in Conowingo reservoir so Maryland's downstream restoration efforts and expenditures, especially in the upper Bay, are not in vain.

Since 2012, after a clarion call from Dorchester County elected officials, the following Maryland county governments have participated in the Coalition since inception or for a period of time to raise awareness and pursue improvement to the water quality of the Chesapeake Bay in the most prudent and fiscally responsible manner – through research, coordination and advocacy: Allegany, Caroline, Carroll, Cecil, Dorchester, Frederick, Harford, Kent, Queen Anne's and Wicomico. After the U.S. Geological Survey (USGS) issued a report in August 2012 (SIR 2012-5185) confirming the exponential loss of trapping capacity in the Conowingo Dam reservoir and associated threats to downstream water quality, the Coalition adopted as its calling card the striking NASA satellite image on page 2 of the report. (see copy attached)

Since inception, Coalition counties have submitted substantive and well-sourced testimony whenever legislation or joint resolutions have been introduced dealing with Conowingo Dam in the context of Bay restoration and protection. (see attached prior Coalition testimony, which however dated is relevant today). To date, there has been no enactment by the General Assembly whatsoever on this most important issue related to Bay health – sad and curious amidst all we in Maryland are doing and spending to improve Bay water quality.

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[1] The Emmy Award winning documentary video "The Conowingo Factor" summarizes the Dam's history and the water quality issues posed by both the Dam and sediment, nutrients and debris coming down the Susquehanna River. https://www.youtube.com/watch?v=LvK86Ripmc4&feature=youtu.be

We share the collective disappointment in Exelon's refusal to embrace the mantle of Bay stewardship as we've monitor their legal filings against the State and before FERC to shirk responsibility for the adverse downstream environmental impacts attributable to Conowingo Dam operations and maintenance (or lack thereof in the reservoir).

For better or for worse, the proposed Settlement Agreement between the State and Exelon related to Conowingo Dam relicensing as negotiated by the Hogan Administration has indeed moved the needle, as evidenced by the sudden popularity in the General Assembly and among NGOs and the media regarding Conowingo Dam relicensing and the significance of the 50-year relicense request now in the hands of FERC. We also understand the context in which the State was compelled to concede it's WQC authority for a settlement (or sorts) with Exelon as multiple federal policy, regulatory and FERC related case law stars lined up nicely for big energy.

To see or support this legislation as a means to vilify the Hogan Administration for their efforts to address the Conowingo factor would be misguided. Had the General Assembly, the Maryland Congressional Delegation, UMCES, EPA Chesapeake Bay Program, USACE, CBF and other large, wheel-healed and entrenched NGOs, etc. taken this issue more seriously (instead of denying, downplaying or distracting from the Conowingo Factor) there would have been considerably more leverage for the Administration in addressing this vexing issue.

The greatest concern about the current state of the Conowingo reservoir is the inevitability of storm events (more frequent and intense due to climate change) that propel vast amounts of the accumulated nutrients, sediment and other contaminants through and over the Dam in catastrophic surges that far exceed the Bay's ability to adequately assimilate such loadings. As a result, the sediment settles to the Bay bottom and smothers the Bay's oyster beds and submerged aquatic vegetation – Mother Nature's most efficient filters.

Agencies and NGOs may quibble about degrees of impact while citing estimated percentages of pollution attributable to scour during storms; but so much pollution loading to the Bay comes from the Susquehanna River and so much pollution has accumulated in the upstream reservoirs that any percentage of scour is still an enormous amount of pollution being delivered in shock loadings in a few days.

Simply put, the Coalition counties cannot accept as the new normal for the Maryland portion of the Bay that all of the reservoirs in the lower Susquehanna River are full, that enormous amounts of Susquehanna River pollution are no longer being trapped, that more storms and harmful scour are inevitable and that dredging Conowingo reservoir is off the table. Nor should any Marylander who cares about the Bay. With predictions for more frequent and intense storms comes the scouring of enormous amounts of nutrient-laden sediments and other contaminants from the Conowingo reservoir, which has lost its trapping capacity. Denial and downplaying risk widespread taxpayer fatigue watching the government ignore the elephant in the room.

All things considered, the Bay is declining, in spite of billions of dollars spent to restore it (and glossy colored reports reminding us just how little progress we've made). By bringing as much attention as possible to the single largest source of pollution to the Bay and the greatest threat to Bay restoration effects at every level, all the while pointing out that today nobody is responsible for dredging or otherwise addressing the accumulated nutrients and sediments above the Conowingo Dam and that our upstream neighbors are doing very little in comparison to the collective efforts of Marylanders, the Coalition has been stoking an overdue and deserving public policy discussion about the smartest, most cost-effective ways to save the Bay and help local economies in the process. It is time to take a step back and look again at the big Chesapeake Bay watershed picture, and to recognize the perfect storm of political, economic, governmental, regulatory, environmental and special interest forces – including Mother Nature herself. It is time to reprioritize what we do and spend to meaningfully improve the water quality of the Bay.

Keeping it simple: the 14-mile reservoir above Conowingo Dam is the largest stormwater management pond in the Bay watershed and it is full. It must be dredged and properly maintained in order to trap some of the sediment and other pollutants that flow down the Susquehanna River before entering the Bay. We support stopping all pollution from ever entering the Susquehanna River; however, we are realistic about how long that will take and at what costs (see widespread criticism of Pennsylvania's Phase III WIP). In the meantime, by dredging and maintaining Conowingo reservoir (and the other dam reservoirs in the lower Susquehanna River), the Maryland portion of the Bay will get the breathing room that it needs to recover and thrive. We believe that the Administration's "Conowingo Sediment Characterization and Innovative Reuse and Beneficial Use Pilot Project" will show positive economic opportunities and commercial benefits related to dredging the Conowingo reservoir, in addition to the environmental benefits downstream. The sediment characterization component of that project must be expedited as such information is critical to assessments and decisions being made regarding the Conowingo Factor.

We support the Conowingo specific watershed implementation plan (WIP) that is under development and look forward to the opportunity to participate in the formulation of this WIP. We understand how this approach will test the fortitude of the watershed states' partnership; but a healthier Chesapeake Bay is well worth the effort. We also understand that without addressing the Conowingo factor in a meaningful way the Bay TMDL goals for downstream jurisdictions are unachievable and unaffordable.

For these reasons, the Coalition urges a FAVORABLE report on SB 955.

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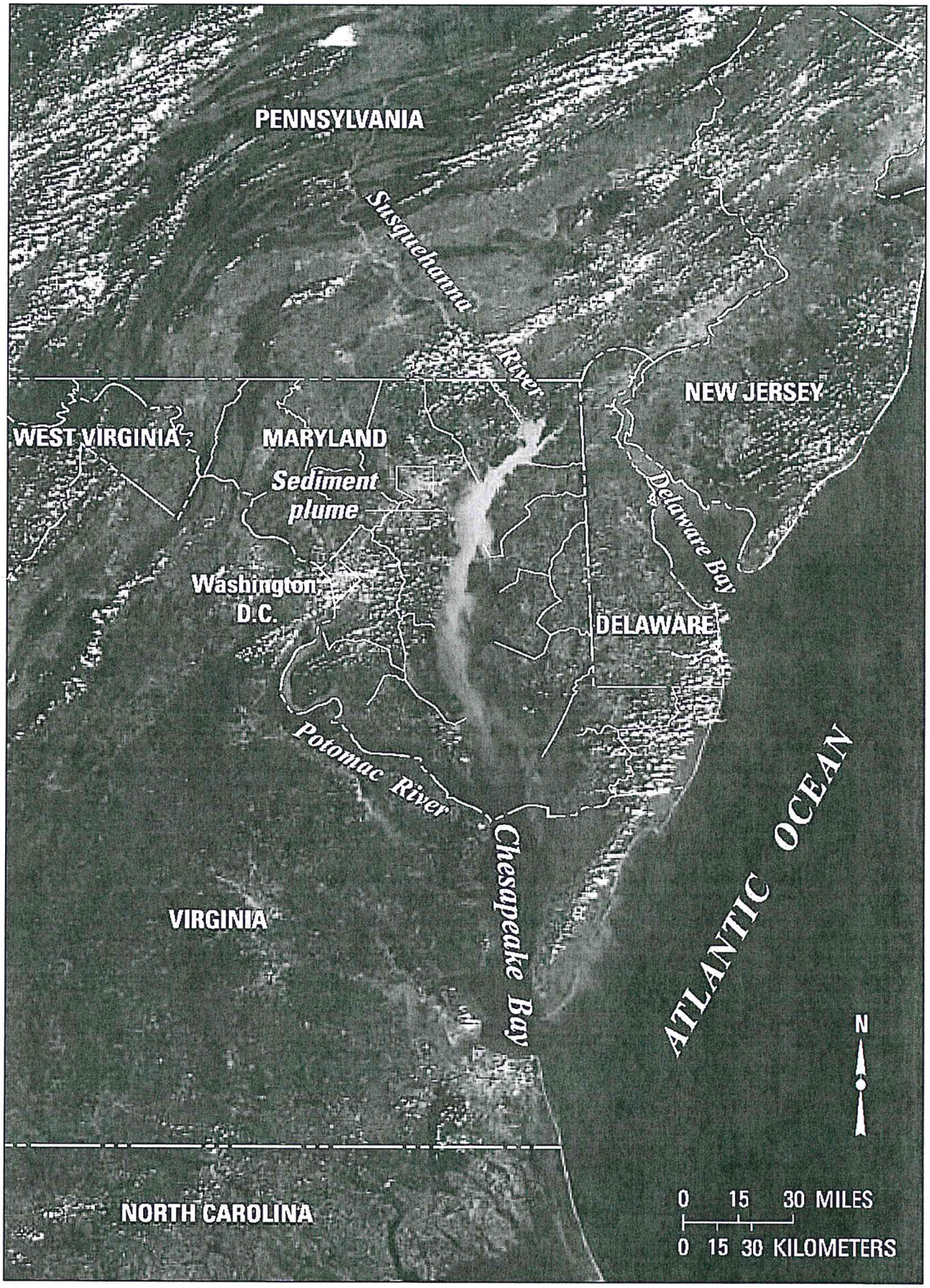
Exhibits



NASA photograph from the Terra satellite, September 13, 2011 (a few days after Tropical Storm Lee) showing sediment plume extending about 100 miles to the mouth of the Potomac River.

The objective of the Clean Chesapeake Coalition is to pursue improvement to the water quality of the Chesapeake Bay in a prudent and fiscally responsible manner.

A picture is worth a 1,000 words...

This NASA satellite image appeared in the August 2012 U.S. Geological Survey report that confirmed the exponential loss of trapping capacity in the Conowingo Dam reservoir, and has since served as a calling card for the Coalition. We added the county jurisdictional boundaries.

Here are the staggering numbers behind the photograph of the 100-mile long sediment plume emanating from the Conowingo Dam a few days after Tropical Storm Lee in September 2011.

Estimated amounts transported into the Bay during this single storm event (over 9 days), According to the *U.S. Geological Survey:*	
42,000 tons nitrogen	**10,600 tons phosphorus**
19 million tons sediment	****4 million tons scoured (at least)**
According to the *UMCES - Horn Point (Cambridge, MD) Survey:*	
115,910 tons nitrogen	**14,070 tons phosphorus**
By comparison (yearly Susquehanna River pollutant loading averages 1978-2011):	
71,000 tons nitrogen | 3,300 tons phosphorus | 2.5 million tons sediment	

Pollution reduction targets per EPA Bay TMDL and Maryland WIP (through 2025):

	State WIP Costs (billions)	State WIP Results (tons/year)
Stormwater	$ 7.38	Nitrogen – 1,100 | Phosphorus – 116 | Sediment – 102,370
Septics	$ 3.71	Nitrogen – 620 | Phosphorus – 0 | Sediment – 0
WWTP	$ 2.36	Nitrogen – 1,909 | Phosphorus – 46 | Sediment – 0
Agriculture	$ .928	Nitrogen – 2,372 | Phosphorus – 187 | Sediment – 37,108
TOTAL	$ 14.4	Nitrogen – 6,001 | Phosphorus – 349 | Sediment – 139,478

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FOR CONCERNED CITIZENS and LEGISLATORS

Clean Chesapeake Coalition Advocates for Conowingo Pond Dredging

The Conowingo Dam (the "Dam") converted the lower Susquehanna River into a large stormwater management pond that Exelon, the Dam's owner, calls the "Conowingo Pond." The Dam widened the natural course of the river and increased the depth of the river. Widening and deepening the river slowed the rate of flow of water in the river, which allowed suspended solids in the river to settle (fall out of suspension) on the bottom of the reservoir and become "trapped" in the same manner that a stormwater management pond "traps" sediments.

Like all stormwater management ponds, the Dam has altered the otherwise normal or natural flow of water in the Susquehanna River. Like all stormwater management ponds that have not been maintained (*i.e.*, periodically dredged of the sediments that accumulate in the artificially created reservoir), during significant storm events, accumulated sediments have been scoured from the bottom of the pond and dumped in mass below the Dam, shocking the Maryland portion of the Chesapeake Bay with a blanket of deadly sediments.

Sediment Scoured From The Conowingo Reservoir During Significant Storm Events[1]

Storm	Year	Month	Peak Flow Cu^3/sec	Volume of Sediment Scoured into Bay (Million Tons)
Hurricane Agnes	1972	June	1,130,000	20
Hurricane Eloise	1975	September	710,000	5
Unnamed	1993	April	442,000	2
Unnamed	1996	January	909,000	12
Hurricane Ivan	2004	September	620,000	3
Unnamed	2011	March	487,000	2
Hurricane Irene	2011	July	Unmeasured	Unmeasured
Tropical Storm Lee	2011	September	778,000	4
Hurricane Sandy	2012	October	Unreported	Unreported

[1] Jeffrey Brainard, *Big Year for Bay Storms, Bad Year for Bay Sediment?*, Chesapeake Quarterly Vol. 10 No. 4, Dec. 2011. See link: http://www.mdsg.umd.edu/CQ/V10N4/main1/. *See also The Impact of Sediment on the Chesapeake Bay and its Watershed*: U.S. Geological Survey, June 3, 2005. See link: http://chesapeake.usgs.gov/SedimentBay605.pdf.

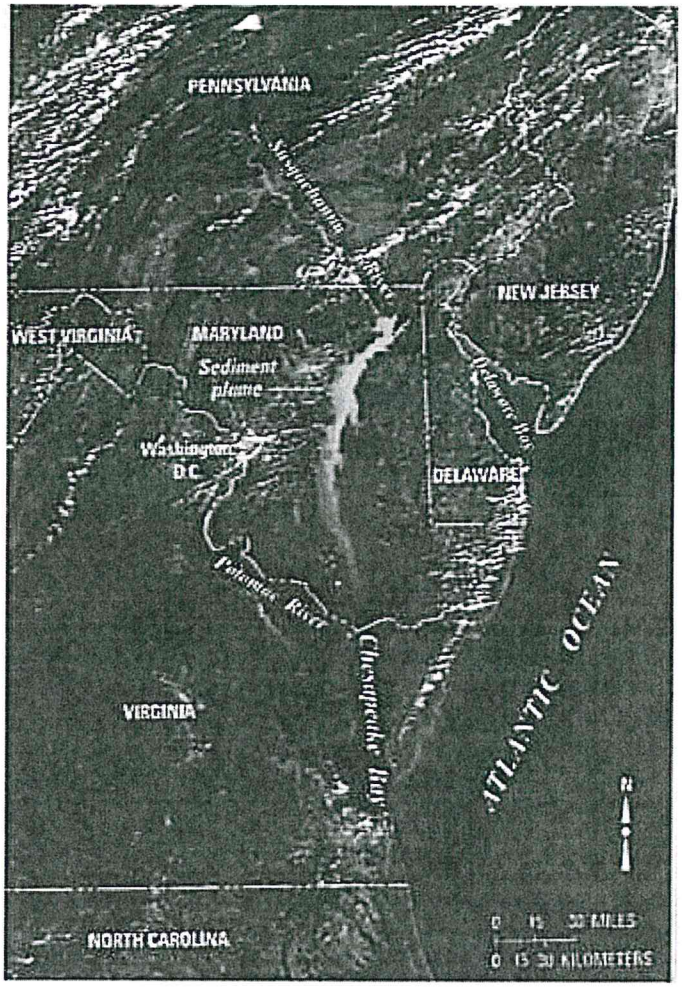
Billions of taxpayer dollars have been spent to dredge the navigable shipping channels in the upper Bay and the channels into local marinas that have been clogged with sediments. The largest source, if not the sole source, of those sediments is the Susquehanna River, including scour from the bottom of the Conowingo Pond. Economically and environmentally, those sediments should be dredged from the pond behind the Dam where they have accumulated (approximately 9,000 acres or 3,600 hectares), not after they are dumped into the Bay and spread across approximately 4,479 square miles.

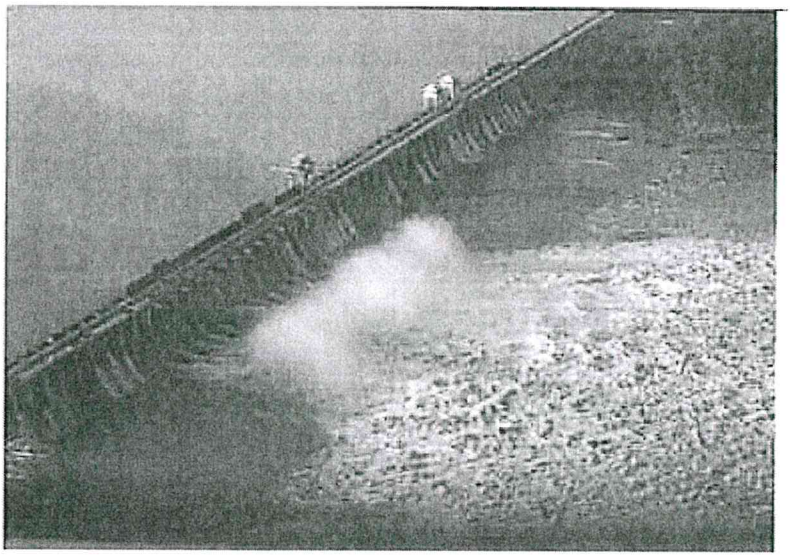
Exelon, a company with over $30 billion in annual revenues, receives at least two benefits from the Dam: (1) it produces 572 megawatts of electricity, which is enough electricity to power an average of 572,000 or more homes; and (2) it receives renewable energy credits that may be used or sold to offset air emissions from power plants that burn fossil fuels.

Sediment Loading From Storm Event Scour In Comparison to Average Annual Sediment Loading from Susquehanna River

Storm	Year	Avg. Annual Sed. Load from Susquehanna River (Million Tons)	Sed. Load From Scour (Million Tons)	% of Avg. Annual Load from Scour
Hurricane Agnes	1972	1.5	20	1,333%
Hurricane Eloise	1975	1.5	5	333%
Unnamed	1993	1.5	2	133%
Unnamed	1996	1.5	12	800%
Hurricane Ivan	2004	1.5	3	200%
Unnamed	2011	1.5	2	133%
Tropical Storm Lee	2011	1.5	4	266%
Hurricane Sandy	2012	1.5	Undetermined	Undetermined

The photographs below were taken within 2-4 days after Tropical Storm Lee in September 2011.





Scour during significant storm events occurs in less than one week. Thus, in a matter of days, scour from the Conowingo Pond during a significant storm has added anywhere from 133% to 1,333% more than the average annual sediment loading from the Susquehanna River. Such loading results in a big die-off of oysters and underwater grasses in the Bay north of the Choptank River. In 1972, up to a meter of sediments was added to the floor of the upper Bay; two-thirds of that sediment was attributed to scour from the floor of the lakes and reservoirs behind the three dams in the lower Susquehanna River. During Tropical Storm Lee, over two inches of sediments were deposited on the floor of the upper Bay. In short, the shock effect of this rapid loading of scoured sediments is devastating to all fauna that cannot flee (swim) to the lower Bay and to all SAV in the upper Bay. The oysters and SAV in the upper Bay and the upper Bay tributaries have never recovered from the devastation caused by the scour from Hurricane Agnes. SAV in the Susquehanna Flats was killed to pre-1985 levels (thousands of acres of SAV were killed) as a result of the two storm events in 2011.

The Dam traps the best sediment - sand - and releases the most damaging sediments - clay and silt - into the Bay. The Bay has thus been deprived of sand that is necessary: (1) to hold the roots of SAV during storm events; (2) to support the shell beds of oysters; (3) to fortify shorelines and thus reduce erosion; and (4) to cover and suppress the clays and silts that are washed into the Bay so that those clays and silts (a) do not continue to emit phosphorus and nitrogen bound to them in the Susquehanna estuary, (b) do not continue to agitate into suspension and cloud the Bay waters; and (c) do not deprive Bay flora and fauna of needed sunlight and habitat.

If the Conowingo Pond is not dredged and maintained, the Bay will never recover. Coalition members have intervened in the relicensing of the Dam to urge the Federal Energy Regulatory Commission (FERC) to place conditions on the license to be issued that will require Exelon to dredge and maintain the stormwater management pond created by the Dam so that a blanket of deadly sediments cannot be scoured from the bottom of the reservoir and deposited in the Bay now with regularity and in devastating proportions during significant storm events.

The Coalition observes that the science underpinning the points being made all comes from federal agencies and institutions funded by federal agencies and federal tax dollars. The Coalition hopes that FERC will act consistently with federally conducted and federally funded studies, unless it is able to offer a scientifically based rationale for why such studies are invalid or unreliable and undeserving of due consideration in the relicensing of the Dam.

The Coalition observes that significant federal financial resources have been devoted to dredging below the Dam. Federal resources should be directed to the capture of sediments above the Dam before such sediments are widely dispersed over the Bay. It would be more cost effective to capture sediments above the Dam than below. To the extent that dredging of the Conowingo Pond will reduce the federal funds required to dredge the upper Bay in order to keep the Port of Baltimore and the stream of marine commerce viable, a portion of such savings could equitably be directed to assist Exelon with the cost of dredging and maintaining the Conowingo Pond.

Conowingo Matters

The Chesapeake Bay is a national treasure.[i] The reasons to save the Bay are limitless and need not be debated.

The health of the Chesapeake Bay is impacted more by what flows downstream and from other watershed states than from the shoreline, tributaries and human activity in Maryland.[ii]

The Susquehanna River is the largest tributary to the Bay, providing more than 50% of the freshwater to the Bay, and is (where it flows through the Conowingo Dam) the single largest point source of pollution loading to the Bay – 46% of the nitrogen, 26% of the phosphorus and 33% of the sediment that is loaded annually into the Bay as a whole.[iii]

For more than 85 years, the Conowingo Dam has been harnessing the Susquehanna River to produce hydroelectric power for sale while also functioning as a large sediment trap. The 14-mile reservoir above the Dam (aka "Conowingo Pond") is the largest stormwater management pond (8,500 acres; 310,000 acre-feet) in the entire Chesapeake Bay watershed – and is now full.[iv]

Conowingo Pond has lost its trapping capacity (reached "dynamic equilibrium") whereby all that flows to the Dam passes through unchecked (without settling, as if the Dam was not there) into the Chesapeake Bay. At equilibrium, the annual average pollution loadings from the Susquehanna River are exacerbated: a 250% increase in the 2.5 million ton average annual suspended sediments load; a 70% increase in the 3,300 ton average annual phosphorus load; and a 2% increase in the 71,000 ton average annual nitrogen load.[v] Additionally, because Conowingo Pond is full, devastating amounts of accumulated nutrients, sediment and other contaminants are scoured from the reservoir and dumped into the Bay during storm events and in equally harmful proportions now on a regular basis.

The amount of nutrient-laden sediment accumulated in Conowingo Pond, waiting to be scoured into the Bay by the next storm, is enormous at more than 175 million tons – enough to fill about 80 football stadiums.[vi]

In the popular book "Turning the Tide – Saving the Chesapeake Bay" published by the Chesapeake Bay Foundation it was correctly forecasted that "a loss of trapping at Conowingo would cause major problems for water quality in the upper bay and also for dredging the economically vital ship channels serving the Port of Baltimore" - in a section of the book aptly titled "Time Bomb at Conowingo".[vii]

All things considered, dredging Conowingo Pond and upstream reservoirs to regain trapping capacity, and then maintaining those reservoirs, should be priority number one in our Chesapeake Bay restoration efforts as there is not currently available or in play a more cost effective and environmentally beneficial (measurable) single activity to improve the Bay's water quality; and such an undertaking would benefit local economies.

Today, there is no commitment, plan, responsible party or budget to specifically address the devastating amounts of nutrients, sediment and other contaminants that are scoured into the Bay during storm events and in equally harmful proportions now on a regular basis.

Since 1983, numerous federal, state and local government agencies and private organizations have spent more than $15 billion in the name of Bay restoration;[viii] and Maryland alone has committed its taxpayers to spend more than $14.4 billion by 2025 to meet pollution reduction goals set by the U.S. Environmental Protection Agency (EPA).[ix]

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The modeling used by EPA to establish the "pollution diet" for the Chesapeake Bay and to apportion cleanup responsibility among the watershed states does not adequately account for the loss of nutrient and sediment trapping capacity in Conowingo Pond and the resulting increased pollution to the Bay from upstream sources. In Appendix T of the 2010 Bay TMDL the trapping capacity of Conowingo Pond is erroneously assumed through 2025; and waiting to recalibrate is unfair to Marylanders.[x]

The State of Maryland's watershed implementation plan (WIP) ignores the pollution attributable to the loss of trapping capacity in Conowingo Pond and commits zero funding to the problem, while aggressively regulating septic tanks, agriculture and stormwater runoff at enormous costs with marginal returns.[xi]

The new Chesapeake Bay Watershed Agreement (signed June 16, 2014), under the auspices of the Chesapeake Bay Program, includes laudable principals, goals, outcomes and management strategies with no mention whatsoever of the once-in-a-generation opportunity to meaningfully help the Bay and protect Bay restoration efforts and expenditures through the relicensing of the Conowingo Dam now underway with the Federal Energy Regulatory Commission (FERC).[xii]

Exelon Corporation has filed for a 46-year federal license to continue operating Conowingo Dam with no requirements whatsoever to dredge or maintain Conowingo Pond to minimize the scouring of nutrients, sediment and other contaminates into the Bay.[xiii] The draft Environmental Impact Statement (EIS) recently issued by FERC suggests more study and no action by Exelon or others to address the downstream impacts from scour, sediment and the resulting harm to aquatic life.[xiv]

The federal relicensing requires Exelon to obtain from the State of Maryland a "water quality certification" pursuant to Section 401 of the Clean Water Act.[xv] Upon issuance of such, the State will have determined that the continued operation and maintenance of Conowingo Dam meets Maryland's water quality standards. To ensure that this most significant tool in the relicensing process is maximized, the State's attention and resources should be marshalled accordingly – not in the direction of costly programs, policies and practices with questionable or marginal pollution reduction benefits and adverse side effects on local economies.

Oysters and submerged aquatic vegetation (SAV) are Mother Nature's most efficient filters for improving water quality, and the most cost effective.[xvi] Addressing the loss of trapping capacity in Conowingo Pond will give oysters and SAV in the Upper Bay a fighting chance.[xvii] Accepting the status quo above the Dam and the shock loadings of sedimentation due to scour as the new normal leaves the Bay's flora and fauna in peril and undermines downstream efforts and expenditures to restore the ecosystem.

It is time to take a step back and look at the big Chesapeake Bay watershed picture, and to recognize the perfect storm of political, economic, governmental, regulatory, environmental and special interest forces – including the power of Mother Nature herself. It is time to reprioritize what we are doing and spending to meaningfully improve the water quality of the Bay. The next big storm could be devastating.

The Clean Chesapeake Coalition is a growing association of Maryland local governments whose elected officials have coalesced to seek improvement to the water quality of the Chesapeake Bay in the most prudent and fiscally responsible manner possible – through research, coordination and advocacy.

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[i] *See* President Obama Executive Order 13508, May 12, 2009.
See link: http://executiveorder.chesapeakebay.net/EO/file.axd?file=2009%2f8%2fChesapeake+Executive+Order.pdf.
[ii] U.S. Environmental Protection Agency, Chesapeake Bay Total Maximum Daily Load (TMDL) for Nitrogen, Phosphorus and Sediment; December 29, 2010, Section 4.1 – Sources of Nitrogen, Phosphorus and Sediment to the Chesapeake Bay: Jurisdiction Loading Contributions. 2009 model estimates: Maryland loadings – 20% of total nitrogen; 20% of total phosphorus; 17% of total sediment).
[iii] *Id.* at Section 4.2 – Sources of Nitrogen, Phosphorus and Sediment to the Chesapeake Bay: Major River Basin Contributions.
[iv] Hirsch, R.M., 2012, Flux of nitrogen, phosphorus, and suspended sediment from the Susquehanna River Basin to the Chesapeake Bay during Tropical Storm Lee, September 2011, as an indicator of the effects of reservoir sedimentation on water quality: U.S. Geological Survey Scientific Investigations Report 2012–5185, 17 p. *See* link: http://pubs.usgs.gov/sir/2012/5185/.
[v] *Id.*
[vi] Testimony of Colonel J. Richard Jordan, III, Commander and District Engineer, U.S. Army Corps of Engineers-Baltimore District; to Senate Committee on Environment and Public Works, Subcommittee on Water and Wildlife, Field Hearing on May 5, 2014 at Conowingo Dam Visitors Center; Chaired by Hon. Benjamin L. Cardin.
[vii] Horton, Tom, "Turning the Tide: Saving the Chesapeake Bay." Island Press, Revised Ed. 2003, pg. 97.
[viii] Jackson, Alex. "Following the money spent on Chesapeake Bay an elusive pursuit." CapitalGazette.com. October 4, 2013. *See* link: http://www.capitalgazette.com/news/environment/following-the-money-spent-on-chesapeake-bay-an-elusive-pursuit/article_bac613d3-fe43-591d-a7d6-a017bec635ae.html.
[ix] Maryland's Phase II WIP, Section I, pg. 56. *See* link:
http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Documents/FINAL_PhaseII_Report_Docs/Final_Documents_PhaseII/Final_Phase_II_WIP_MAIN_REPORT_102612.pdf.
[x] U.S. Environmental Protection Agency, Chesapeake Bay TMDL Appendix T. *See* link:
http://www.epa.gov/reg3wapd/pdf/pdf_chesbay/FinalBayTMDL/AppendixTSusquehannaDams_final.pdf.
[xi] *See generally* Maryland's Phase II WIP. *See* link:
http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/FINAL_PhaseII_WIPDocument_Main.aspx.
[xii] *See generally* Chesapeake Watershed Agreement 2014. *See* link:
http://www.chesapeakebay.net/documents/FINAL_Ches_Bay_Watershed_Agreement.withsignatures-HIres.pdf.
[xiii] *See* Federal Energy Regulatory Commission Docket Number P-405, filing 20120831-5024, submitted August 30, 2012.
[xiv] *See* Federal Energy Regulatory Commission Docket Number P-405, filing 20140730-4001, submitted July 30, 2014.
[xv] Clean Water Act, Section 401(a)(1), 33 U.S.C. § 1341(a)(1).
[xvi] Oyster filtration- *see* link: http://chesapeakebay.noaa.gov/oysters/oyster-reefs.
SAV filtration- *see* link: http://web.vims.edu/bio/sav/AboutSAV.html.
[xvii] *See generally*: Dennison, W.C., T. Saxby, B.M. Walsh (eds.). 2012. *Responding to major storm impact: Chesapeake Bay and the Delmarva Coastal Bays*, pg. 9, concluding that: "The impact of [Tropical Storm] Lee on aquatic grasses at the [Susquehanna] flats was substantial." *See also*: U.S. Army Corps of Engineers, *Chesapeake Bay Oyster Recovery: Native Oyster Restoration Master Plan*, pg. 56, concluding that: "Sediment is a significant threat to oysters. Sediment effectively smothers oysters. Oyster growth must be greater than sediment rates in order for oysters to survive."