REVISING FISH CONSUMPTION ADVISORIES ONE STEP AT A TIME

INTEGRATING SCIENCE AND DEVELOPING APPROACHES TO INFORM MANAGAMENT FOR CONTAMINANTS OF CONCERN IN AGRICULTURAL AND URBAN SETTINGS

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Division of Watershed Stewardship & Division of Waste and Hazardous Substances

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FISH TISSUE CONTAMINANT MONITORING

- DNREC, in cooperation with the DRBC, NJDEP and others have been testing fish for contaminants for over 30 years. (Focused mainly on impaired Delaware River drainages)
- PCBs, mercury, DxF & other contaminants in fish have fallen significantly in response to source mitigation efforts.
- Consequently, the number & severity of fish advisories have been reduced in recent years.

DELAWARE FISH CONSUMPTION ADVISORIES

WATERBODY	SPECIES	CONTAMINANT OF CONCERN	GEOGRAPHICAL EXTENT	MEALS/YR (8-OUNCE SERVING)
All Waters not listed below	All species not listed below	All	All Areas not listed	52
Delaware River	All Finfish	A, B, E	DE/PA Line to the C&D Canal	3*
Lower Delaware River and Delaware Bay	Striped Bass, Channel Catfish, White Catfish, American Eel	A	Chesapeake & Delaware Canal to the Mouth of the Delaware Bay	3*
	White Perch	A	Chesapeake & Delaware Canal to the Mouth of the Delaware Bay	6
	Bluefish 20 inches or less	A	Chesapeake & Delaware Canal to the Mouth of the Delaware Bay	12
	Bluefish-greater than 20 inches	A, C	Chesapeake & Delaware Canal to the Mouth of the Delaware Bay	3*
Delaware Atlantic Coastal Waters including Delaware Inland Bays	Striped Bass	A	Coastal Delaware from Mouth of Delaware Bay Southward to DE/MD Line	3*
	Bluefish 20 inches or less	A	Delaware from Mouth of Delaware Bay Southward to DE/MD Line	12
	Bluefish-greater than 20 inches	A, C	Coastal Delaware from Mouth of the Delaware Bay Southward to DE/MD Line	3*
Shellpot Creek	All Finfish	A, E, G	Governor Printz Blvd. to Delaware River	1
		A, E, G, H	Upstream of Governor Printz Blvd.	2
Tidal Brandywine River	All Finfish	A, B, E	River Mouth to Baynard Blvd	2
Non-tidal Brandywine River	All Finfish	A, B, E	Baynard Blvd. to DE/PA Line	6
Tidal Christina River	All Finfish	A	I-95 at Peterson Wildlife Refuge upstream to Smalleys Dam (includes Nonesuch Creek)	12
		A, B, E, F, G	Mouth upstream to I-95 at Peterson Wildlife Refuge	1
Non-tidal Christina River	All Finfish	E	Smalley's Dam to DE/MD Line	12
Tidal White Clay Creek	All Finfish	A, E, F, G	River Mouth to Route 4	1
Non-tidal White Clay Creek	All Finfish	A, E	Route 4 to DE/PA Line	12
Red Clay Creek	All Finfish	A, B, E, F	Creek Mouth to DE/PA Line	3
Little Mill Creek	All Finfish	A, E, G, H	Creek Mouth to Kirkwood Highway	1
Army Creek and Pond	All Finfish	A, B	Creek Mouth to Route 13, including Army Pond	4
Red Lion Creek	All Finfish	A, B	Route 1 to the Delaware River	2
		A, E	Upstream of Route 1	12
Chesapeake & Delaware Canal	All Finfish	A,B E	Entire Canal in Delaware	1
Appoquinimink River	All Finfish	A, B, E	Tidal Portions	2
Drawyers Creek	All Finfish	A -B, E	Tidal Portions	4
Silver Lake Middletown	All Finfish	E	Entire Lake	12
Saint Jones River and Silver Lake Dover	All Finfish	A, B, E	Tidal River and Entire Pond	4
Fork Branch	All Finfish	C	McKee Road to College Road	24
Moores Lake	All Finfish	A	Entire Pond	12
Wyoming Mill Pond	All Finfish	F	Entire Pond	24
Slaughter Creek	All Finfish	A,B	Entire Creek	12
Christina Creek	Stocked Trout	A, E	Rittenhouse Park to DE/MD Line	6
Designated Trout Streams & Ponds other than Christina Creek	Stocked Trout	A	See latest Delaware Fishing Guide for Designated Trout Streams	12

** Women of childbearing age and children should not consume any amount of these fish.*

*For more information on the specific contaminant(s) of concern for each waterbody listed, consult the Division's website (**www.fw.delaware.gov**) or contact DNREC at (302) 739-9902, or the Division of Public Health at (302) 744-4546.*

Contaminants of concern:

***A)** PCBs, **B)** Dioxins and furans, **C)** Mercury, **D)** Chlorinated pesticides, **E)** Dieldrin, **F)** DDT, DDD and DDE , **G)** Chlordane, **H)** Heptachlor epoxide*

2018 Changes to Fish Consumption Advisories in Delaware Waters (Previous Advisories Noted in Orange)				
Waterbody Name	**Fish Species**	**Average adult/angler**	**Women of childbearing age Children less than 6 years old**	**Contaminant**
Tidal Delaware River (between DE/NJ/PA border and northeast extent of the Chesapeake and Delaware (C&D) Canal)	All fish	1 meal per year 3 meals per year	Do not eat Do not eat	PCBs, dioxins, furans, and Dieldrin
Lower Delaware River and Delaware Bay (from the northeast extent of the C&D Canal down to the mouth of the Delaware Bay, defined by a line between Cape Henlopen, DE and Cape May, NJ)	Striped Bass Channel Catfish White Catfish American Eel	2 meals per year 3 meals per year	Do not eat Do not eat	PCBs
	White Perch	2 meals per year 6 meals per year	Do not eat 6 meals per year*	PCBs
	Bluefish – greater than 20 inches	1 meal per year 3 meals per year	Do not eat Do not eat	PCBs, Mercury
	Weakfish (Sea Trout)	12 meals per year No limit	12 meals per year 12 meals per year	-
Atlantic Coastal Waters (beyond the mouth of Delaware Bay, extending out 3 miles into the Atlantic Ocean between Cape Henlopen and Fenwick Island)	Striped Bass	2 meals per year 3 meals per year	Do not eat Do not eat	PCBs
	Bluefish – greater than 20 inches	1 meal per year 3 meals per year	Do not eat Do not eat	PCBs, Mercury

Previous advisories issued in 2009 - Lower River/Bay and Coastal Waters, and 2013 - Tidal Portion

HOW DID WE GET TO WHERE WE ARE IN DELAWARE ?

ONE STEP AT A TIME

1. Agree To Be Part of The Solution
    - Embrace DRBC Pollution Minimization Plan Strategy
    - Foster Relationships and Partnerships . . . Be a TEAM
2. Characterize Current Loads
3. Prioritize Load Reduction Efforts
4. Actively Reduce Loads
5. Move to the Next Priority

WHAT IS WATAR?

WATERSHED APPROACH TO TOXICS ASSESSMENT AND RESTORATION

- **Whole Basin Management framework** – *"…programs from throughout DNREC work in an integrated manner to assess different geographic areas of the State defined on the basis of drainage patterns"*
- **Focus on Persistent, Bioaccumulative, and Toxic (PBT) compounds** – *Risk drivers for fish advisories*
- **Linking Sources and Sinks** – *advanced sampling and analysis utilizing multiple lines of evidence*
- **Clean Water Act (1972), 303d listing and TMDL implementation tool** - *assess impact of toxics in waterways*
- **HSCA site prioritization tool** – *target DNREC remediation efforts*

MEDIA SAMPLED & ANALYTICAL PARAMETERS

SURFACE WATER

- PCBs by EPA Method 1668
- Dioxins and Furans by EPA Method 1613
- Organochlorine Pesticides by EPA Method 1699
- PAHs + Alkylated Homologs by EPA Method 8270/1625

General WATER parameters and sorbents

- BC of Suspended Sediments
- PC, POC, DOC
- Chl-a
- TSS
- DO, T, Cond, pH

SEDIMENT

- PCBs by EPA Method 1668
- Dioxins and Furans by EPA Method 1613
- Organochlorine Pesticides by EPA Method 8081
- PAHs + Alkylated Homologs by EPA Method 8270 SIM
- Mercury by EPA Method 7471

General SEDIMENT parameters and sorbents

- TOC/BC
- Bulk Density
- Specific Gravity of Solids
- % Moisture
- Grain Size

FISH TISSUE

- PCBs by EPA Method 1668
- Dioxins and Furans by EPA Method 1613
- Organochlorine Pesticides by EPA Method 1699
- PAHs + Alkylated Homologs by EPA Method 8270/1625
- Total Mercury by EPA Method 1631
- Methyl Mercury by EPA Method 1630
- % lipid

Other for Water, Sediment and Fish

- Chlorinated Benzenes in Red Lion Watershed
- Metals in Christina Basin (Sediment only)
- Ambient toxicity (Water only – DRBC)

Application of WATAR Approach to Chesapeake Bay Drainages

Summary of Toxics Data for Surface Water, Sediment, and Biota Samples Collected from Delaware Watersheds that Drain to the Chesapeake Bay

Delaware Department of Natural Resources & Environmental Control
Watershed Assessment and Management Section

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July 2017

Quality Assurance Project Plan

Collection and Analysis of Surface Water, Sediment and Fish Tissue Samples for Toxics in Delaware Watersheds that Flow to the Chesapeake Bay

Prepared by:

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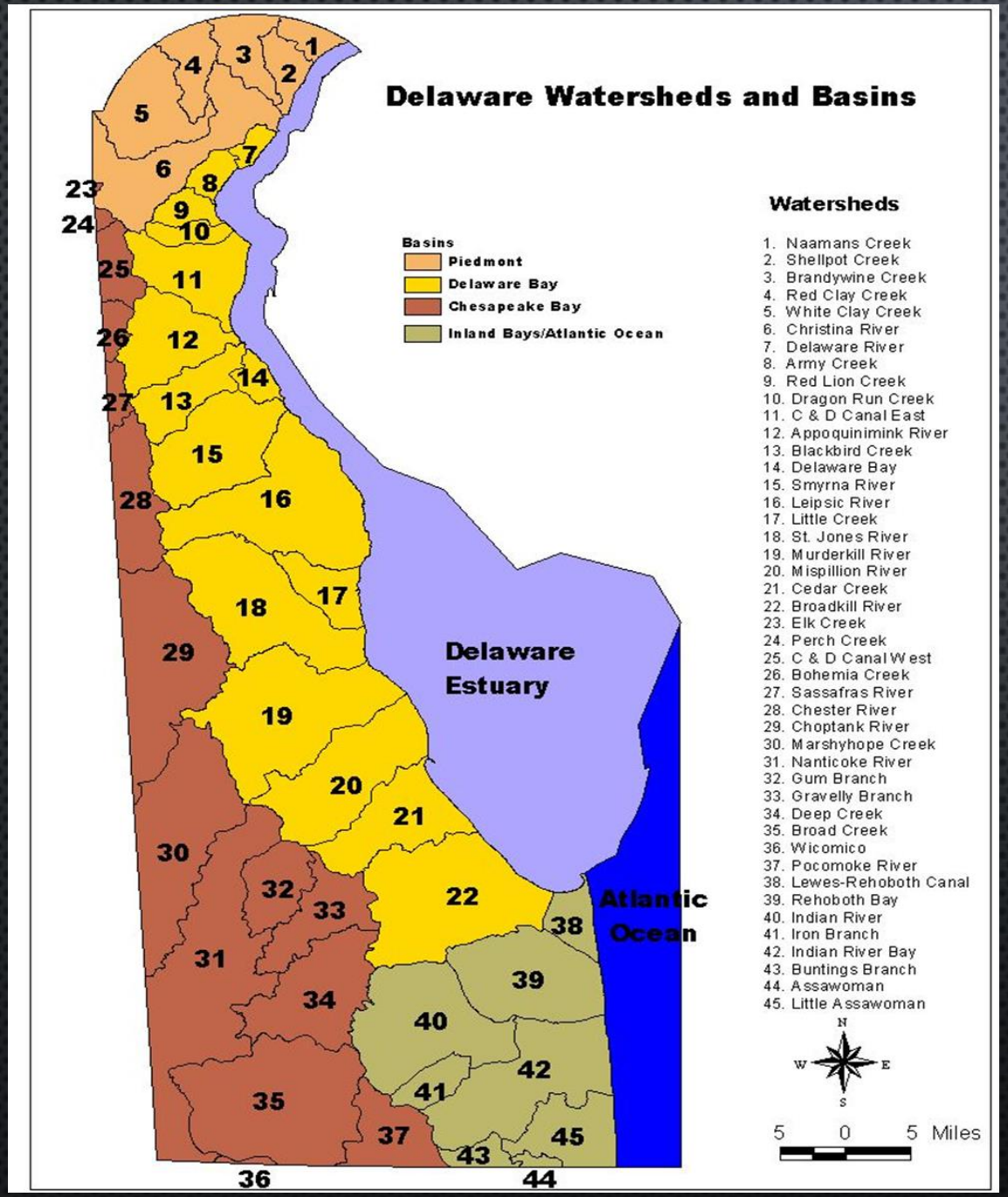
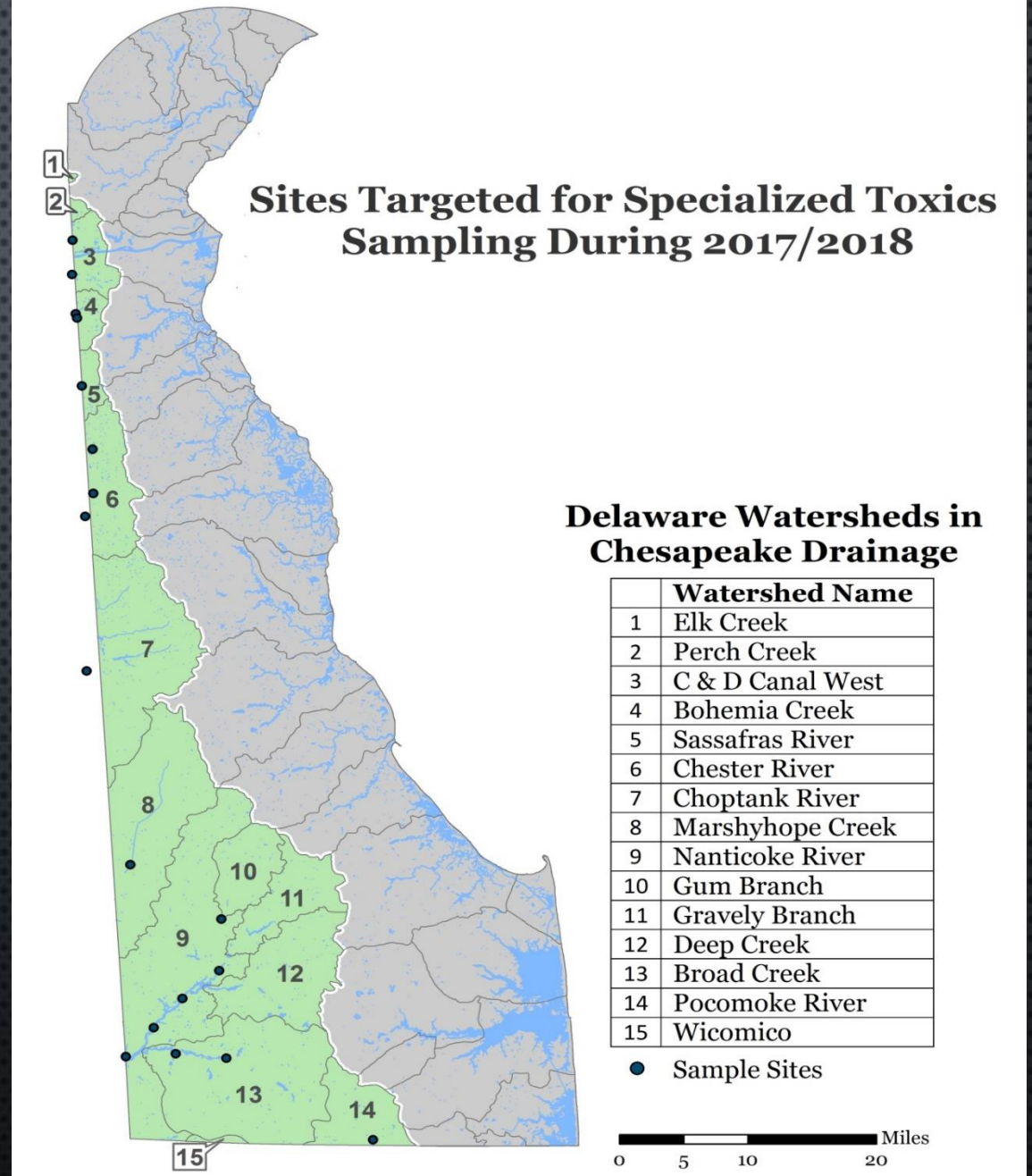
August 2017
QAPP 486, Revision 0

This quality assurance project plan (QAPP) has been prepared according to guidance provided in the following documents to ensure that environmental and related data collected, compiled, and/or generated for this project are complete, accurate, and of the type, quantity, and quality required for their intended use:

- *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5, EPA/240/B-01/003, U.S. Environmental Protection Agency, Office of Environmental Information, Washington DC, March 2001 [Reissued May 2006]). http://www.epa.gov/quality/qs-docs/r5-final.pdf
- *Guidance for Quality Assurance Project Plans. EPA QA/G-5* (EPA 240/R-02/009), U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC, December 2002. http://www.epa.gov/sites/production/files/2015-06/documents/g5-final.pdf


Delaware Watersheds and Basins
Basins
Piedmont
Delaware Bay
Chesapeake Bay
Inland Bays/Atlantic Ocean
Delaware Estuary
Atlantic Ocean
Watersheds
1. Naamans Creek
2. Shellpot Creek
3. Brandywine Creek
4. Red Clay Creek
5. White Clay Creek
6. Christina River
7. Delaware River
8. Army Creek
9. Red Lion Creek
10. Dragon Run Creek
11. C & D Canal East
12. Appoquinimink River
13. Blackbird Creek
14. Delaware Bay
15. Smyrna River
16. Leipsic River
17. Little Creek
18. St. Jones River
19. Murderkill River
20. Mispillion River
21. Cedar Creek
22. Broadkill River
23. Elk Creek
24. Perch Creek
25. C & D Canal West
26. Bohemia Creek
27. Sassafras River
28. Chester River
29. Choptank River
30. Marshyhope Creek
31. Nanticoke River
32. Gum Branch
33. Gravelly Branch
34. Deep Creek
35. Broad Creek
36. Wicomico
37. Pocomoke River
38. Lewes-Rehoboth Canal
39. Rehoboth Bay
40. Indian River
41. Iron Branch
42. Indian River Bay
43. Buntings Branch
44. Assawoman
45. Little Assawoman
N
W
E
S
5 0 5 Miles


Sites Targeted for Specialized Toxics Sampling During 2017/2018
Delaware Watersheds in Chesapeake Drainage
Watershed Name
1 Elk Creek
2 Perch Creek
3 C & D Canal West
4 Bohemia Creek
5 Sassafras River
6 Chester River
7 Choptank River
8 Marshyhope Creek
9 Nanticoke River
10 Gum Branch
11 Gravely Branch
12 Deep Creek
13 Broad Creek
14 Pocomoke River
15 Wicomico
Sample Sites
Miles
0 5 10 20

Stations, Media and Analytes Tested During Year 1

Watershed	Station Location (North to South)	Surface Water; T, DO, pH, conductivity & salinity field measurement	Surface Water; TSS, PC, POC, DOC & Chl-a from 10-L Carboy	Surface Water; DOC from 55-gal centrifuged sample	Surface Water, 20-L for PCB and DxF from Filters (co-extraction and fractionation)	Surface Water, 20-L MRES with ON Pesticides from Filters (from extract split)	Surface Water, 2.5-L for PCB and DxF from 20-L Filtrate	Surface Water, 1L for MRES with ON Pesticides from 20L filtrate	Surface Water, 2.5-L for PAHs Whole Water	Surface Water, 2.5-L for PAHs Filtered	Surface Water, 1-L for Carbamates Whole Water	Surface Water, 500 ml for Glyphosate, AMPA, and Glufosinate Whole Water	Surface Water, 1-L for Acid Extractable Herbicides Whole Water	Suspended Sediments, TOC/BC from 55-gal centrifuged sample	Surface Sediments, TOC/BC, Grain size, moisture, bulk density & specific gravity	Surface Sediment, TAL Metals including Mercury and Cyanide	Subsurface Sediments, TOC/BC from multiple Core Slices	Surface Sediment, PCBs, DxF, MRES Pesticides with ON Pesticides, PAHs Carbamates & Moisture	Surface Sediments, 500 mL for Glyphosate, AMPA, and Glufosinate	Fish Tissue, PCBs, DxF, MRES Pesticides with ON Pesticides, PAHs & Moisture, Lipids
C&D West Watershed	Long Branch @ Steale Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
	Sammons Pond Outflow @ Old Telegraph Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
Bohemia Watershed	Bohemia Mill Pond Outflow @ Old Telegraph Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
	Sandy Branch @ Old Telegraph Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
Sassafras River Watershed	Sassafras River @ Maryline Line Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
Chester River Watershed	Cypress Branch @ Delaney Church Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
	Sewell Branch @ Sewell Branch Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
	Gravelly Run @ Blanco Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
Choptank River Watershed	Choptank River @ Rd 287	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
Marshyhope Creek Watershed	Marshyhope Creek @ Rt. 404	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Nanticoke Watershed	Nanticoke River @ Rifle Range Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	Nanticoke River @ Old Furnace Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	Nanticoke River @ Seaford	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Nanticoke River @ Woodland Ferry	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	Nanticoke River @ MD/DE Line	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Broad Creek Watershed	Records Pond Outflow	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	Broad Creekbelow Bethel	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Pocomoke River Watershed	Pocomoke River @ Bethel Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	

Notes:

1. MRES = Multi-Residue Pesticides includes organochlorine (OC) pesticides, organophosphate (OP) pesticides, triazine herbicides, total pyrethroids, and organonitrogen (ON) herbicides

Stations, Media and Analytes Tested During Year 2

Watershed	Station Location (North to South)	Surface Water; T, DO, pH, conductivity & salinity field measurement	Surface Water; TSS, PC, POC, DOC & Chl-a from 10-L Carboy	Surface Water, 1-L for Pyrethroids Whole Water	Surface Water, 1-L for Hormones and Sterols Whole Water	Surface Water, V TBD for Neonicitinoids Whole Water	Surface Sediments - (HRMS Pyrethroids by MLA-046)	Surface Sediments - (HRMS Hormones and Sterols by MLA-068 (EPA 1698))	Surface Sediments - Neonicitinoids by LC MS/MS	Surface Sediments, TOC/BC, Grain size, moisture, bulk density & specific gravity	Subsurface Sediment, TAL Metals including Mercury and Cyanide from Core Slices Collected 2017	Subsurface Sediment, PCBs, DxF, MRES Pesticides with ON Pesticides, PAHs & Moisture from Core Slices Collected 2017	Fish Tissue, PCBs, DxF, MRES Pesticides with ON Pesticides, PAHs & Moisture, Lipids
C&D West Watershed	Long Branch @ Steale Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Sammons Pond Outflow @ Old Telegraph Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Bohemia Watershed	Bohemia Mill Pond Outflow @ Old Telegraph Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Sandy Branch @ Old Telegraph Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Sassafras River Watershed	Sassafras River @ Maryline Line Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Chester River Watershed	Cypress Branch @ Delaney Church Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Sewell Branch @ Sewell Branch Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Gravelly Run @ Blanco Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Choptank River Watershed	Choptank River @ Rd 287	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Marshyhope Creek Watershed	Marshyhope Creek @ Rt. 404	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Nanticoke Watershed	Nanticoke River @ Rifle Range Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Nanticoke River @ Old Furnace Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Nanticoke River @ Seaford	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Nanticoke River @ Woodland Ferry	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Nanticoke River @ MD/DE Line	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Broad Creek Watershed	Records Pond Outflow	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Broad Creekbelow Bethel	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Pocomoke River Watershed	Pocomoke River @ Bethel Rd	✓	✓	✓	✓	✓	✓	✓	✓	✓			

Notes:

1. Subsurface sediment samples collected from the Nanticoke River @ Seaford and the Nanticoke River @ MD/DE Line include multiple samples collected from discreet depth intervals along sediment cores.
2. Fish samples for contaminants analysis will be collected from twelve (12) public ponds (Mud Mill Pond, Chipman Pond, Concord Pond, Craigs Pond, Hearns Pond, Horseys Pond, Portsville Pond, Racoon Pond, Records Pond, Trap Pond, Trussum Pond, and Tussock Pond).

SGS AXYS Analytical Services		
Test	**Method**	**Matrices**
PCB Congeners	USEPA 1668A - HRMS	Aqueous, Sediment, Tissue, Glass Wound Filter
Dioxins/Furans	USEPA 1613B - HRMS	Aqueous, Sediment, Tissue, Glass Wound Filter
Multi-Residue Pesticides	USEPA 1699 - HRMS	Aqueous, Sediment, Tissue, Glass Wound Filter
PAHs and Alkylated PAHs	USEPA 8270C/D + USEPA 1625	Aqueous, Sediment, Tissue
Carbamates	MLA-047 - LC MS/MS	Aqueous, Sediment
Glyphosates	MLA-054 - LC MS/MS	Aqueous, Sediment
Acid Extractable Herbicides	MLA-037 - HRMS	Aqueous
Pyrethroids	MLA-046 - HRMS	Aqueous, Sediment
Hormones and Sterols	USEPA 1698 - HRMS	Aqueous, Sediment
Neonicitinoids	Pending	Aqueous, Sediment
TestAmerica		
Test	**Method**	**Matrices**
Total Organic Carbon (TOC) and Black Carbon (BC)	Modified Lloyd Kahn	Sediment
Grain (Particle) Size	ASTM D422	Sediment
Bulk Density	ASTM D2937	Sediment
Specific Gravity of Solids	ASTM D854	Sediment
TAL Metals, including Mercury and Total Cyanide	USEPA 6020A, 7471B and 9012B	Sediment
Methylmercury	USEPA 1630	Tissue
DNREC ELS		
Test	**Method**	**Matrices**
Carbon, Organic - Dissolved (DOC)	APHA 5310-B	Aqueous
Carbon, Particulate (PC)	USEPA 440(W)	Aqueous
Carbon, Particulate, Organic (POC)	USEPA 440(W)	Aqueous
Chlorophyll-a	USEPA 445	Aqueous
Residue, Nonfilterable (TSS)	USEPA 2540-D	Aqueous

Chesapeake Drainage Analytical Methods

- Get the best data you can afford, and make it consistent between jurisdictions!
- Collect data strategically, to answer a question, or multiple questions.
- Share information and data (or submit to commission or consortium).

WHAT DOES THE DATA SAY?

STAY TUNED….

HOW WILL WE GET TO THE SAME PLACE WITH DELAWARE'S CHESAPEAKE DRAINAGES?

ONE STEP AT A TIME

1. Agree To Be Part of The Solution
    - Embrace Chesapeake Bay Program Plan/Strategy
    - Foster Relationships and Partnerships . . . Be a TEAM
2. Characterize Current Loads
3. Prioritize Load Reduction Efforts
4. Actively Reduce Loads
5. Move to the Next Priority

CONTACT INFORMATION

HTTP://WWW.DNREC.DELAWARE.GOV/DWHS/SIRB/PAGES/WATAR.ASPX

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TAINTED WATERWAYS
New push to make river fish safe to eat
30A SUNDAY NEWS JOURNAL DELAWAREONLINE.COM
SUNDAY, SEPTEMBER 27, 2015
Little Mill Creek project completed
XERXES WILSON
THE NEWS JOURNAL
Business owners along Little Mill Creek near
through the decades.
"Many of us have self-diagnosed ourselves with P.T.S.D. — post traumatic storm disorder," said
tainty," Austin said.
Tidal marsh once occupied the land where Germay, Meco and Brookside Drives now host a wide range of commercial and
project.
Paul Betty, director of sales for Coverdeck Systems on Meco Drive, said his businesses has been spared significant flood-
QUESTIONS?
DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
New fix for pollution
itten by Jeff Montgomery The News Journal
. 01
14A SUNDAY NEWS JOURNAL DELAWAREONLINE.COM
SUNDAY, SEPTEMBER 13, 2015
Fish consumption advisory is eased
MOLLY MURRAY
THE NEWS JOURNAL
water management and efforts to find, track and
were able to lift these advi-sories or substantially
Army Creek and Pond from U.S. 13 and the entrance to the creek, including Army Pond
duction.
Much of the legacy pol-
06.24.2014
06.07.2014