



CITIZENS FOR A BETTER EASTERN SHORE

SHORELINETM

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Methods Evaluated to Reduce Air Emissions from CAFOs

By Sue Mastyl

At a Virginia Institute of Marine Science (VIMS) public seminar on May 2, Dr. Hong Li, Assistant Professor, Department of Animal and Food Sciences, College of Agriculture and Natural Resources, University of Delaware, summarized recent research on different technologies to mitigate air emissions from poultry concentrated animal feeding operations (CAFOs). He outlined the air quality issues related to poultry CAFOs, including ammonia (NH₃); particulate matter (total suspended particulates [TSP], PM₁₀ [10 microns], and PM_{2.5} [2.5 microns]); volatile organic compounds; and greenhouse gases (carbon dioxide, methane, and nitrous oxide). Ammonia is associated with health concerns such as asthma and other respiratory diseases. Li noted that both PM₁₀ and PM_{2.5} can be inhaled, with PM_{2.5} penetrating deep into lung tissue and into the bloodstream, leading to cardiac and respiratory issues.

Li summarized studies of air emissions from poultry, specifically broilers, and mitigation techniques, including a 2005-2007 study of 2 farms in Western Kentucky funded through a consent agreement between Tyson Foods and EPA, and a 2013-2017 study of farms in Delmarva, funded by USDA. Mitigation techniques studied included vegetative environmental buffers, litter treatment, scrubbers, dietary manipulation, and

housing alternatives.

Baseline emissions data and monitoring techniques were developed in the Tyson-EPA study, which included 1 house on each of 2 farms, with

Scrubbers can be very hard to manage – they require constant cleaning, and have to be bypassed in summer, since there is not enough air flow to cool the flock.

approximately 25,000 birds per house (40 x 500 feet) and a 7-week growing cycle. Three air sampling sites were located in each house, including 1 at the inside of the ventilation fans. One result noted was a difference in ammonia emissions per bird at 7 weeks with new bedding (28 g) compared with built-up litter (32 g). Li noted that European practices are more likely to change the litter with every flock, whereas U.S. farmers generally do not. He also noted that most of the total emissions are produced after 4 weeks, when the birds are older and larger.

Litter Amendment

Litter amendment is a standard practice, involving the use of acidifiers such as aluminum sulfate (Alum), ferric sulfate (Klasp), and sodium bisulfate (PLT) to convert ammonia (NH₃) to ammonium (NH₄⁺), which inhibits bacterial and enzyme activities. The amendment is added using a spreader system, with the flock in place; there is no harm to the chicks as long as it

is dry. When PLT was applied at 3, 5, and 7 weeks during grow-out (at a rate of 50 pounds per 1,000 square feet), ammonia emissions per bird at day 52 were reduced by 50%, from 40 to 20 g. In a separate study of 3 flocks each in 2 houses (60 x 500 feet) with 32,000 birds per house, multiple applications of PLT over the 42-day grow cycle (at a rate of 100 pounds per 1,000 square feet) led to a significant reduction in ammonia emissions, with 2.84 pounds of PLT needed to absorb 1 pound of ammonia. Cumulative emissions were reduced by 20%, from 16 to 13 g per bird. Li noted that this also led to improvements in broiler growth and paw quality, with a 19% increase in nitrate concentrations in the litter.

Exhaust Air Treatment

Li described a study using a USDA-ARS scrubber at 2 farms in Delaware and 1 farm in Pennsylvania. He noted that the prototype cost

See Methods, cont'd on p. 3

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Celebrating 30 Years of ShoreLine

As CBES enters its fourth decade of service to the Eastern Shore, we'll be looking back at the issues, questions and topics explored over the years by ShoreLine Staff, contributors, editors and CBES officers and members.

September 1989

“New (Comprehensive) Plan Is Blueprint For Growth; Public Participation Is Vital”

Planning Commission Chair Jean Mihalyka: “You must have good information to base your goals and objections on, and decisions for land use depend on that. You should have a reason for everything you propose.”

“Potable Water – A Limited Resource”

by H. Mapp Walker

“The available supply of potable water will very likely be the key factor influencing future growth and development on the Eastern Shore, and all available evidence indicates that the supply is both severely limited and under growing pressure.”

Ed. note: Less than 10 years later, in 1997, the US Environmental Protection Agency [designated] “the fresh ground water that supplies all drinking water on the Eastern Shore of Virginia as the Columbia and Yorktown-Eastover Multiaquifer System Sole Source Aquifer.” This designation was achieved through the work of Mr. Walker and a few other retired Shore professionals and many scientists, who volunteered hundreds of hours of research and petition in this effort.

Chocolate Covered Strawberries

from The Kitchen Hive



It's strawberry season. And here's another one of those two-ingredient recipe that demonstrate, once again, that you know your way around the kitchen.

- A quart or more of strawberries, washed, dried and chilled
- Baker's Semi-Sweet 4 oz. baking bar – 56% cacao
- Have ready: toothpicks (one for each strawberry), a piece of Styrofoam or other material to hold the berries on toothpicks, colored sprinkling sugar (optional)

In a small, deep, microwave-safe bowl, melt the broken pieces of the chocolate bar in the microwave – in 10 second intervals – until chocolate is melted and can be stirred with a spoon. Working quickly, put cold strawberry securely on toothpick, twirl in the melted chocolate and insert toothpick into styrofoam. Sprinkle some with sugar (optional). If chocolate starts to harden, microwave for 10 seconds. If the toothpick in the styrofoam is too much bother, covered berries can be placed flat on wax paper or parchment.

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Methods, cont'd from p. 1

\$7,000 to \$10,000, and the production price would be lower; a separate electrical service is required, with a heater to prevent freezing and a separate water line. He added that the pressure drop reduces the air flow rate by at least 30%. The scrubbers produce a solution with suspended ammonia, which can then be spread as fertilizer. Over the 3 sites, the scrubbers captured approximately 30% of ammonia and dust emissions, and required an average of 28 gallons of water and 27.5 kWh of electricity to capture 1 pound of ammonia. Li noted that scrubbers can be very hard to manage – they require constant cleaning, and have to be bypassed in summer, since there is not enough air flow to cool the flock.

Warm-season grasses, such as miscanthus and switchgrass, grow very fast and do well, although they are perennials that die back in the winter.

Vegetative Environmental Buffers

Originally, Li said, vegetative buffers were placed 50 feet from the poultry houses, although now it's accepted that they can be placed as close as twice the fan diameter, with negligible effect on air flow. Although dust (and high ammonia concentration) from the fans will kill some species, others thrive on it. Warm-season grasses, such as miscanthus and switchgrass, grow very fast and do well, although they are perennials that die back in the winter. Evergreens at the fan ends can be killed by the ammonia emissions. Grass buffers were shown to have negligible adverse effect on fan performance when placed at twice the fan diameter downstream, and actually may be beneficial by mitigating the wind effect on the fans.

Li and his group studied a poultry house built in 2003; the buffer was planted that same year, with deciduous trees closer and evergreens farther away from the fans. They used Lidar to measure downwind concentrations, and showed that the buffers were 21% to 74% effective at capturing particulates and ammonia during the day, depending on the wind; calm conditions had lower results. At night, with no photosynthesis, the buffers did not sequester ammonia.

Alternative Housing

Li also described a study from Shandong, China, comparing plastic netting and rice hull (litter) flooring systems for 4 flocks of broilers in 2 houses (52 x 495 feet). The results showed a small difference between the 2 systems (ammonia emissions were 0.71 g per bird with rice hull litter, and 0.81 g per bird with netting; this higher concentration could possibly be because the manure sits for a longer time, and may need to be scraped more frequently). He indicated this will require further study.

Recommendations

Li compared the different mitigation techniques (see table below), and suggested that the use of scrubbers in winter (which could add 20 to 50 cents to the cost of each bird) and the addition of warm-season grasses to vegetative buffers in summer could together reduce ammonia emissions by 20% to 30%. Litter amendment would provide an additional 50% reduction, leading to a total reduction of 60% to 70% in ammonia emissions. 

Comparison of Mitigation Techniques to Reduce Air Emissions from Poultry CAFOs

	<i>Vegetative Buffer</i>	<i>Litter Amendment</i>	<i>Scrubber</i>
Effectiveness on reducing emissions	Varies by season	High for ammonia (all seasons)	High for ammonia and dust (particulate matter) for cold seasons
Initial cost	Low	Medium (\$25,000 per house)	High (\$10,000 per fan)
Maintenance	Medium (irrigation, weed & pest control)	Medium (cleaning, PLT)	High (acid, water, electricity)
Product	Biomass	Fertilizer	Fertilizer
Impact on ventilation	Improve fan performance by blocking wind	None	Lower fan performance
Impact on production	None	Improve production	None

ShoreLine comment: Air emissions from industrial chicken houses have been increasingly worrisome for those who live, work, or play downstream of these houses. We are encouraged that research is giving some mitigation options. But what is clear is that multiple mitigation strategies are likely needed, since each has certain seasons where its effectiveness is reduced. We hope that the integrators like Tyson and Perdue will be open to supporting financially those farmers who will be trying to reduce the air quality impact of their houses. That is likely the only way these strategies can be widely adopted across the Eastern Shore.

Bethany Simpson – Official 2018 Bike Tour Artist

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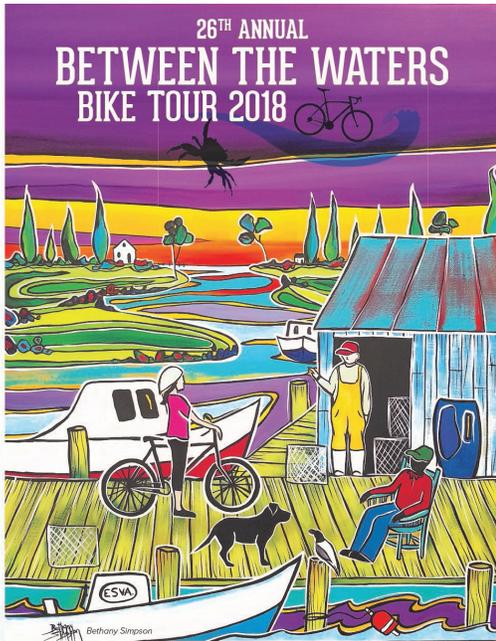


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The painting highlights the mission of one of the Shore's largest ecotourism events, "Pedal to Protect Virginia's Eastern Shore." The captivating image is being utilized in promotional items including print ads, rack cards, signage, and online marketing.

"I love what CBES does and this is a way I can help," says Bethany. "I want to see the Shore protected, its history, its culture, I want my sister's kids and maybe someday my kids, to have what I had."

During the 25th Anniversary Bike Tour, held last October, cyclists could be seen cruising down Shore roads with Bethany's painting emblazoned on their backs.

"Last year was the first time CBES sold professional bike apparel to help us raise much-needed funds," said CBES Executive Director, Donna Bozza. "Because of Bethany's extraordinary artwork, it was a great success."

Once again CBES is raffling off tickets for the painting, with 100% of the proceeds going back into the organization.

"We are just incredibly grateful for Bethany's support," said Bozza.

Simpson is represented by the Lemon Tree Gallery in Cape Charles, and also sells her work at the Machipongo Trading Company, north of Eastville on Route 13. You can discover her on Facebook: Bethany Simpson, Artist, and she can be reached at paintesva33@hotmail.com.

For chances to win "Between the Waters 2018," a 16 x 20 acrylic painting valued at \$600, go to www.cbes.org OR send a check to CBES, P.O. Box 882, Eastville, VA 23347 – \$20 per ticket or 3 for \$50. The winning ticket will be drawn on Oct 27, the day of the Bike Tour. You do not have to be present to win. 

Fortuitous "lightning" strikes twice – this being the second year that *CBES Between the Waters Bike Tour* will be represented through the talents and generosity of Eastern Shore artist Bethany Simpson.

For the 26th year of the Bike Tour, which will be held in Onancock on October 27, Bethany designed an original painting in her signature kaleidoscope-colored Coastal Folk Art style. The scene incorporates a cyclist chatting with watermen on a dock amidst familiar Shore sights, from deadrises to crab pots and, of course, a friendly black Lab.

2018 Juneteenth Celebration

Saturday, June 16 from 10 AM to 4 PM • Sunday, June 17 from 3 PM to 5 PM

Exmore Town Park

Main Stage Juneteenth Festival Music Performances

Featuring "Black Elvis" – New Heavenly Wings Over Jordan –

Frankie Davis from Paris, France

Sunday Gospel Performances by New Mt. Calvary Male Chorus and other groups...



Registration for the "Walk for Good Health," hosted by the Community Unity Day Coalition, will begin at 9:00 AM Saturday. This is a Family Fun Day Event. On Sunday, June 17, 2018 from 3:00 P.M to 5:00 PM is the Gospel Extravaganza "Tribute to Fathers."

Admission is Free and Open to the Public. No Alcohol is permitted.

For more information, call Jane Cabarrus at 757-442-2139 or Barbara Boggs at 757-678-2137.

Schools Falling Apart.... ...Cash-strapped Counties Feel It the Worst

By Mary Miller

From duct tape holding chairs together and mending broken windows, to desks positioned around garbage buckets catching ceiling leaks, to broken air conditioning forcing closings when classroom temperatures reached 90, to classrooms with only one electric outlet – Northampton High School? No. These are situations reported from Lee County, Pulaski County, and other school districts in southwest and southside Virginia. In a January, 2018 article in the *Roanoke Times*, Sara Gregory reports that a combination of continued deferred maintenance, lack of school construction funding from the state, and the aging of school infrastructure have created a crisis in many rural districts unable to fund new school buildings.

A survey in 2013 stated that 70% of the states' school buildings were more than 30 years old. Some states, like Wyoming, have been forced to create a statewide authority to pay for school construction when a court decided that "the state had an obligation to ensure adequate and equitable facilities." Other states with school construction authorities provide funding based on a district's ability to pay.

State Funding of School Building Below National Average

State construction spending since the recession has largely disappeared. Virginia is in the bottom 50% of states for its share of school construction funding. The last of the state Literacy Fund loans¹ were issued in 2008. It has been nearly impossible for many inner-city and rural school districts to fill the funding gap since then. Bond referendums have failed, and construction needs for some districts are 3 times the annual school budget.

According to Ms. Gregory of the *Roanoke Times*, the governor's proposed budget doesn't restore school construction grant funding or offer any other remedy for local districts' construction woes. A Bill to create a capital grant program to help "high fiscal stress" districts with school construction costs was left in committee by the General Assembly. The Virginia Lottery contributed half a billion dollars to state schools in 2017 – about 8% of the state education expenditures.² Money is distributed using a need-based formula. Accomack County received \$4,036,489.03. Northampton County received \$1,342,327.26. But none of those annual funds are available for school construction.

Local Taxpayer Dollars Are the Only Option

Northampton County made the decision two decades ago to tie up long-term debt repayments to pay for an oversized courthouse-jail complex and administration offices. More than 20 years later there remains a \$3 million annual debt repayment and \$1.5 million per year in operations cost

for a jail that was vastly overbuilt. While most rural districts in need of new school construction are only cash-strapped, Northampton County not only has no spare cash but is also saddled with old debt and jail costs.



Northampton school officials want a new Middle/High School to replace the deteriorating building. Northampton Supervisors will have to figure out how and when to pay for it. With no construction help from the state and no building dollars from the lottery, Northampton County and other localities in need of new school buildings are left to manage on their own. Raise taxes, wait until debt is paid down so more debt can be incurred, repair the worst of the building damages? One solution is more painful than the last.

The bottom line for now appears to be that if a new school building is built, county taxpayers will be footing the bill.



¹ Those were loans of up to \$20 million, subsidized interest loans based on a district's ability to pay.

² <http://wvtr.com/2018/02/13/virginia-lottery-education-funds/>

Don't Forget to Vote!

Primary elections will be held on Tuesday, June 12, 6:00 AM to 7:00 PM, for Republican candidates for Senate, and for both Republican and Democratic candidates for Congressional District 2.

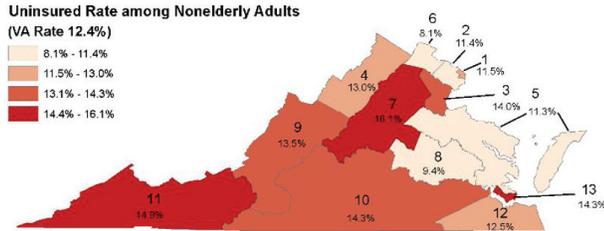


Democracy requires participation at every level, and every vote and every election counts. For more information on the candidates, visit the Virginia Department of Elections website (<https://www.elections.virginia.gov/>). For details on polling locations, visit the Registrars' websites for Accomack County (<https://www.co.accomack.va.us/departments/registrar>) and Northampton County (<http://www.co.northampton.va.us/gov/registrar/index.html>).

Keeping Track

Shore's Uninsured Adult Rate Among Lowest in State

Uninsured rate for nonelderly adult Virginians (19-64) in 2016, by Region



According to one study published by *Virginia Business* magazine, May 2018, this graphic* from the Urban Institute, a public policy research organization, appears to show that large numbers of both Shore counties' adults have access to health insurance. Information presented shows that the numbers of uninsured adults, 19 to 64, in most of the Chesapeake Bay regions are lower than the state average. This area includes the Eastern Shore (Region 5), with a rate of 11.3% uninsured adults. The State average is 12.4%. The data does NOT include the substantial population 65+ covered by Medicare, and also does not include children. This is significant for both Accomack and Northampton counties, which have populations among the oldest in Virginia.

*www.vhcf.org/data/profile-of-the-uninsured/ (map represents data from the U.S. Census and seeks to correct an earlier published uninsured estimate)

Update on Recycling

A series of articles in the *Virginian-Pilot* has added much-needed detail to what's acceptable and what isn't eligible for recycling. Here are some highlights:

- No pizza boxes (not even clean ones – Chinese recyclers could reject a whole container if they see even a single pizza label)
- No clamshell boxes (even though they are number 1) – for plastic, stick with (clean) bottles marked number 1 and number 2
- Yes to broth cartons and milk cartons

For more details, check out the following articles:

Robert McCabe: "What's allowed – and not allowed – in recycling bins across Hampton Roads," Feb. 16, 2018; https://pilotonline.com/business/consumer/article_c85bd25f-78c0-5e6a-87d4-9d0351cb31ff.html

Robert McCabe: "In or out: How to recycle in Hampton Roads," Feb. 23, 2018; https://pilotonline.com/business/consumer/article_5af43ac6-f0f6-51be-824c-a2ede103ecb1.html

Robert McCabe: "Recycling can be confusing, yes: Here's the beginning of an explanation," Mar. 2, 2018; https://pilotonline.com/business/consumer/article_c5f13390-ee8b-529e-b20e-2afc89b1e736.html

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Northampton County to Equalize Tax Rate

As Northampton County worked to balance the budget for FY2019, it became clear that an adjustment to the tax rate would be necessary, due to changes in property values reflected in the 2017 assessment.

This became confusing when the first public notice in April stated that county real estate values had decreased by 1.35% since the last assessment, and that the tax rate would increase – even though the Commissioner of Revenue's office had provided accurate data to the contrary in December 2017. A week later, a second notice declared that the property values had actually increased by 1.61%, and the tax rate would decrease. To add to the confusion, the state allows a 1% growth of the tax levy due to increased assessed value. The bottom line is that the effective tax rate equalization change will be minimal.

An important point might easily be missed here, however. To even a casual observer, the amount of new construction and remodeling, coupled with new building permits issued and public property being sold and returning to the tax rolls, would appear to indicate there might have been a greater increase in assessed values. But much of the new construction had not been completed and was not included in the 2017 assessment. That increased property value will be included in the next assessment – which will probably mean an overall increase in real property, and the county tax rate will probably need to be equalized again.

2018 CBES

Between the Waters Bike Tour

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What If No One Shows Up to Pick the Crabs?

The first crabs were hauled up in April. But as with produce farmers in Ohio and California, there were few workers available to get the crops, or in this case, the crabs, ready for market.



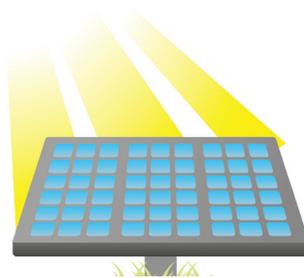
What happened? These seasonal industries, just like tourism, hospitality and resort food services, rely on seasonal foreign workers, who in turn rely on seasonal H-2B visas to return year after year, often to the same employer to work for several months. These visas used to be available with a routine application, which allowed both employers and workers to apply every year for the same jobs. An article by Ryan Marshall in *USA Today* (5/4/18) explains what happened: “For the first time, the Trump administration awarded the visas in a lottery this year, instead of the usual first-come, first-served basis.” The demand for seasonal workers exceeds the number of visas available.

A May 14, 2018, *Wall Street Journal* article by Scott Calvert tells the rest of the story. The visa lottery decision was made as an attempt to force the hiring of American workers. With unemployment at a 17-year low, crab processors found no one to hire. A Maryland producer said he has had five American applicants in 20 years, none of whom showed up for an interview. The ripple effect is real – processors don’t buy crabs if they have no workers, crabbers aren’t buying bait, truckers aren’t making runs, box makers aren’t doing business. Some processors who lost the lottery estimate their picking rooms are losing \$20,000 a day in sales. One Baltimore supplier is selling jumbo lump for \$43.95 a pound.

This month there will be a lottery for another 15,000 visas in non-agricultural jobs, including the seafood industry. But employers will have lost over 2 months of their 8-month season, and some have actually had to close down their operations.

Accomack County Installs Solar

Accomack County recently installed a 38.4-kilowatt solar photovoltaic system for the Parks and Recreation Department at Sawmill Park in Accomac, which will provide enough energy for the facility, as well as preventing the equivalent of 100,000 gallons of gasoline in CO₂ emissions. Approximately 95% of the cost of the project was paid by funds from the developer of the 80-megawatt solar farm near Oak Hall.



The \$11,573,791 Mile

That’s not a typo. Northampton County is adopting its VDOT Six-Year Plan for road projects and funding. Documents presented by VDOT to the Board of Supervisors include projects totaling \$13,275,450 for the 2018-2024 Plan period. But calculations indicate that only \$1.6 million will actually be available for road improvements over the next 6 years – because in addition to \$82,000 already spent for a needed bridge repair, a whopping \$11.6 million has just been paid out for a connector road near Cape Charles at Bay Creek.

Controversy has swirled around this project since the 1991 Annexation Agreement that resulted in Cape Charles absorbing the Bay Creek development property. Who would actually fund the road, what conditions would trigger private funding by the developer versus public funding by VDOT, who would, or could, enforce the Annexation Agreement, and who would be served by the road, have been the core issues of the controversy. The project was variously called a connector road, an access road, or a harbor road, depending on who was advocating for taxpayer funding. State signage currently identifies that road as “Detour – To Bay Creek.” Public documents indicate that over the past several years, state, county and town officials, private property owners, and railroad management were all involved in the decision to prioritize this project and nail down public taxpayer funding through VDOT – resulting in fewer State dollars for other county road projects.

A 28-year-old recommendation in the annexation paperwork, in support of private funding for this road construction, seems prescient here: “*The use of State funds in effecting the road improvements necessitated by the pending development (Bay Creek, then called Accawmacke Plantation) will result in a reduction in the amount of State road assistance available to make other road improvements in Northampton County.*”

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SHORELINE

Community Calendar - June 2018

Note: Please verify times and places prior to attending meetings.

CBES and Other Activities		Accomack County		Northampton County	
June 6	VIMS Public Seminar 7:30 PM, Wachapreague	June 6	Board of Zoning Appeals 10 AM, Sup. Chambers	June 5	Board of Zoning Appeals 1 PM, Conference Room
June 14	Shorekeeper Meeting* 3 PM, ES Chamber of Commerce	June 13	Planning Commission (PC) 7 PM, Sup. Chambers	June 5	Planning Commission (PC) 7 PM, Sup. Chambers
June 16-17	Juneteenth Festival 10 AM/ 1 PM Exmore Town Park	June 19	School Board 6:30 PM, Sup. Chambers	June 12	Board of Supervisors 7 PM, Sup. Chambers
June 19	ES Ground Water Committee 10 AM, Accomac	June 20	Board of Supervisors 5 PM, Sup. Chambers	June 20	Wetlands Board TBA, Conference Room
June 19	CBES Board Meeting 7 PM, Eastville	June 21	Wetlands Board 10 AM, Sup. Chambers	June 20	PC Work Session 7 PM, Sup. Chambers
				June 25	BOS Work Session 7 PM, Old Courtroom
				June 26	School Board 6:00 PM, Machipongo

* Alternating between the ES Chamber of Commerce in Melfa and the Barrier Islands Center in Machipongo

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