



**Maryland**  
Department of  
the Environment

# Generating and Selling Nutrient Credits from Aquaculture

*46<sup>th</sup> East Coast Commercial Fisherman's & Aquaculture Trade  
Exposition*

*January 18, 2020*

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# Outline

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- Trading overview
- Generating Credits
- Purchasing Credits
- Sample Trades



# What is Water Quality Trading?

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- Water Quality Trading Program
  - Water quality marketplace for meeting and maintaining pollutant load limits
  - Transactions between sectors
  - Attract public and private participation
  - Supplement traditional governmental approaches for improving water quality
- Goals
  - Enhance Maryland's effort to protect and restore its waters
  - Achieve results faster and at a lower cost
  - Accelerate efforts to restore and improve water quality
  - Promote Innovation

**WHEN? WQT IS HAPPENING NOW**



# What's Oyster Aquaculture's role?

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- Nutrients are consumed by plankton, which are then consumed by oysters and stored in the meat
- When oysters are harvested, those nutrients are removed from the system “permanently”
- Aquaculture is approved by the Chesapeake Partnership as a nutrient reduction practice (nitrogen & phosphorus)
  - Wild Harvest is not!!!



# State agency roles in Aquaculture trading

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- Maryland Department of Natural Resources (DNR)
  - Harvest Verification for Aquaculture
- Maryland Department of the Environment (MDE)
  - Certification, and registration of:
    - Wastewater credits
    - Septic credits
    - Stormwater credits (and alternative practices)
    - Oyster Aquaculture
  - Registration of trades within these sectors
  - Referee
    - Maintaining Public Transparency



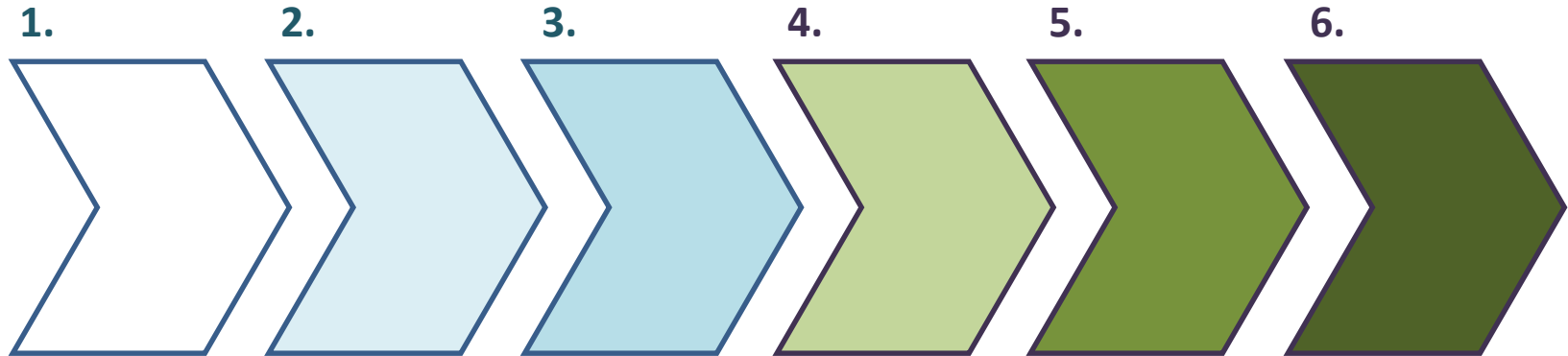
# Key Terms

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- **Baseline:** The practices, actions, or levels of pollutant reductions that must be achieved before a credit seller can generate credits
- **Credit:** A unit of load reduction below baseline equal to one pound (delivered) of nitrogen, phosphorus or sediment
- **Credit Certification:** The process in which credits are quantified
- **Registration:** The placement of credit on the registry after verification and certification
- **Registry:** The publicly accessible ledger of credits and trades
- **Verification:** the process through which credits are authenticated, either through annual reports or on-site inspections by qualified parties



# Brief Overview



Baseline Met:

A BMP is adopted or installed to reduce nitrogen, phosphorus or sediment

Harvest Info & Verification Forms sent to DNR

Verification form and certification application send to MDE

Credit is Certified for Market Participation

The credit generator reaches an agreement with a credit purchaser, and a credit acquisition form is submitted to MDE or MDA

The trade is reviewed and the transfer of credit is posted in the registry

The credit purchaser applies the credit toward meeting a permit requirement or other use

**Aquaculture Credit Generation**

**Credit Trading**



# Generating Credits

Oyster Size Class Range (inches)	Content in Oyster Tissue (g/oyster)			
	Diploid		Triploid	
	Nitrogen	Phosphorus	Nitrogen	Phosphorus
Small: 2.0 – 2.49	0.05	0.01	0.06	0.01
Medium: 2.5 – 3.49	0.09	0.01	0.13	0.01
Large: 3.5 – 4.49	0.15	0.02	0.26	0.03

	Number of Oysters in Size Class	Amount Nitrogen Removed (g): <i>Nitrogen Content x # Oysters</i>	Amount Phosphorus Removed (g): <i>Phosphorus Content x # Oysters</i>
Size Class (1)	<input type="text"/>	<input type="text"/>	<input type="text"/>
Size Class (2)	<input type="text"/>	<input type="text"/>	<input type="text"/>
Size Class (3)	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Total:</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Tradable Credits: Multiply total amount removed by 0.95 (accounts for reserve ratio) then round down to last whole number	Nitrogen	Phosphorus
	<input type="text"/>	<input type="text"/>

- 1) Different sizes/ploidy give different credits
  - Small
  - Medium
  - Large
- 2) Submit Verification Information
- 3) Submit paperwork for certification
- 4) MDE Review and Certification





# Who can participate?

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- Individual leaseholders or brokers partnering with leaseholders
- But you'll need to follow the rules
  - Farm-raised oysters only (Oyster Aquaculture)
  - Oyster must be larger than 2"
  - Credits need to be certified in the grow out location
  - Need to follow the Chesapeake Bay Partnership guidance on verification (Harvests need to be counted)



# The Register and Market

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- Register = Publically-accessible ledger of credits and trades

Initially ...

- Credits and trades involving the developed sector will be posted on MDE's Water Quality Trading website in a basic ledger

Later ...

- The Chesapeake Bay Nutrient Trading Registry (CBNTR)
- Everything will be moved to the new system

Each credit will receive a unique ID number in both systems

- Our Market is currently on MDE's website, but will be part of the CBNTR in the near future
  - It's no E-Harmony, but we hope it will be in the future



# Credits to Sell, but who's Buying?

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- Phase I stormwater permit counties
  - Highly Developed Counties in Central Maryland and the Western Shore, some Statewide entities
- Phase II stormwater permit counties & cities
  - Down the road additional counties with a lesser degree of development
- General Permit for Industrial Stormwater
  - Individual facilities with permit needs
- Future Partners?
  - MD is looking to expand trading outside permitted entities to expand aquaculture



# Trading Credits

- Credit Buyer reaches agreement with Credit Generator or broker
- Forms submitted to MDE Trading Administrator
  - Request
  - Legal Assurance of credit transfer
- Once reviewed, and all supplemental documents are provided, transactions will be posted to registry

The form is titled "CREDIT ACQUISITION REQUEST" and is from the Maryland Department of the Environment. It is divided into four main sections: A. PURCHASER ELIGIBILITY, B. PURCHASER INFORMATION, C. CREDIT GENERATOR INFORMATION, and D. CREDIT USE INFORMATION. Section A contains two questions about legal agreements and BMP access. Section B includes fields for Purchaser Name, Mailing Address, Town/City, ZIP Code, Telephone, and Email. Section C includes fields for Credit Generator's Name, Registry ID, and Project ID. Section D includes checkboxes for Permit Compliance, WIP Target Load Reduction, Local Impairment, and Water Quality Benefit. It also has fields for Permit Type, Permit Number, and a section for listing purchased credits by pollutant (Nitrogen, Phosphorus, Sediment) and year. At the bottom, there are sections for listing credit serial numbers for Nitrogen, Phosphorus, and Sediment.

[mde.maryland.gov/programs/Water/WQT/Pages/WQT\\_Purchasing\\_Credits.aspx](http://mde.maryland.gov/programs/Water/WQT/Pages/WQT_Purchasing_Credits.aspx)



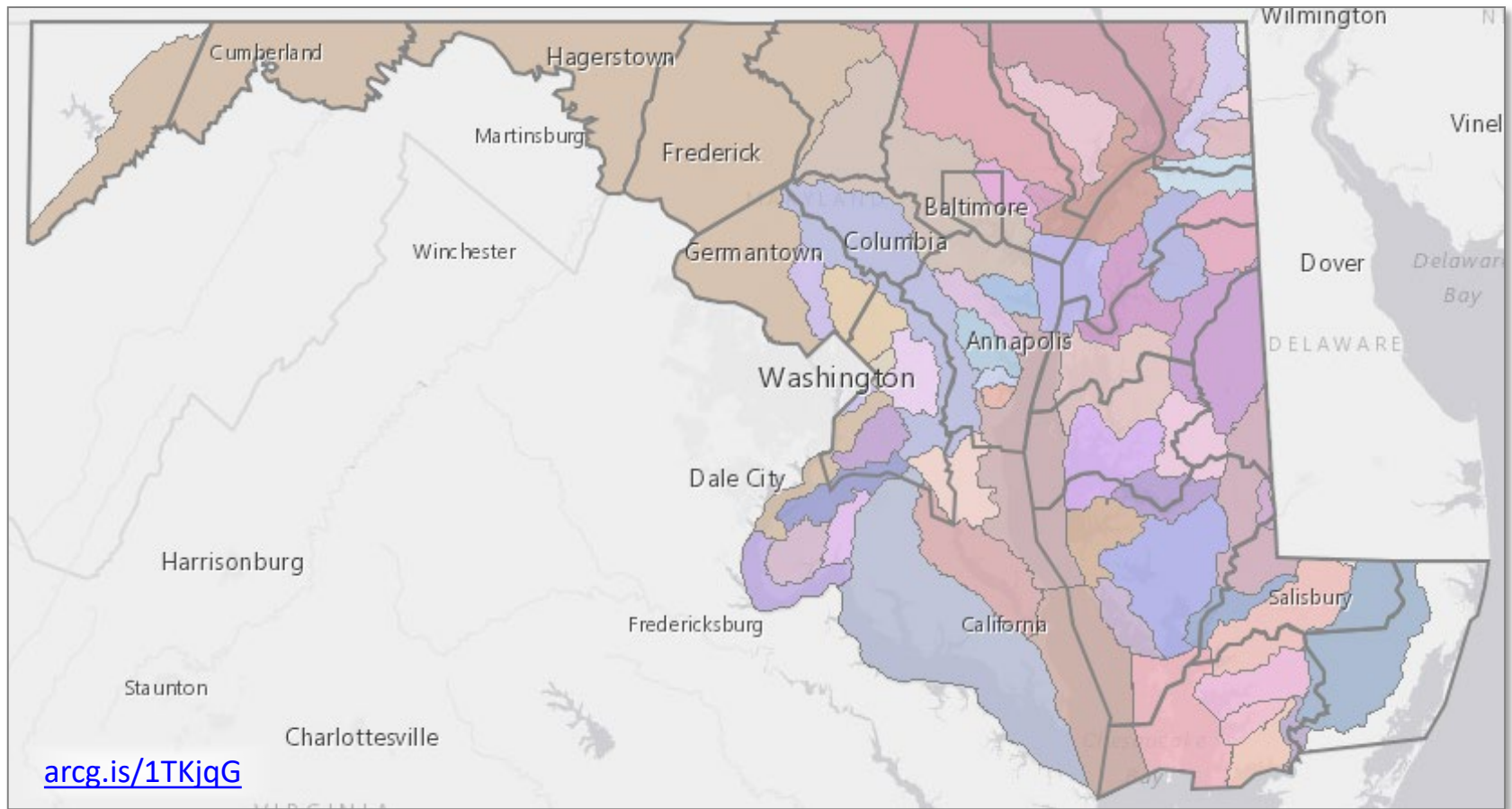
## Additional Considerations

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- Currently used for Chesapeake Bay
  - Could potentially be expanded
- Credit and trades must conform with:
  - Trading geography and permit purchase areas
  - Trading year
    - Vintage for credits
  - Verification requirements



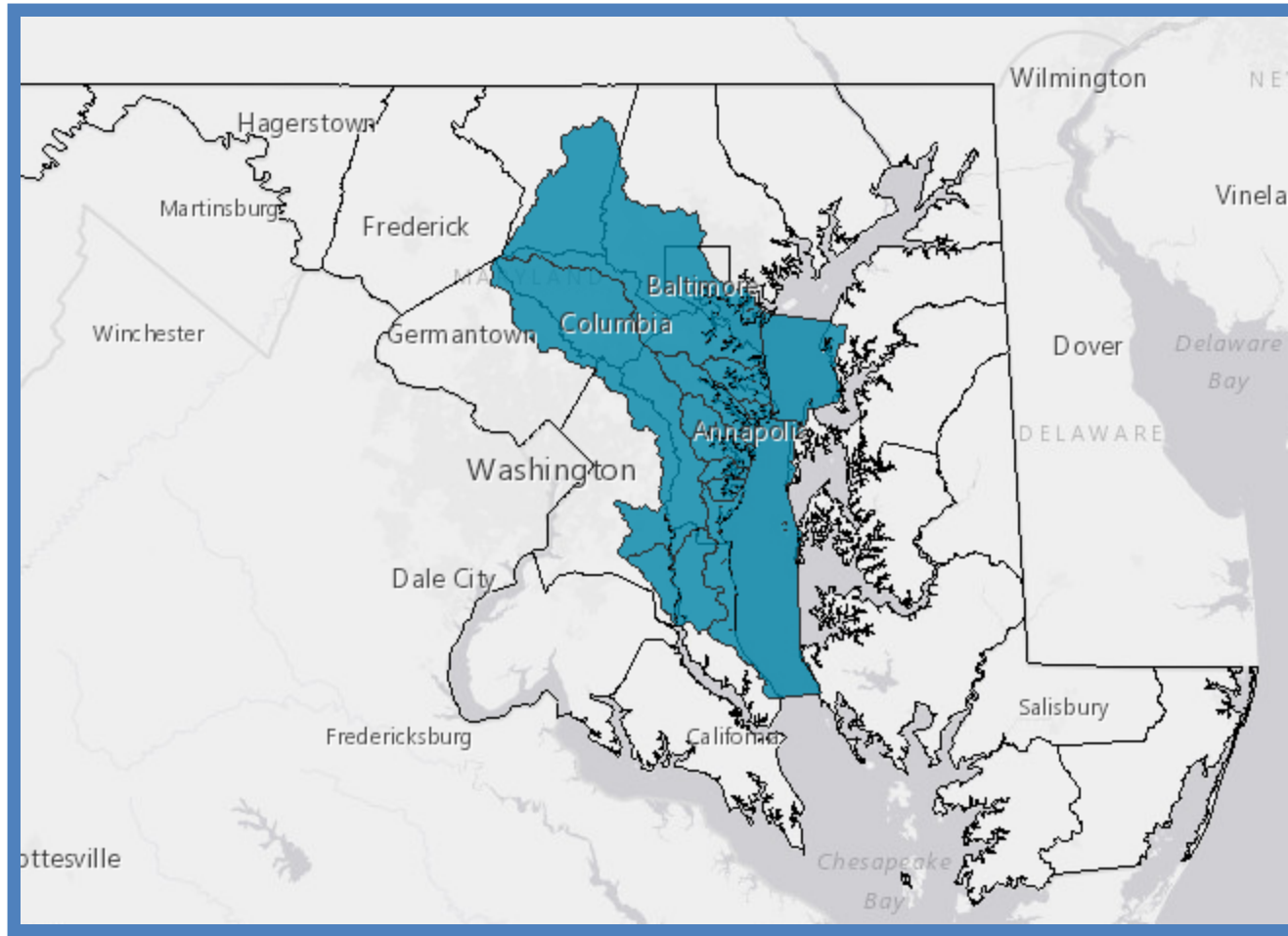
# Trading Regions



## Chesapeake Bay TMDL Segments



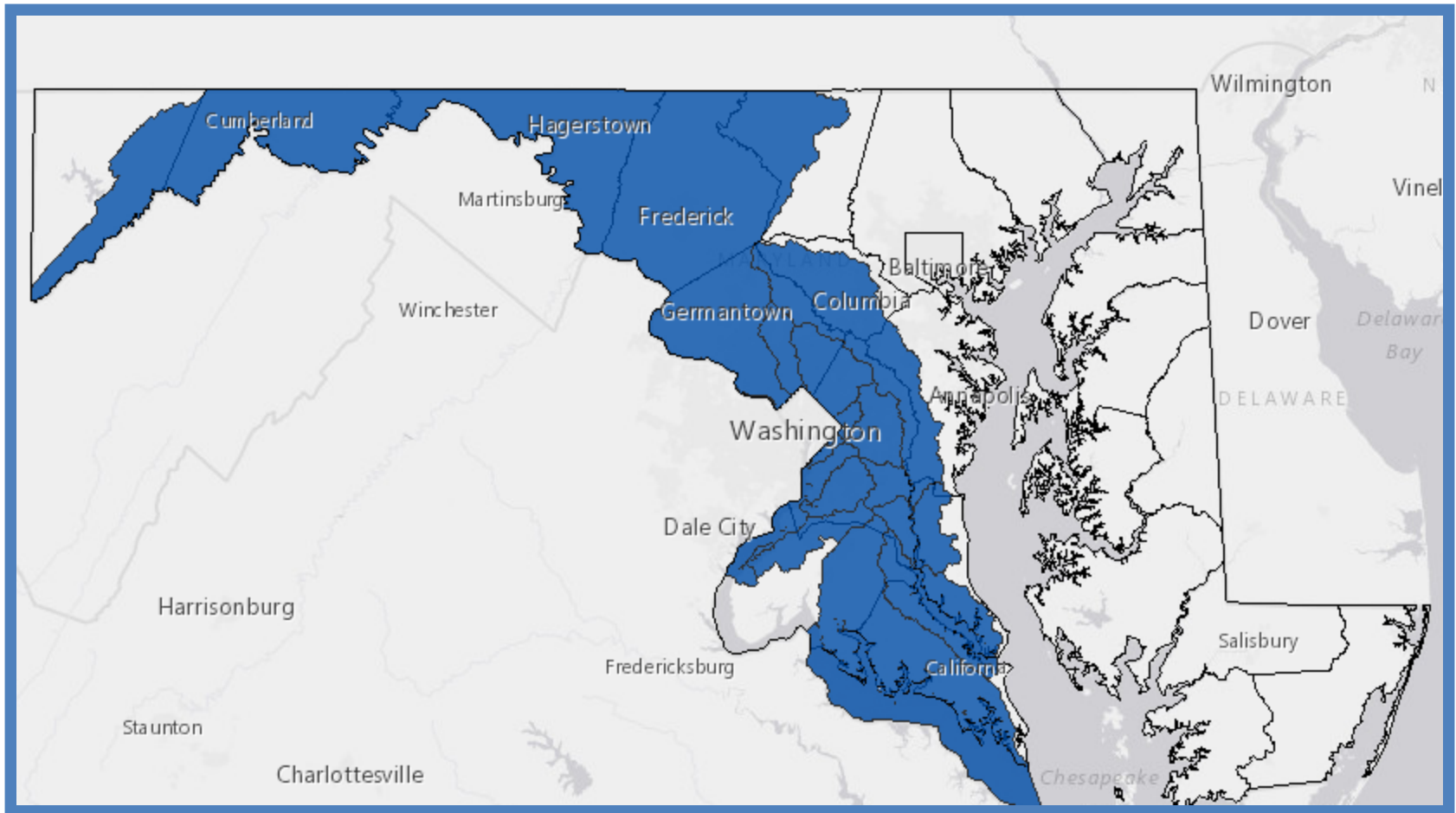
# Purchasing Areas for permittees



**Anne Arundel County Purchasing area for stormwater permittees**



# Purchasing Areas Continued

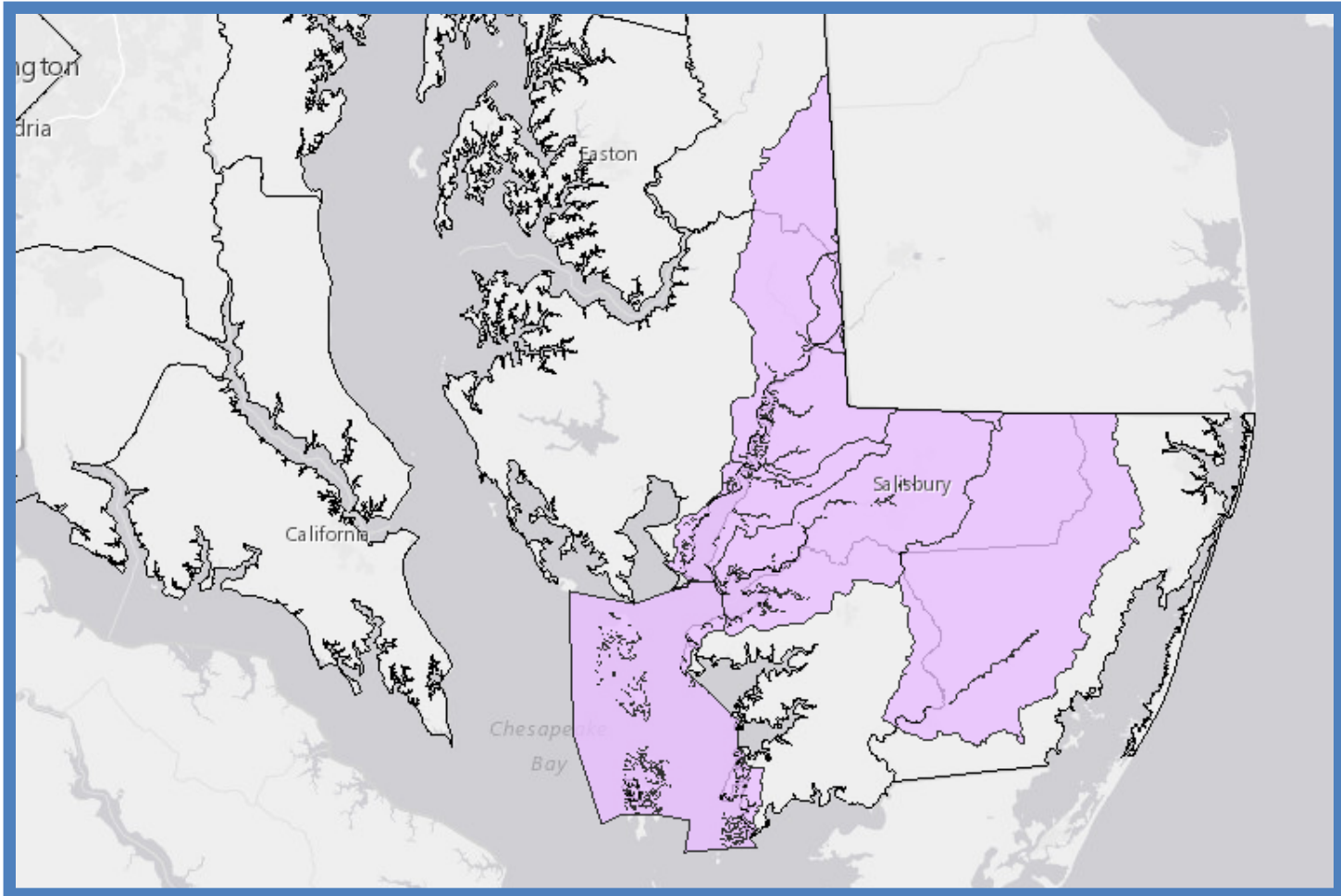


**Prince Georges County Purchasing area for stormwater permittees**





# Purchasing Areas Continued



**Wicomico County Purchasing area for stormwater permittees**



# Resources for Interested Parties & Public

- MDE trading website
  - Background information
    - Trading FAQs
  - Credit Calculators & tools for Certification
  - WQT Register and Market Board

The screenshot shows the official website for the Maryland Department of the Environment's Water Quality Trading Program. The header features the Maryland state logo and the text 'DEPARTMENT OF THE ENVIRONMENT'. A search bar is located in the top right corner. Below the header is a navigation menu with links: HOME, ABOUT MDE, AIR, LAND, WATER, MARYLANDER, PERMITS, and NEWSROOM. The main content area is titled 'Water Quality Trading' and includes a list of links: Wastewater Permits, Sediment, Stormwater and Dam Safety, Onsite Disposal Systems, TMDL, Compliance, and Water Quality Trading Home. To the right, there is a section titled 'Water Quality Trading Program Home' with a large image of a bridge over water. Below the image is a navigation bar with five tabs: WQ TRADING HOME (selected), GENERATING CREDITS, PURCHASING CREDITS, REGISTRY & MARKET, and TOOLS & RESOURCES. A blue box contains 'WQT Highlights:' with a notice dated 1.23.19 regarding credit needs on the WQT Market Board. At the bottom, there is a section for 'Program Description'.



- **MDE Trading Webpage:**  
[mde.maryland.gov/programs/Water/WQT/Pages/index.aspx](http://mde.maryland.gov/programs/Water/WQT/Pages/index.aspx)
- **MDE Trading Program Contact Info:**  
[mde.wqtrading@maryland.gov](mailto:mde.wqtrading@maryland.gov)

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