2019 ANNUAL POULTRY REPORT

COVERING JANUARY 1, 2018 – DECEMBER 31, 2018

Developed by Accomack County Planning & Zoning Staff

Reviewed and Approved by the Accomack County Planning Commission on February 26, 2019

CONTENTS

EXECUTIVE SUMMARY 2019 (covering 2018)

The 2019 executive summary is intended to provide new or updated information to the 2018 Poultry Report. No changes have been made to the 2018 Poultry Report. Significantly updated numbers will be found in this year's Executive Summary.

Poultry Numbers:

As of February 1, 2019:

- Since July 1, 2014, **245 poultry broiler houses have been authorized by zoning permits.**
- **There are no zoning permits pending.**
- Staff estimates that of the **245 poultry houses authorized by zoning permit, 218 have been constructed, or are expected to be producing broiler chickens in the near future**.
- **11 Poultry houses have been authorized by zoning permit since January 1, 2018** (last Poultry Report) and are included in the 218 house number above.
- **Staff is aware of plans for an 8 house operation near Hallwood**. **No zoning permit has been applied for at this time.**
- **We are also aware of interest for a 2 house expansion of an existing poultry farm.** No zoning permit has been applied for at this time.
- Over the past year we have been able to better determine how many poultry operations were producing broiler chickens prior to July 1, 2014. Staff estimates that **254 poultry broiler houses were in operations (or in process) as of July 1, 2014.**

Groundwater:

Since the last report was written, 56 poultry operations on the Eastern Shore of Virginia (all believed to be in Accomack County) have entered into a consent order with the Virginia Department of Environmental Quality (DEQ). As of the writing of this report, of the 56 operations in the consent order, DEQ has determined that 54 need to submit a groundwater withdrawal permit, as water withdrawal for the poultry operations is in excess of 300,000 gallons of water demand in a month.

As we understand it, the following steps will occur with the poultry operations that DEQ determines require a water withdrawal permit:

A public information session

Public Notice

Public hearings

DEQ action & recommendation to the State Water Control Board.

Action by State Water Control Board on the groundwater withdrawal applications

Other Groundwater Items:

- As of the writing of this report, staff can confirm that two **(2)** of the recently constructed poultry operations are utilizing the surficial (Columbia) aquifer, for some of their water supply.
- It is worth noting that Senator Lynwood Lewis has introduced a bill that could make it easier for all large groundwater users to utilize the superficial aquifer. It is hoped that large groundwater users (including poultry operations) will utilize the surficial aquifer for water withdrawals as a result of this bill and greater awareness of the availability of water in the surficial aquifer. The bill has passed the General Assembly and is awaiting the Governor's signature. A copy of that bill is attached.

Buffers:

Staff is in the process of re-inspecting required poultry buffers on numerous poultry operations. From the inspections we have performed so far, here are some observations:

Landscape buffers planted to screen poultry operations from the street or roads, or strategically planted to screen neighboring houses are in compliance with approved plans and are performing as expected.

Required landscape buffers along side yards are not performing well. Neglect and having even been mowed over in some cases are causes of poor or no performance. Staff will be issuing corrective action letters in the near future to property owners that are out of compliance with approved plans.

As far as plant materials utilized in buffer plantings go, Eastern Red Cedar is performing well. Wax Myrtle (Bayberry) which is commonly used in buffer plantings is not performing well, likely do to neglect. Staff will be recommending a substitute for replacement plantings.

Stormwater:

Confined Poultry Operation approved after July 1, 2014 are required to construct and maintain **stormwater facilities.** County staff perform inspections throughout the construction period until the stormwater management is complete and operational.

Each poultry farm's Stormwater management system has been designed to make sure that the peak flow rate leaving the developed site will be less than or equal to the peak flow rate in the pre-developed condition.

Several poultry operators have completed construction of the site work, including the stormwater management facilities. County staff will begin monitoring each site for proper operation and maintenance of these facilities. As required by the Virginia Stormwater Regulations, a formal site inspection will be conducted at least once every five **(5)** years.

In 2018, there were two **(2)** poultry farms that exhibited technical problems related to stormwater management. Each site relies on infiltration as the primary best management practice (BMP). In each case, the owner is working with the contractor and the engineer to identify the problem, re-design the BMP, and construct the recommended improvements.

Since last report, there have been six **(6)** Notices to Comply and two **(2)** Notices of Violation issued to poultry construction sites. Of the two **(2)** Notices of Violation, one **(1)** poultry facility was taken to court and was ordered to comply.

The County received six **(6)** specific, site-related complaints: three **(3)** concerned stormwater management and were handled by the Environmental Programs Department. Three **(3)** were addressed by Building, Planning, & Economic Development.

Economic Impact:

The most obvious economic impact from the poultry industry in Accomack County are the benefits derived from the Perdue and Tyson processing plants. Current employment at the two **(2)** plants is in excess of **3040** employees. The local economy also benefits from the poultry industry with employment and payroll in the following areas: poultry growers and farm workers, truck drivers, grain elevators, and grain farmers.

Virginia Institute of Marine Sciences (VIMS) Report:

In 2016, the Eastern Shore Laboratory of VIMS announced its intentions to study nutrient impacts of poultry littler on the Eastern Shore. The Accomack County Board of Supervisors voted to support this effort at its meeting held February 17, 2016.

A report titled "Water quality in Southern Accomack County Watershed" was issued on February 12, 2019. The report in its entirety is located in Attachment 1. The report summarizes the results of water samplings taken stating **"The spatial variability in the data for all parameters and the lack of correlation of any high values to poultry sites does not suggest storm water runoff impacts from poultry operations. Further sampling at these locations will monitor any changes in these water quality parameters as the poultry operations mature, and will help to assess the adequacy of siting regulations to ensure they are protective of the marine resources downstream of these operations."**

Conclusion:

As expected, the numbers of new poultry operations seeking zoning permits has dwindled. New poultry house construction (from approved permits) will continue through 2019. By the end of 2019 most poultry related construction should be complete.

As was suggested in last year's report Groundwater permitting and on-going monitoring of various items will continue. The VIMS reports suggests that further monitoring is needed. Staff will continue to monitor poultry related matters not only in Accomack County but on the Delmarva Peninsula and beyond.

ATTACHMENTS

1) "Water quality in southern Accomack County watersheds" Report by Richard A Snyder and Paige G. Ross – 12 February 2019

2) SB 1599 Ground water withdrawal; Eastern Shore Groundwater Management Area, incentives for use. Introduced by Lynwood W. Lewis, Jr.

3) Delmarva Land and Litter letter – 22 August 2018

4) "Maryland to Monitor Air Quality Near Poultry Houses" Article – 29 January 2019

5) Executive Summary – 2018 Poultry Report

ATTACHMENT 1: "Water quality in Southern Accomack County watersheds"

VIMS | William & Mary
Virginia Institute of Marine Science
Eastern Shore Laboratory

Water quality in southern Accomack County watersheds

Richard A Snyder and Paige G Ross

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12 February 2019

The Issue. Expansion of poultry grow out houses in Accomack County VA has raised concerns for water quality impacts both seaside and bayside where harvesting marine resources and aquaculture operations may be affected. The dust and litter from the poultry houses are potential sources of nitrogen, phosphorous, and fecal contamination to watersheds and receiving waters. Siting regulations, storm water controls, and management of litter storage and handling are designed to limit these impacts, yet no analysis has been implemented to verify the efficacy of these protective measures. This investigation sampled watersheds after a 2 week dry period prior to a storm event and immediately after the rain event in July 2018, and later in November 2018 after a month of continuous light rainy wet weather resulting in water saturated soils but no major rainfall. Samples were processed for Total *Enterococcus* fecal indicators, dissolved ammonia, total nitrogen and total phosphorous.

Methodology. Watersheds segments in southern Accomack County were chosen on bayside and seaside where poultry operations have recently been built (Figures 1 and 2), and adjacent watershed segments where no poultry operations currently exist. Stream and ditch crossings at roadside right of ways were targeted. For the 20 July 2018 dry sampling event, some of the streams were not flowing and the samples consisted of stagnant pools of water at the culverts. For the rain and wet period sampling on 25 July and 9 November 2018, all samples were taken from flowing water.

Standard water quality sampling procedures were followed. Field technicians used latex gloves to prevent contamination of samples. For each sampling event, an acid rinsed and sterilized 500 ml Nalgene polypropylene bottle was filled and rinsed three times with site water before final filling, capping, and placing on ice for transport to the laboratory. Field blanks consisted of newly opened commercial spring water. Field data sheets recorded the number of the sample, date and time of collection, coordinates for each sample location recorded from GPS. Temperature and salinity (where appropriate) of the water was recorded from a handheld YSI meter. Samples were processed in a VIMS ESL laboratory within 6 hours of collection.

EPA Method 1600 was followed for determining total *Enterococcus* counts. Water samples were filtered onto Micron Separations Inc. (MSI) 0.45 µm 47mm cellulose filters as a 10 ml aliquot and a 1 ml aliquot diluted with 9 ml autoclaved spring water. Filter apparati were rinsed with ethanol and sterile spring water between samples. Filters were placed onto commercially prepared *Entercoccus* growth media with blue indicator dye in 50 mm plates (Aquaplates Inc. mEI plates). Samples were incubated at 41 degrees C and all colonies colored blue from the indicator dye counted after 24 hours.

Additional sample water was passed through 13 mm Whatman GF/F filters and collected in acid washed 60 ml polypropylene bottles for dissolved ammonia determination and frozen at -20 degrees C until analysis. The filters were frozen at -20 degrees C, dried at 50 degrees C, and held under vacuum for later stable isotope analysis. Additional sample water was placed into acid washed 125 ml polypropylene bottles without filtration and frozen -20 degrees C until analysis for total nitrogen and total phosphorous determination. Details of the nutrient analyses are presented in Appendix I. The raw data are presented in Appendix II. Data were plotted using ESRI ArcView GIS mapping software.

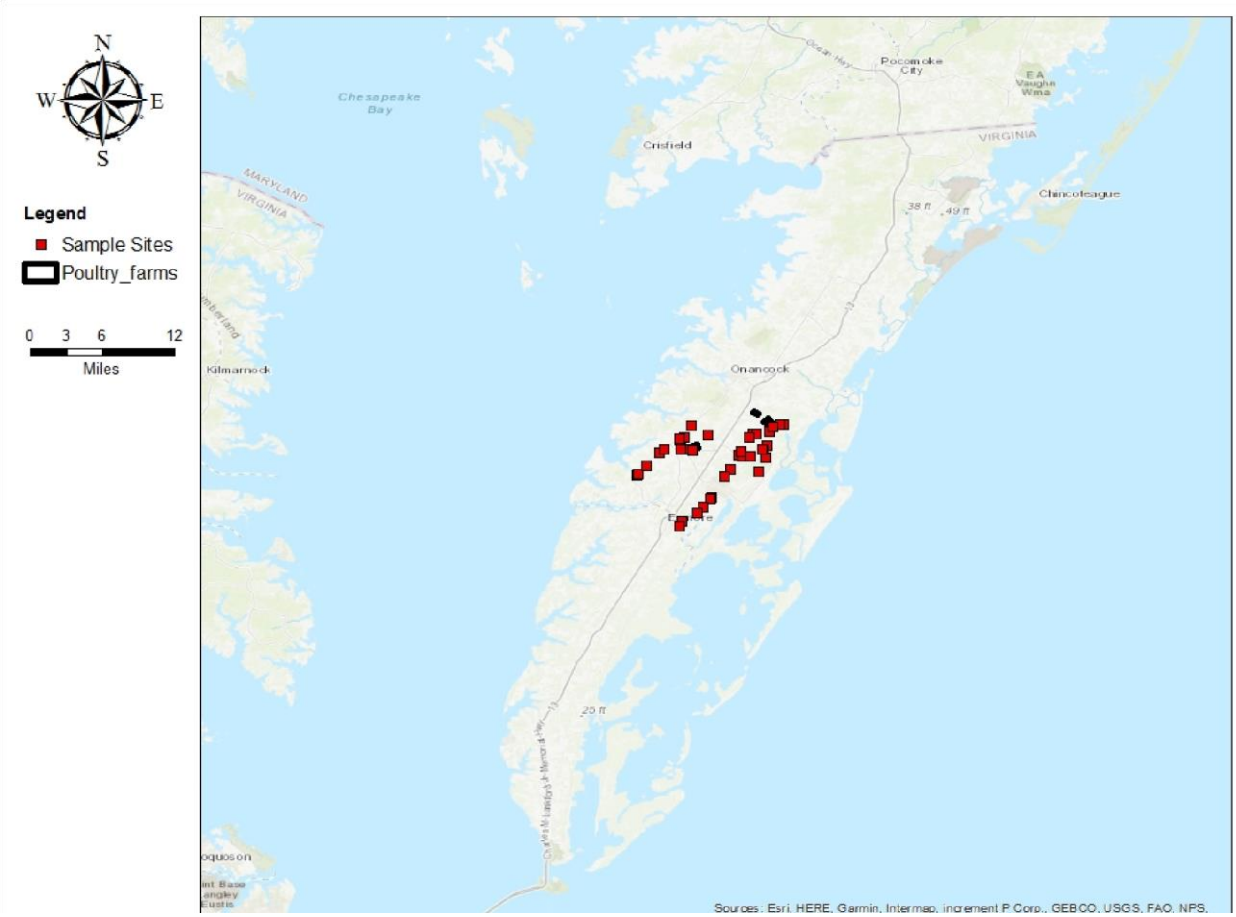

Figure 1. Sample locations on the Eastern Shore of Virginia.

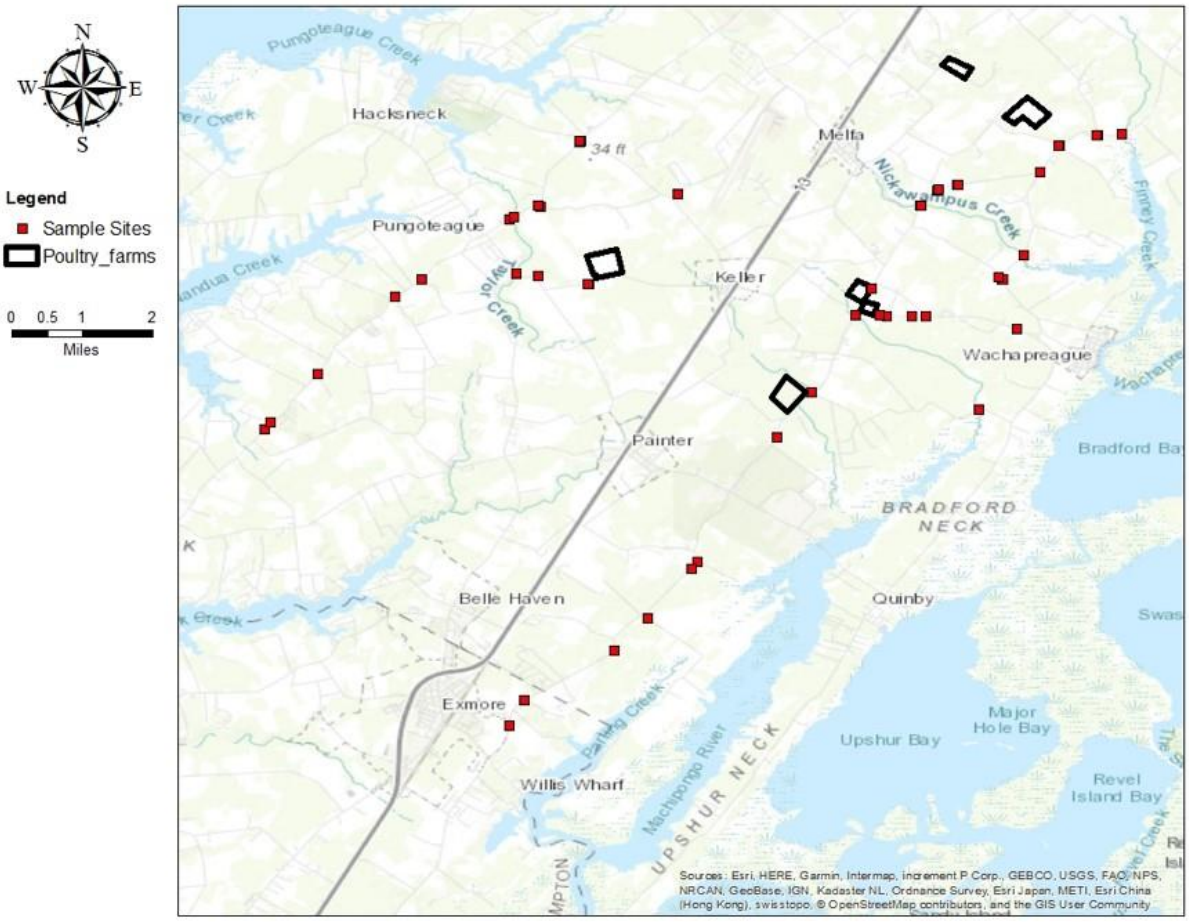

Figure 2. Sample locations for drainages at road crossings (red squares) and the locations of poultry operations (black polygons).

Results and Discussion

Rainfall records were obtained from the National Weather Service archived records for Melfa Airport: https://weatherspark.com/h/m/147126/2018/7/Historical-Weather-in-July-2018at-Melfa-Accomack-Airport-Virginia-United-States#Figures-Rainfall. Prior to the dry sampling conducted 20 July 2018, no rainfall was recorded for 14 days. Between 21 July and 25 July, 3.22 inches of rain were recorded with 1.45 inches recorded for the 24 hours prior to sampling on the 25th of July, and 0.15 inches recorded for the 24 hours encompassing the sampling event. For the 9 November sampling, rainfall was recorded every day Nov 3-9 for the week prior with the exception of 7 Nov, ranging from .01 to .48 inches, with 0.04 inches falling in the 24hours prior to sampling, and 0.77 inches recorded for the 24 hours post sampling. Drizzling rain was occurring at the time of sampling. Soil conditions across the peninsula were wet at the time.

High nitrogen values were recovered during all three sampling events at the stream crossing Bobtown Road near the intersection of Hollies Church Road. No poultry operations are in this watershed, and

these data were removed from any comparisons to samples taken in watershed segments where poultry operations existed, as listed in Table 1.

Enterococcus data was not available for the 20 July dry sampling period. *Enterococcus* counts for the 25 July 2019 sample date (Table 1) were overall higher (geomean 1027 vs 411) but also more variable than the data from the 9 November sampling date. The minimum counts were 45 vs 110 per 100 ml and maximum counts were 2850 vs 1190 per 100 ml respectively.
All samples taken except for 1 (45 per 100 ml), exceed the VA DEQ one sample threshold for *Enterococcus* counts (9VAC25-260-170). For all samples taken in watershed segments containing poultry operations with any chance of receiving runoff or groundwater, no differences were found when compared to watershed segments with no poultry operations (Table 1), although the data are highly variable. Visual presentation of the data by GIS is shown in Figures 3 and 4.

The Enterococcus counts, indicative of warm blooded animal or human fecal contamination were generally elevated in all samples, with the highest concentrations occurring in areas not containing poultry operations or litter applications. (Figures 3 and 4). High Fecal indicator counts are common on the ESVA, and the wooded stream basins and wooded swamps characteristic of ESVA watersheds provide habitat for wildlife that contribute to these data. Scattered small scale livestock operations are known for the area, but not identified per watershed segment. In addition, many of the homes located within the watersheds and close to the waterways are on septic systems with drain fields that have the potential to add to fecal loadings in the stream flow. Open pit disposal (outhouses, cesspools) are known to exist but were not located or surveyed in this investigation.

Ammonia concentrations are indicative of recent heterotrophic metabolic activity, largely the deamination of proteins and amino acids in organic matter by microbes and animals. This compound is bioreactive, picked up by plants, microbes, and algae to build proteins, or oxidized to nitrate by microbes. The seaside bays and marshes of the ESVA tend to be nitrogen limited (Giordano et al., 2011), so excess ammonia and other nitrogen sources are of concern. VA DEQ
Acute Criteria thresholds for ammonia are pH dependent (9VAC25-260-155), but only two stations had values that exceed this threshold for any pH. The flowing stream at the corner of Bobtown Road and Hollies Church Road exceed the threshold values in all samples taken. One other sample exceeded the threshold for a sample taken under dry conditions in a stagnant pool from a drainage ditch receiving water from an agricultural field with no poultry associated. Generally, the ammonia levels obtained for the samples reported here were well below established thresholds for ecological effects, and no association with poultry operations was evident (Table 1; Figures 5-7).

An Observed Effects Concentration (OEC) for Total Nitrogen (TN) in Virginia streams was proposed for between 2.60 and 3.66 mg/L and for a Total Phosphorous (TP), an OEC threshold was proposed at 0.25-0.284 mg/L (Zipper et al., 2012). The lower end of these proposed limits was used for this evaluation.

TN values found in the ESVA stream samples presented in this report exceeded the threshold for several locations. Overall, 16 of the 58 samples taken were higher than 2.60 mg/L. For the separate

sampling events, this represented 46% of the dry period samples (20 July), 20% of the rain event samples (25 July), and 26% of the extended wet period samples (9 November). No association of TN values and poultry operations was observed (Table 1; Figures 8-10).

Only two TP samples exceeded the lower limit of the proposed OEC threshold and at different locations. The first was a sample taken from a stagnant pool in a ditch draining an agricultural field with no associated poultry during the dry period samples of 20 July. One other sample from this period was close to the OEC threshold, also from a stagnant pool in a drainage immediately downstream from a poultry operation. The second sample over the OEC was from a stream associated with a flooded woodland swamp during the rain event sampling on 25 July. This site was downstream of a poultry operation that was not yet raising birds. None of the samples from the extended wet period sampling on 9 November came close to the limit, with a maximum recorded value of 0.156 mg/L (Table 1). No association of phosphorous concentrations with poultry operations was apparent from these data (Table 1; Figures 11-13).

In general, the spatial variability in the data for all parameters and the lack of correlation of any high values to poultry sites does not suggest storm water runoff impacts from poultry operations. Further sampling at these locations will monitor any changes in these water quality parameters as the poultry operations mature, and will help to assess the adequacy of siting regulations to ensure they are protective of the marine resources downstream of these operations.

References

Giordano, JCP, MJ Brush, and IC Anderson. 2011. Quantifying annual nitrogen loads to Virginia's coastal lagoons: sources and water quality response. *Estuaries and Coasts* 34:297309.

Zipper, CE, K Stephenson, L Shabman, G Yagow, and J Walker. 2012. *Technical and policy considerations and options in assessing nutrient stresses on freshwater streams in Virginia. Report of the Academic Advisory Committee for the Virginia Department of Environmental Quality*. Virginia Water Resources Research Center, Virginia Tech, Blacksburg, VA.

Table 1. Summary data for the three sampling dates.

		Entercoccus 100 ml-1	NH3	TDN	TDP
			Units: mg/L MDL: 0.0062	Units: mg/L MDL: 0.0285	Units: mg/L MDL: 0.0095
20-Jul-18	geomean		0.149	2.765	0.064
	max		16.45	21.932	0.283
	min		0.006	0.825	0.019

25-Jul-18	geomean	1027	0.069	1.184	0.049
	max	2850	8.68	9.56	0.382
	min	45	0.013	0.179	0.014
9-Nov-18	geomean	411	0.044	1.354	0.031
	max	1190	17.5	18.26	0.156
	min	110	0.01	0.173	0.01
overall	geomean	623	0.064	1.473	0.042
	max	2850	17.5	21.932	0.382
	min	45	0.006	0.173	0.01
poultry	geomean	685	0.030	1.437	0.035
	max	2800	0.0947	6.8799	0.3822
	min	210	0.0064	0.1725	0.01
nonpoultry	geomean	580	0.058	1.220	0.043
	max	2850	4.765	6.1372	0.2833
	min	45	0.0125	0.204	0.01

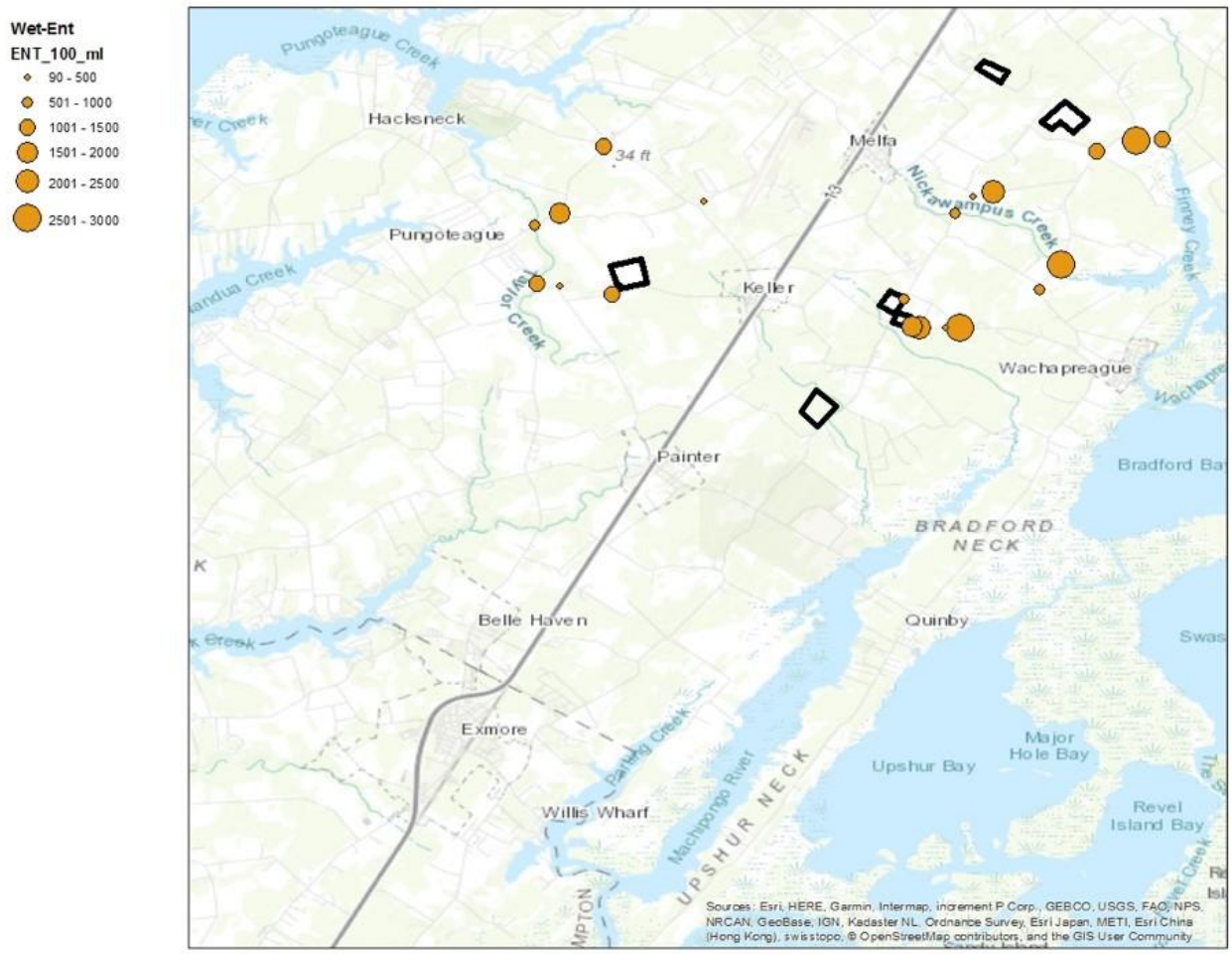

Figure 3. *Enterococcus* counts per 100 ml, during the end of a rain event. Sampling date was 25 July 2018.

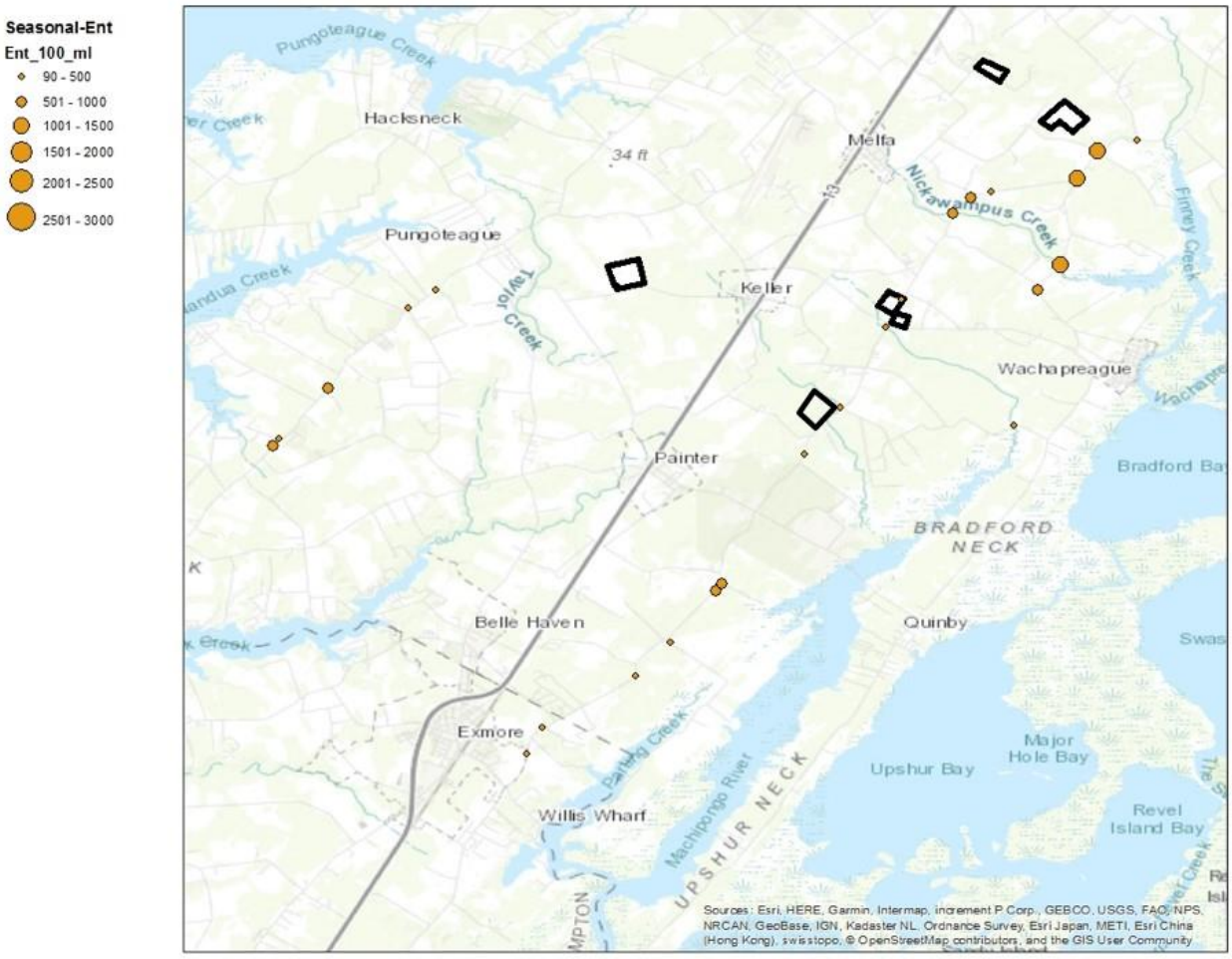

Figure 4. *Enterococcus* counts per 100 ml, not associated with rainfall but extended wet weather resulting in saturated soil conditions. Sampling date was 9 November 2018.

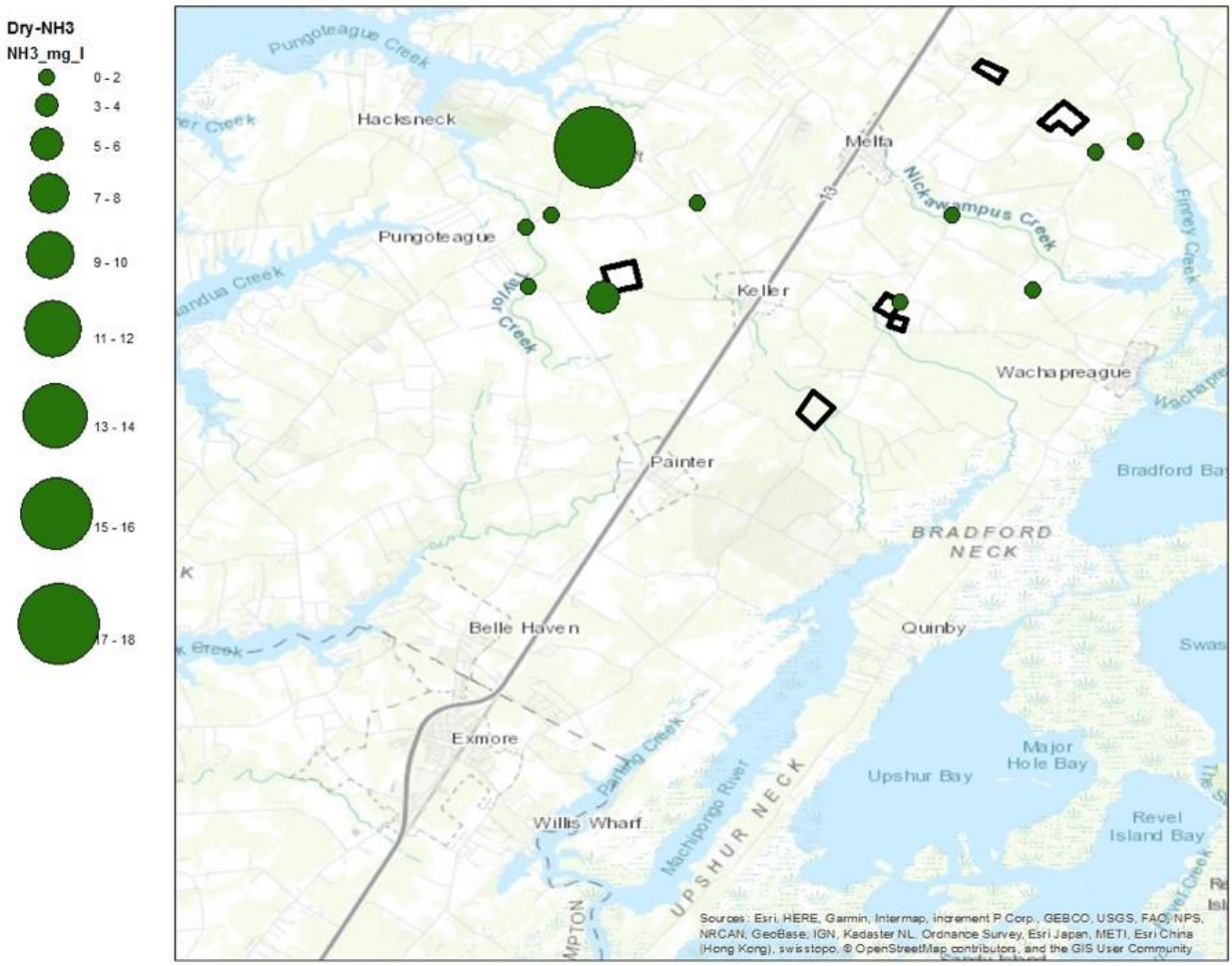

Figure 5. Ammonia concentrations during a dry period immediately prior to a rain fall event. Sampling date was 20 July 2018.

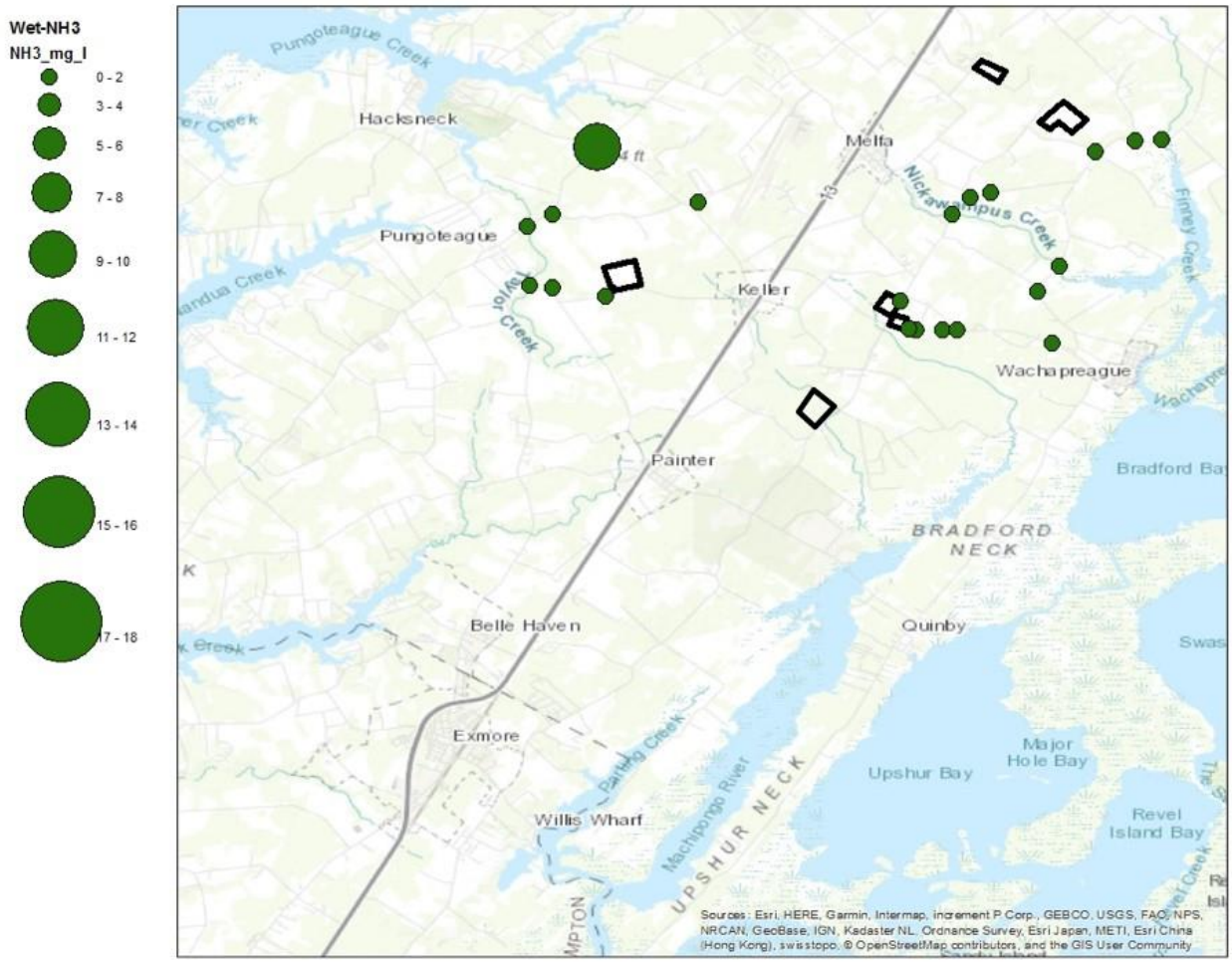

Figure 6. Ammonia concentrations during the end of a rain event. Sampling date was 25 July 2018.

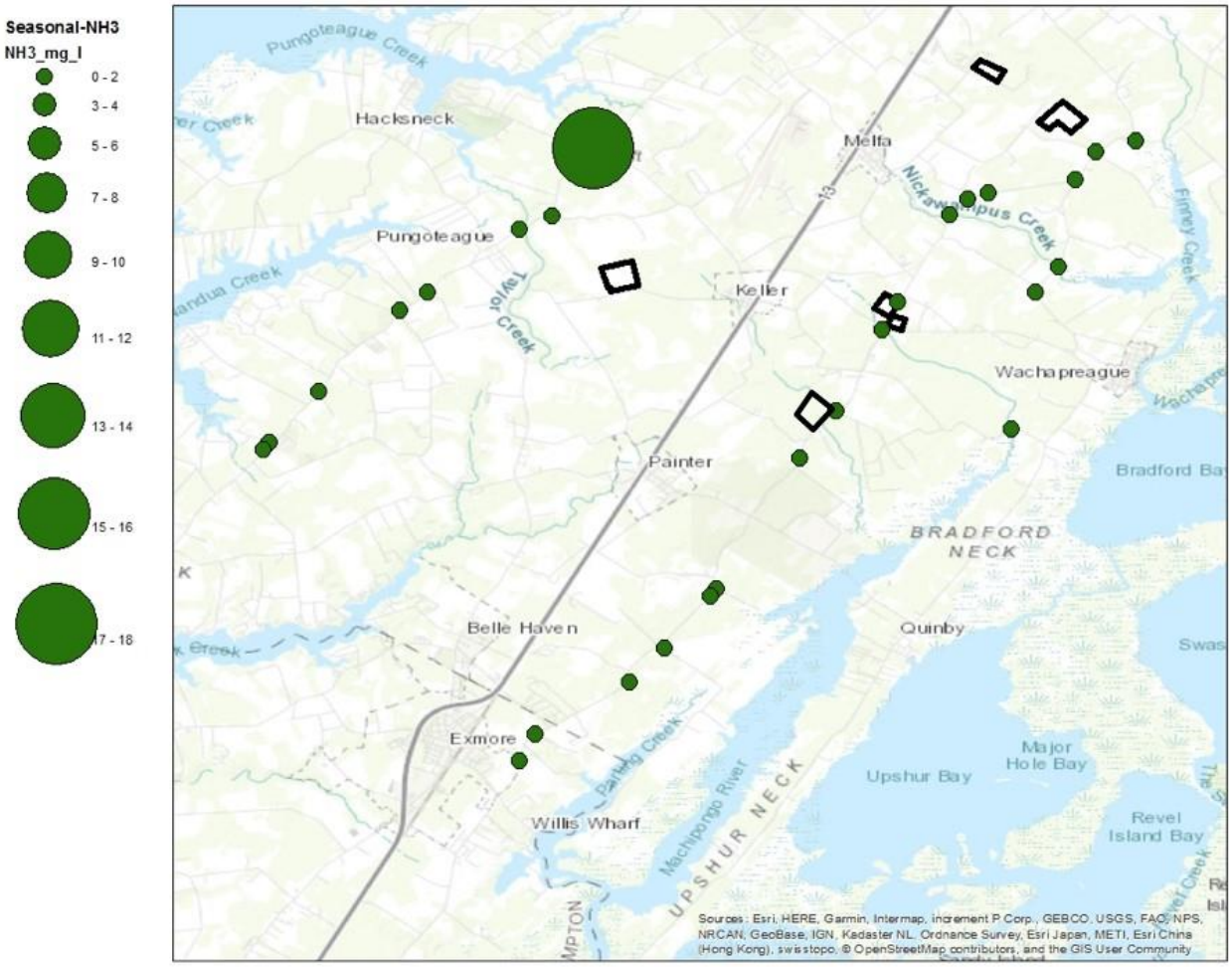

Figure 7. Ammonia concentrations not associated with rainfall but extended wet weather resulting in saturated soil conditions. Sampling date was 9 November 2018.

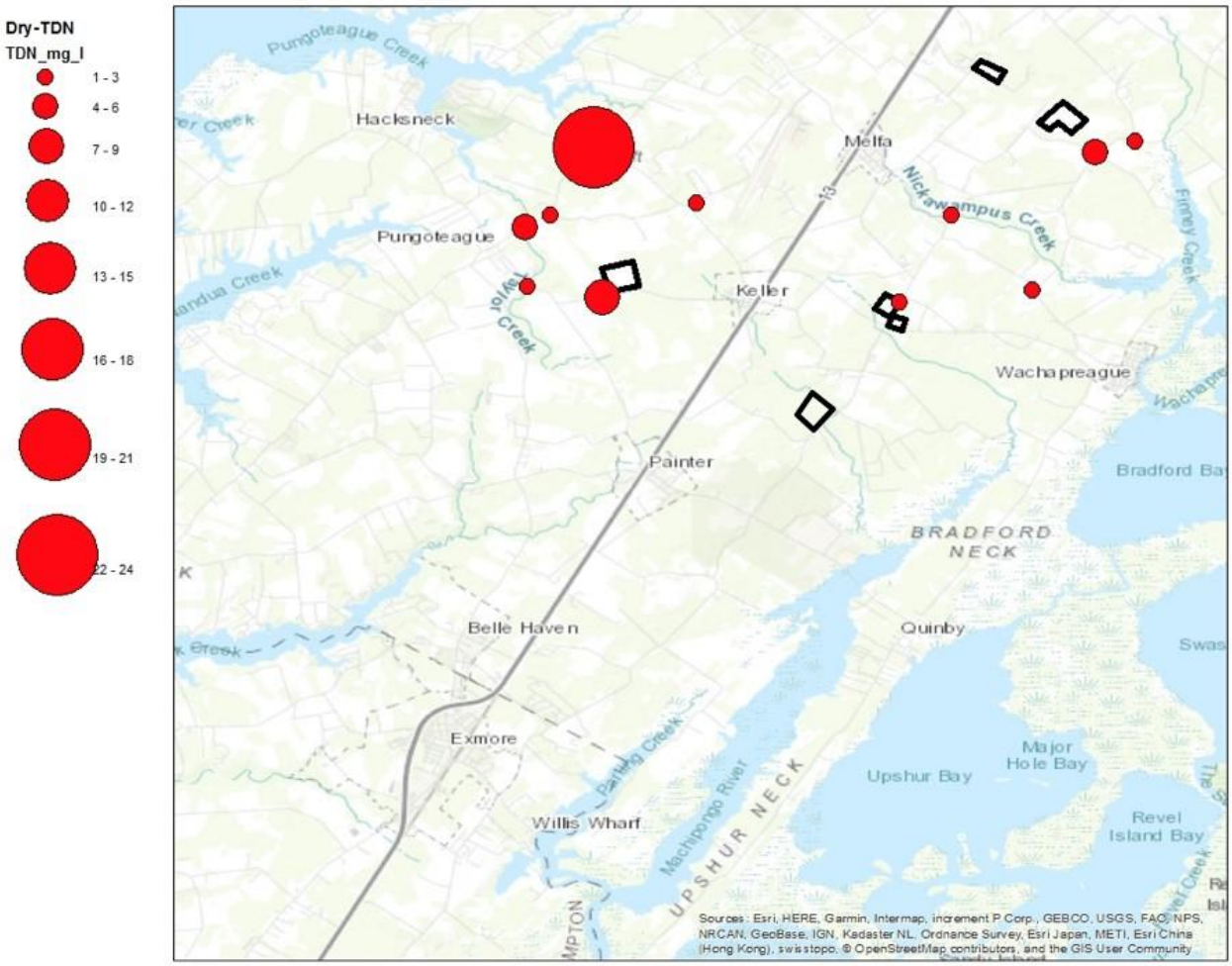

Figure 8. Total Nitrogen (TN) content during a dry period immediately prior to a rain fall event. Sampling date was 20 July 2018.

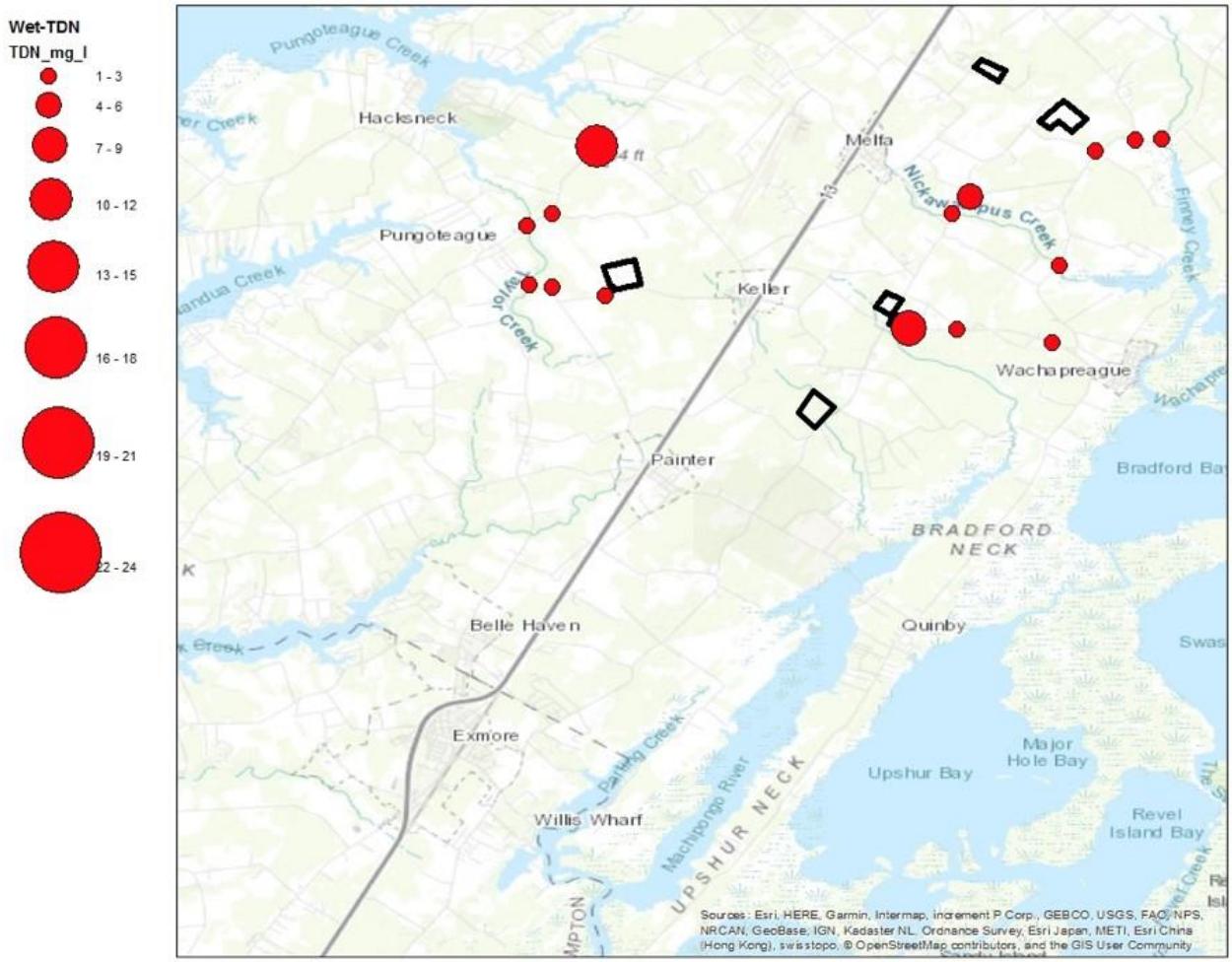

Figure 9. Total Nitrogen (TN) content during the end of a rain event. Sampling date was 25 July 2018.

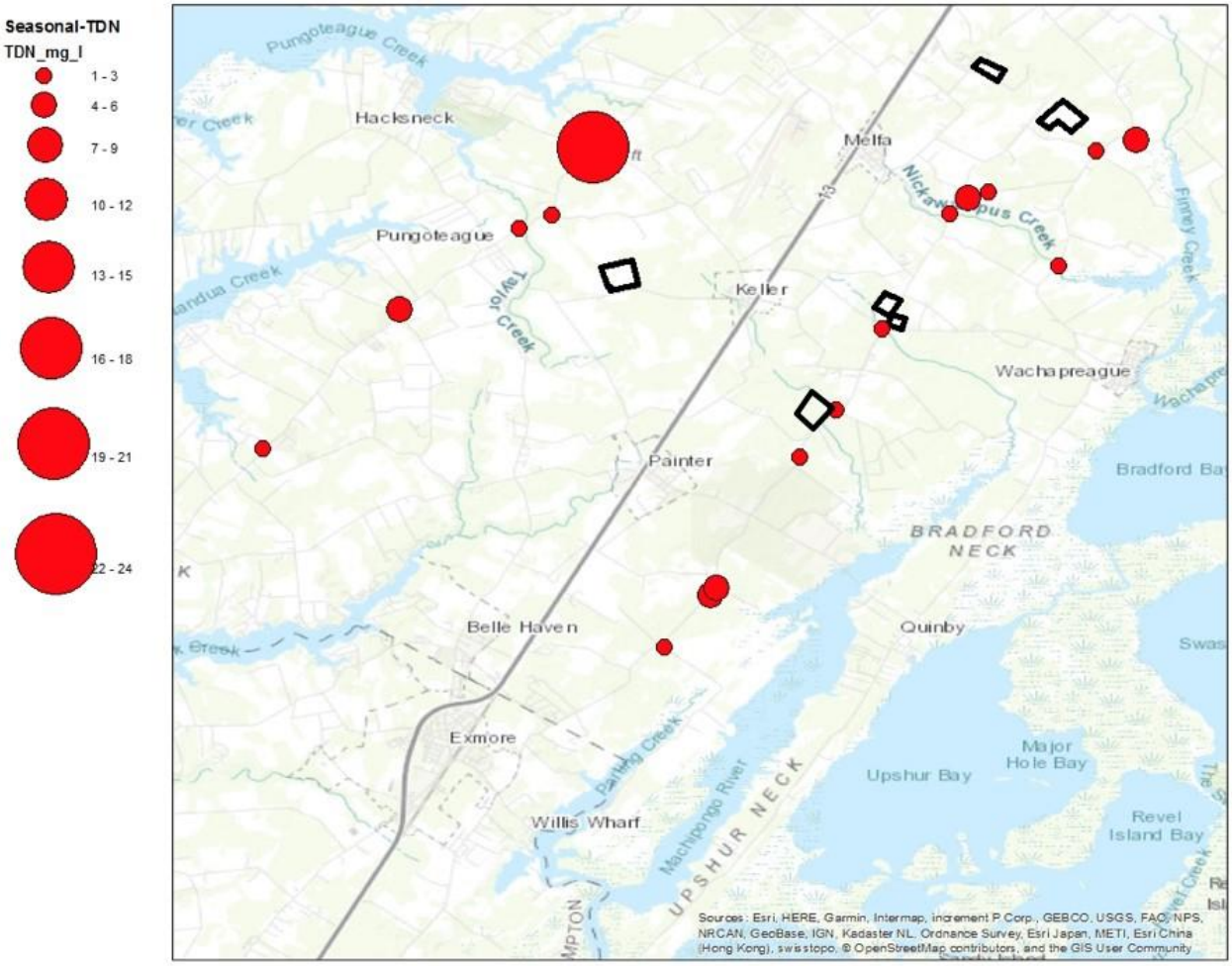

Figure 10. Total Nitrogen (TN) content not associated with rainfall but extended wet weather resulting in saturated soil conditions. Sampling date was 9 November 2018.

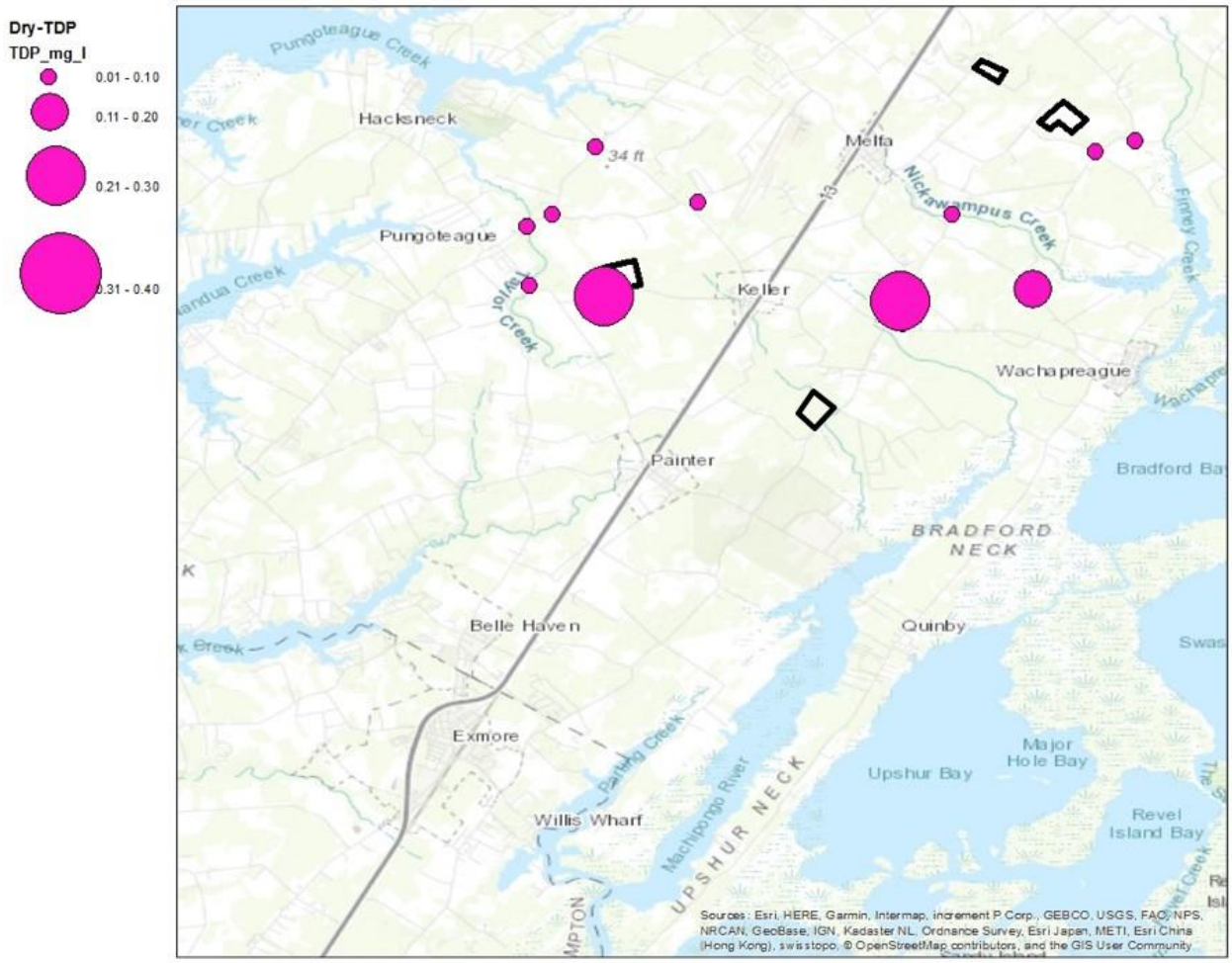

Figure 11. Total Phosphate (TP) content during a dry period immediately prior to a rain fall event. Sampling date was 20 July 2018.

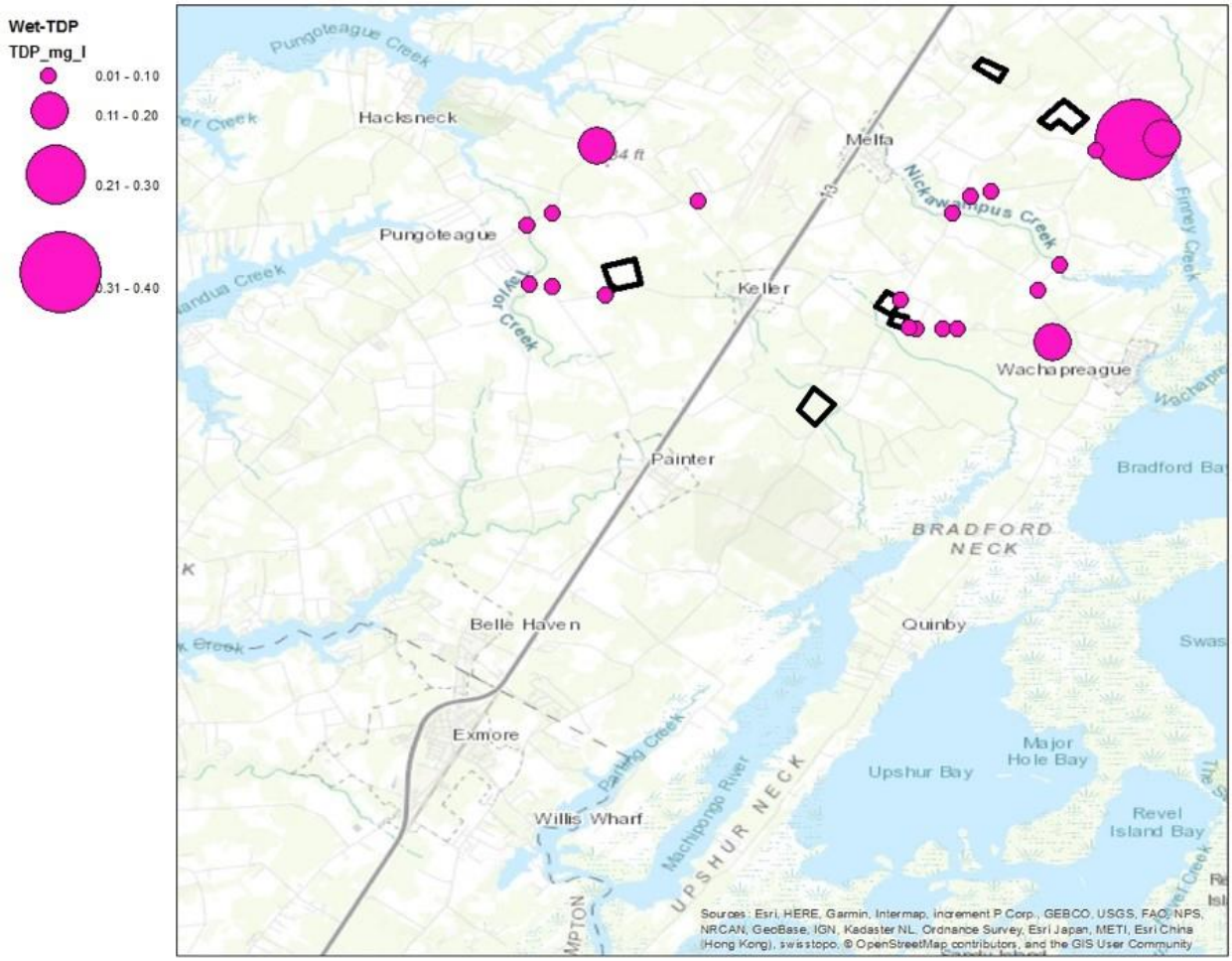

Figure 12. Total Phosphate (TP) content during the end of a rain event. Sampling date was 25 July 2018.

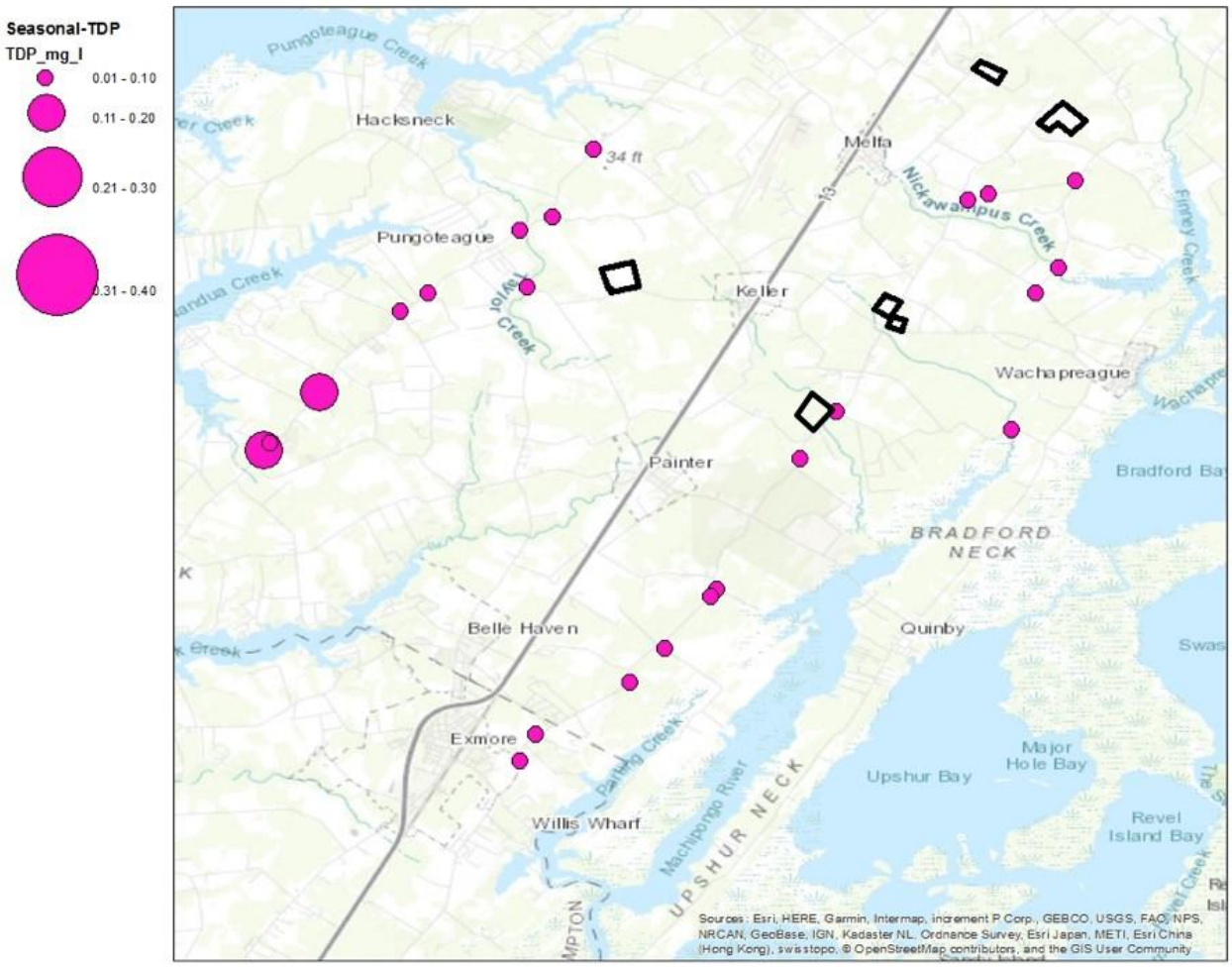

Figure 13. Total Phosphate (TP) content not associated with rainfall but extended wet weather resulting in saturated soil conditions. Sampling date was 9 November 2018.

Appendix I. Analytical methods for nutrient analyses.

Determination of Ammonia by Skalar Auto Analyzer
ASC METHOD: 3000
Document Control Number: 00072

1.0 SCOPE AND APPLICATION:

1.1 This method is for the determination of Ammonia by Skalar Autoanalyzer. The applicable range is 0.005-2.0 mg/l.

2.0 SUMMARY OF METHOD:

2.1 Automated Continuous flow, segmented stream, no bubble gating.

2.2 Dual wavelength detection and matrix correction.

2.3 Alkaline phenol and hypochlorite react with ammonia to form indophenol blue that is proportional to the ammonia concentration. The blue color formed is intensified with sodium nitroprusside. Reaction is heat catalyzed at 37°C.

Determination of Total Dissolved Nitrogen and Total Dissolved Phosphorous by Skalar Auto Analyzer ASC METHOD: 3005

Document Control Number: 00076

1.0 SCOPE AND APPLICATION:

1.1 This method describes the digestion procedure for total dissolved nitrogen (TDN) and total dissolved phosphorus (TDP) in fresh and estuarine surface waters by the alkaline persulfate oxidation technique. The dissolved fraction are aliquots of sample which have passed through a filter to remove particulates. The method is suitable for the determination of total nitrogen (TN) and total phosphorus (TP) with necessary precautions to ensure that particulates are fully digested. The applicable range for TDN and TN is 0.09-0.90 mg/L. The applicable range TDP and TP is 0.01-0.40 mg/L.

2.0 SUMMARY OF METHOD:

2.1 The persulfate oxidation technique for nitrogen in water is performed under heated alkaline conditions, where all organic and inorganic forms of nitrogen are oxidized to nitrate. As the reaction proceeds, NaOH is consumed and the pH drops to < 2.2, which allows the oxidation of all phosphorus compounds to orthophosphate.

2.2 An aliquot of digested sample is analyzed for nitrate and orthophosphate using automated colorimetric methods (Method 3001 and Method 3003, respectively) to produce total nitrogen and total phosphorus concentrations.

Appendix II. Data

Sample locations in watershed segments downstream or inclusive of poultry operations are highlighted in yellow.

Date	Time	Lat	Long	*Entercoccus* 100 ml-1	NH3 Units: mg/L MDL: 0.0062	TN Units: mg/L MDL: 0.0285	TP Units: mg/L MDL: 0.0095
20-Jul-18	13:45	37.6217	75.7082		0.4936	0.8252	0.1397
20-Jul-18	14:00	37.6194	75.7344		0.0064	1.5566	0.2052
20-Jul-18	14:10	37.6366	75.7240		0.0271	2.5216	0.0299
20-Jul-18	14:35	37.6511	75.6879		0.0870	1.5800	0.0436
20-Jul-18	14:45	37.6488	75.6957		0.0316	4.2052	0.0191
20-Jul-18	15:30	37.6499	75.7945		16.4500	21.9323	0.0638
20-Jul-18	15:45	37.6365	75.8030		0.0947	1.9832	0.0351
20-Jul-18	15:55	37.6342	75.8081		0.0670	5.6542	0.0511
20-Jul-18	16:10	37.6224	75.8076		0.0712	1.9262	0.0792

20-Jul-18	16:20	37.6205	75.7928		4.7650	6.1372	0.2833
20-Jul-18	16:47	37.6389	75.7744		0.0989	1.1530	0.0397
25-Jul-18	13:00	37.6137	75.7259	230	0.1035	0.6418	0.0360
25-Jul-18	13:02	37.6137	75.7313	2005	0.0471	0.7243	0.0329
25-Jul-18	13:12	37.6138	75.7327	2800	0.0237	6.8799	0.0138
25-Jul-18	13:15	37.6195	75.7344	1600	0.0126	0.1791	0.0187
25-Jul-18	13:21	37.6137	75.7232	870	0.0125	0.9802	0.0212
25-Jul-18	13:40	37.6366	75.7241	1440	0.0506	2.3122	0.022
25-Jul-18	13:41	37.6398	75.7205	720	0.1095	3.9595	0.0439
25-Jul-18	13:42	37.6409	75.7164	45	0.0576	0.6195	0.0625
25-Jul-18	13:46	37.6488	75.6959	2020	0.0199	0.9393	0.0207
25-Jul-18	13:58	37.6511	75.6879	2785	0.0258	2.1089	0.3822
25-Jul-18	14:02	37.6512	75.6827	960	0.0739	2.7199	0.1177
25-Jul-18	14:08	37.6262	75.7030	1620	0.0717	1.1624	0.0968
25-Jul-18	14:10	37.6213	75.7072	1790	0.0351	0.2040	0.0228
25-Jul-18	14:32	37.6388	75.7744	360	0.0976	0.2411	0.0318
25-Jul-18	14:40	37.6364	75.8030	225	0.0373	1.0565	0.0309
25-Jul-18	14:47	37.6499	75.7943	2230	8.6800	9.5600	0.1001
25-Jul-18	14:50	37.6343	75.8080	720	0.0799	1.9534	0.0630
25-Jul-18	15:00	37.6225	75.8076	1240	0.0341	1.2601	0.0443
25-Jul-18	15:05	37.6204	75.7927	2805	0.8076	1.2232	0.0752
25-Jul-18	15:20	37.6219	75.8030	2850	0.1458	0.8440	0.0935
9-Nov-18	8:41	37.6212	75.7073	520	0.0583	0.6328	0.0361
9-Nov-18	8:48	37.6263	75.7030	1190	0.0500	2.3880	0.03
9-Nov-18	8:52	37.6433	75.6996	1160	0.02	0.7348	0.03
9-Nov-18	8:56	37.6488	75.6955	1010	0.02	1.6490	0.01
9-Nov-18	9:00	37.6511	75.6877	210	0.0273	3.4750	0.01
9-Nov-18	9:12	37.6409	75.7166	110	0.0229	0.8970	0.0317
9-Nov-18	9:15	37.6397	75.7207	510	0.0378	4.0040	0.03
9-Nov-18	9:17	37.6364	75.7243	590	0.0407	2.8970	0.01
9-Nov-18	9:22	37.6193	75.7345	380	0.02	0.1725	0.01
9-Nov-18	9:26	37.6139	75.7378	330	0.0462	1.1150	0.01
9-Nov-18	9:34	37.5944	75.7123	280	0.0423	0.7194	0.0675

9-Nov-18	9:58	37.5980	75.7468	400	0.0251	1.0010	0.01
9-Nov-18	10:03	37.5886	75.7538	320	0.0432	2.2410	0.0309
9-Nov-18	10:08	37.5631	75.7703	560	0.0647	3.7060	0.02
9-Nov-18	10:11	37.5617	75.7715	830	0.0405	4.3770	0.02
9-Nov-18	10:18	37.5513	75.7806	310	0.1139	1.5500	0.0668
9-Nov-18	10:22	37.5448	75.7874	340	0.0254	0.5874	0.0396
9-Nov-18	10:27	37.5345	75.8058	340	0.0272	0.7823	0.02
9-Nov-18	10:29	37.5293	75.8090	160	0.1281	0.7575	0.0533
9-Nov-18	10:48	37.5905	75.8595	520	0.0436	0.8470	0.1560
9-Nov-18	10:45	37.5919	75.8584	410	0.0460	0.5865	0.0611
9-Nov-18	10:53	37.6017	75.8486	660	0.0252	0.7060	0.1228
9-Nov-18	11:03	37.6176	75.8326	200	0.0245	4.1910	0.0474
9-Nov-18	11:09	37.6213	75.8271	320	0.0349	0.4709	0.0479
9-Nov-18	11:11	37.6338	75.8091		0.0296	2.1430	0.0390
9-Nov-18 11:17	37.6363	75.8026	0.0291	1.2430	0.03	9-Nov-18 11:22	37.6496 75.7945 17.5000 18.26 0.0439

ATTACHMENT 2: SB 1599 Ground water withdrawal

2019 SESSION

ENROLLED

VIRGINIA ACTS OF ASSEMBLY — CHAPTER

An Act to amend and reenact § 62.1-255 of the Code of Virginia and to amend the Code of Virginia by adding a section numbered 62.1-262.1, relating to ground water withdrawal; Eastern Shore Groundwater Management Area; incentives for use.

[S 1599]

Approved

Be it enacted by the General Assembly of Virginia:

1. That § 62.1-255 of the Code of Virginia is amended and reenacted and that the Code of Virginia is amended by adding a section numbered 62.1-262.1 as follows:

§ 62.1-255. Definitions.

As used in this chapter, unless the context requires otherwise:

"Beneficial use" includes~~, but is not limited to,~~ domestic (including public water supply), agricultural, commercial, and industrial uses.

"Board" means the State Water Control Board.

"Department" means the Department of Environmental Quality.

"Eastern Shore Groundwater Management Area" means the ground water management area declared by the Board encompassing the Counties of Accomack and Northampton.

"Ground water" means any water, except capillary moisture, beneath the land surface in the zone of saturation or beneath the bed of any stream, lake, reservoir or other body of surface water wholly or partially within the boundaries of ~~this~~ *the* Commonwealth, whatever the subsurface geologic structure in which such water stands, flows, percolates or otherwise occurs.

"Ground water withdrawal permit" means a certificate issued by the Board permitting the withdrawal of a specified quantity of ground water in a ground water management area.

"Person" means any and all persons, including individuals, firms, partnerships, associations, public or private institutions, municipalities or political subdivisions, governmental agencies, or private or public corporations organized under the laws of ~~this~~ *the* Commonwealth or any other state or country.

"Surficial aquifer" means the upper surface of a zone of saturation, where the body of ground water is not confined by an overlying impermeable zone.

§ 62.1-262.1. Permits for withdrawals from Eastern Shore Groundwater Management Area.

The Board shall adopt regulations to provide incentives for the withdrawal of ground water from the surficial aquifer in the Eastern Shore Groundwater Management Area rather than from the deep aquifer in such management area. Notwithstanding the provisions of subsection C of § 62.1-266, such incentives may include extended permit terms of as long as 20 years, an accelerated permit process, discounted permit fees, other subsidies, or other incentives.

ENROLLED

SB1599ER

ATTACHMENT 3: Delmarva Land and Litter letter

DELMARVA LAND & LITTER CHALLENGE

CHAIR
Andrew McLean
Relief Farm
VICE CHAIRS
Robert Hutchison
Hutchison Brothers
Robert Gallagher
West Rhoda Riverbanque
MEMBERS
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Sussex Conservation District
Kenny Bounds
Deputy Sec. of Agriculture, Delaware
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Kristen Hughes Evans
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Bob Fenzo
Middlatlantic Farm Credit (Ret.)
Kurt Fuchs
Middlatlantic Farm Credit
Alan Girard
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The Nature Conservancy
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Jeff Horstman
ShoreRivers
Steve Lovitsky
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David Lovell
Old Mill Farms
Bill Massey
Mountaire Farms
Nancy Nunn
Harry R. Hughes Center for Agro-Ecology
Michael Phillips
Perdue AgriBusiness (Ret.)
Karla Raettig
Maryland League of Conservation Voters
Jennifer Rhodes
Univ. of Maryland, Extension Service
Kelly Shenk
U.S. EPA
Hans Schmidt
Maryland Dept. of Agriculture
Lindsay Thompson
Maryland Grain Producers
Lisa Wool
Nanticoke Watershed Alliance

August 22, 2018

Dear Delmarva Land & Litter Steering Committee Members,

During the April 30 Steering Committee meeting, Andrew McLean asked the Mass Balance Workgroup to work in committee to resolve the outstanding issues and come to consensus before bringing the draft report to the Steering Committee. The Mass Balance Co-Chairs worked very hard to do this but were not able to reach consensus. The draft report was never presented to the Steering Committee for review. After the July 30 Steering Committee meeting, it became clear to the Executive Committee that full transparency required that the draft report and list of unresolved items be shared with you all.

The Delmarva Land and Litter Challenge (DLLC) brings together a diverse set of stakeholders to address connections between poultry production and water quality on the Delmarva Peninsula. Our members work collaboratively to develop mutual respect and shared understanding between representatives from environmental, agricultural industry, and governmental organizations.

Two years ago, the DLLC began work on a mass balance to develop a better, more granular understanding of where surpluses or deficits of agricultural nutrients applied to cropland exist on the Delmarva. Our objective was to develop science and data-backed, county specific numbers for the region to better inform poultry litter usage and transportation.

Our Mass Balance Workgroup, comprised of representatives from academia, agriculture industry, state and federal government agencies and environmental non-profits, worked diligently to develop detailed methods for a mass balance assessment of the Delmarva. They relied on the best available data at the time, including the 2012 US Agriculture Census report. The process was developed in part through trial and error, as every technical assumption and recalculation took tremendous amount of ground truthing and time.

The Mass Balance Data Analysis Team and Co-Chairs completed a draft report that ultimately presented challenges that impeded consensus support. Three main areas requiring resolution still exist:

1. **Crop yield goal assumptions:** Consensus within the workgroup could not be reached on what data and assumptions should be used to determine yield goals.
2. **Phosphorus application rates for each crop type:** Agreement could not be reached on appropriate phosphorus application rates for various crops and how best to account for land that is double cropped.
3. **P application Rates as it relates to P Soil Levels for Cropland P FIV <150:** Consensus could not be reached on whether to use medium P soil level (26 - 50) for all acreage under P FIV 150 or to assume a P FIV of 75, the mid-point between 0 and 150.

www.DelmarvaLandAndLitter.net
Paula Jasinski, DLLC Coordinator
101 North 5th Street, Suite A | Richmond, VA 23219 | (804)824-3945 | paula@greenfirststudio.com

The DLLC Executive Committee believes that these issues can be resolved through further discussion and documentation. However, knowing that the Mass Balance Workgroup has already committed two years to this work, the Executive Committee voted to pause the process and wait until the 2017 US Agriculture Census report and numbers are released before proceeding. When newer data is available, DLLC can revisit the process and the potential to run a range of scenarios examining litter management options.

The Mass Balance work, specifically, and the DLLC work, generally, is challenging. Stakeholders with a legacy of contention, mistrust and combative relationships, have committed to working collaboratively toward win-win, grass roots level solutions to the challenge of fostering viable, sustainable agriculture and a healthy Chesapeake Bay. Given the history and the issues in front of us, our work has and will experience fits and starts. A firm commitment to working together, to finding ways to do things differently than we've done them in the past can provide the leadership and the energy that is essential in getting to the win-win solutions we've said that we want.

Sincerely,

Andrew McLean
Chair, DLLC

ATTACHMENT 4: Maryland to Monitor Air Quality Near Poultry Houses Article

Maryland to Monitor Air Quality Near Poultry Houses

Posted: Jan 29, 2019 2:26 PM EST
Updated: Jan 29, 2019 3:00 PM EST

ADVERTISEMENT

ANNAPOLIS, Md. (WBOC/AP)- Maryland will sample air on the lower Eastern Shore to examine the potential effects of large poultry houses on air quality.

The Maryland Department of the Environment announced Tuesday that monitoring stations will collect preliminary data on ammonia and particulate matter levels near poultry houses for comparison with air quality elsewhere in the state.

The Keith Campbell Foundation for the Environment and Delmarva Poultry Industry have committed more than $500,000 to the effort and the department is responsible for technical aspects. The three parties signed a memorandum of understanding on Monday. After one year, the department will review results and consider relevant input on any further steps that might need to be taken.

The MDE is responsible for technical aspects of the monitoring such as the specification of equipment and the collection and analysis of air monitoring results. This effort is scheduled to continue for one year. At that point, the department will review results and consider relevant input on any further steps that might need to be taken.

"The Hogan administration is committed to sound science and environmental leadership in agriculture," said Maryland Environment Secretary Ben Grumbles. "This innovative partnership for air quality monitoring will provide useful information to the public."

Two new monitoring stations will be installed on the Lower Shore with equipment to measure ammonia and particulate matter while collecting information on weather conditions. Establishing the monitors near poultry houses is designed to provide results representative of any effects of concentrations of poultry houses throughout the Eastern Shore, according to the MDE.

The specific locations of new stations will depend on an evaluation of factors such as the availability of power, security and proximity to trees and man-made structures that might interfere with the quality of data. The MDE will consider the distance between a potential station site and a concentration of poultry houses and homes. The department expects to evaluate these factors over the next few months.

One of those two new stations will be upwind from poultry houses and one will be downwind to allow for a comparison, according to the MDE. Moreover, equipment to measure ammonia levels will be added to two existing MDE monitoring stations that already measure particulate matter to provide additional "baseline" levels for comparison with the stations near poultry operations. One will be north of the Lower Shore and one will be on the Western Shore.

ATTACHMENT 5: Executive Summary – 2018 Poultry Report

EXECUTIVE SUMMARY

Poultry Numbers:

As of March 5, 2018:

- Since July 1, 2014, **240 poultry houses have been authorized by zoning permits.**
- **15 poultry houses are pending.**
- Staff estimates that **284 poultry houses were in existence prior to July 1, 2014.**

As can be seen on the map on page 7 of the report, historically speaking, the majority of the poultry houses in the County were located north of Parksley. Since 2014, a significant number of new poultry houses have been located south of Parksley.

Much of the concern raised by County residents and others regarding the surge in new poultry houses has come from those living in the southern part of the County (and Northampton County). It is not entirely surprising that concerns are being raised given the relatively small number of poultry houses that existed in the southern part of the County prior to 2014.

Ordinance Changes:

In response to a surge in applications for new poultry houses, Accomack County amended its Zoning Ordinance in February 2016 to tighten regulations regarding confined poultry operations. As part of the ordinance development, Dr. David Matson, from the Eastern Shore Health Department spoke to the Planning Commission on January 13, 2016. Dr. Matson's input was invaluable in the development of the new ordinance. Another notable ordinance amendment occurred in July 2017 when the County removed the possibility of new poultry houses being constructed in residential and general business zoned areas.

Groundwater:

There has been a great deal of concern regarding **groundwater withdraw. A groundwater withdraw number of 3.1 million gallons per day was widely circulated throughout the community. The 3.1 million gallon per day withdraw was an estimate for all poultry houses (pre-2014 and post 2014) that have a Virginia Pollution Abatement (VPA) Permit from the Department of Environmental Quality (DEQ). The 3.1 million gallon number does NOT reflect projected actual usage and is approximately 37 percent higher than the high range of staff estimates (staff estimates are found below) for usage. Staff does not believe that the 3.1 million gallon per day number is valid for estimating actual water use.**

Staff Estimates the following amount of water needed (average) per poultry house per month that includes consumption (drinking water) and cooling water needs:

- 70,950 gallons per month – Low Range
- 81,625 gallons per month – Mid Range
- 152,875 gallons per month – High Range

Stormwater:

Confined Poultry Operation approved after July 1, 2014 are required to construct and maintain **stormwater facilities.** County staff performs inspections during construction and also a post construction visits.

Each poultry farm's Stormwater management system has been designed to make sure that the peak flow rate leaving the developed site will be less than or equal to the peak flow rate in the pre-developed condition.

Economic Impact:

The most obvious economic impact from the poultry industry in Accomack County are the benefits derived from the Perdue and Tyson processing plants. The 2014 estimated payroll for poultry processing was $121,251,000 (from January 13, 2016 presentation to BOS). The local economy also benefits from the poultry industry with employment and payroll in the following areas: poultry growers and farm workers, truck drivers, grain elevators, and grain farmers.

Future Considerations/Items to monitor:

- Ammonia & Airborne particulates
- Groundwater withdraw regulation and law modification relative to the Columbia aquifer
- Buffer effectiveness
- Personal property taxes
- Groundwater withdraw