Maryland Chesapeake Bay Tributary Water Quality Monitoring Program – 2017

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Maryland Department of Natural Resources, Resource Assessment Service
Publication_Date: 20180630
Title: MD DNR Chesapeake Bay Tributary Water Quality Monitoring Program 2017
Geospatial_Data_Presentation_Form: Spatial dataset
Online_Linkage: [http://www.chesapeakebay.net/data/index.htm]

Description:
Abstract:

One of the main goals of the Chesapeake Bay restoration is to reduce the impacts of excess nutrients on the Bay and its tributaries. In accordance with this goal, the Chesapeake Bay Program jurisdictions have agreed to reduce nitrogen, phosphorus and sediment pollution to the Bay. The Maryland Chesapeake Bay Tributary Water Quality Monitoring Program evaluates the physical/chemical component of water quality at fifty-nine tributary stations. By measuring levels of nutrients and closely related habitat characteristics such as dissolved oxygen and water clarity, the monitoring program provides some of the most direct linkages to management actions that are reducing nutrient loads to the Bay.

Samples are collected monthly at each tributary station with one exception: samples are not routinely collected at station EE3.3 in January and February.

Note that prior to 2017, sixty stations were included in the Tributary Monitoring Program. Due to funding constraints, the number of sites sampled was reduced by one in 2017. Tributary water quality monitoring project sampling ceased in January 2017 at station: XHH4742.

Note that prior to 2014, sixty-nine stations were included in the Tributary Monitoring Program. Due to funding constraints, the number of sites sampled was reduced by nine in 2014. Tributary water quality monitoring project sampling ceased in January 2014 at the following stations: BXK0031, CCM0069, MNK0146, XDJ9007, POK0087, XAK7810, TRQ0088, TRQ0146 and XCI4078.

Note that the year 2013 tributary project station count was sixty-nine. The number of project sampling stations was incorrectly listed as seventy, instead of sixty-nine, in metadata records describing project years preceding 2013.

Purpose:

The Maryland Department of Natural Resources Chesapeake Bay Water Quality Monitoring Program is part of a cooperative effort between the Federal government and State and local governments in the Chesapeake Bay watershed to assess the status and trends of nutrient and sediment concentrations in Maryland's Chesapeake Bay mainstem and its tidal tributaries.

The information is integrated with data from other Bay water quality stations and living resources monitoring projects and used to understand linkages, temporal variation and long-term trends.

Water quality data are also used to refine, calibrate and validate Chesapeake Bay ecological models. The models are used to develop and assess water quality criteria with the goal of removing the Chesapeake Bay and its tidal rivers from the list of impaired waters.

Supplemental_Information:

The target audiences for this information include Resource Managers, Technical/Scientific Users, Government, Educators, Students and General Public.

Data users who desire very detailed information about Water Quality Monitoring data definition, sampling procedures and data processing are encouraged to refer to three documents listed below. The first two documents may be obtained from The Chesapeake Bay Program Office. The third document is available via The Maryland Department of Natural Resources Eyes on the Bay web site.

Water Quality Database - Database Design and Data Dictionary, Prepared For: U.S. Environmental Protection Agency, Region III, Chesapeake Bay Program Office, January 2004. [http://archive.chesapeakebay.net/pubs/cbwqdb2004_RB.PDF]. An updated version of the data dictionary is a Chesapeake Bay Program work in progress.

Guide to Using Chesapeake Bay Program Water Quality Monitoring Data, EPA 903-R-12-001, February 2012, CBP/TRS 304-12 [http://www.chesapeakebay.net/documents/3676/wq_data_userguide_10feb12_mod.pdf].

The Quality Assurance Project Plan for the Maryland Department of Natural Resources Chesapeake Bay Water Quality Monitoring Program - Chemical and Physical Properties Component for the period July 1, 2017 - June 30, 2018 [http://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/MdDNR_MTQAPP2017.pdf].

Time_Period_of_Content:
  Time_Period_Information:
    Range_of_Dates/Times:
      Beginning_Date: 20170110
      Ending_Date: 20171221
  Currentness_Reference: Ground Condition
Status:

Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -79.4938
East_Bounding_Coordinate: -75.0405
North_Bounding_Coordinate: 39.7425
South_Bounding_Coordinate: 37.8713
Keywords:
Theme:
Theme_Keyword_Thesaurus: Global Change Master Directory (GCMD). 2018. GCMD Keywords, Version 8.6. Greenbelt, MD: Global Change Data Center, Science and Exploration Directorate, Goddard Space Flight Center (GSFC) National Aeronautics and Space Administration (NASA). URL (GCMD Keyword Forum Page): [https://earthdata.nasa.gov/gcmd-forum]
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Theme_Keyword: EARTH SCIENCE>BIOSPHERE>ECOLOGICAL DYNAMICS>ECOSYSTEM FUNCTIONS>PRIMARY PRODUCTION
Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>SURFACE WATER>SURFACE WATER FEATURES>RIVERS/STREAMS
Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>WATER CHARACTERISTICS>ALKALINITY
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Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>SOLIDS>TOTAL DISSOLVED SOLIDS
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Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>WATER CHARACTERISTICS>WATER TEMPERATURE
Place:
Place_Keyword_Thesaurus: Producer Defined
Place_Keyword: Chesapeake Bay
Place_Keyword: Maryland
Place_Keyword: Monitoring Segment
Place_Keyword: Tidal Tributaries
Place_Keyword: Back River
Place_Keyword: Big Annemessex River
Place_Keyword: Bohemia River
Place_Keyword: Bush River
Place_Keyword: C&D Canal
Place_Keyword: Chester River
Place_Keyword: Choptank River
Place_Keyword: Eastern Bay
Place_Keyword: Elk River
Place_Keyword: Fishing Bay
Place_Keyword: Gunpowder River
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Place_Keyword: Manokin River
Place_Keyword: Nanticoke River
Place_Keyword: Northeast River
Place_Keyword: Patapsco River

Place_Keyword: Patuxent River
Place_Keyword: Pocomoke River
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Place_Keyword: South River
Place_Keyword: Susquehanna River
Place_Keyword: Tangier Sound
Place_Keyword: West River
Place_Keyword: Wicomico River

Temporal:
Temporal_Keyword_Thesaurus: USGS Thesaurus
Temporal_Keyword: autumn
Temporal_Keyword: spring (season)
Temporal_Keyword: summer
Temporal_Keyword: winter

Access_Constraints: None
Use_Constraints: None
Point_of_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Renee Karrh
Contact_Position: Program Manager
Contact_Address:
Address_Type: mailing and physical
Address: 580 Taylor Avenue, C2
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State_or_Province: Maryland
Postal_Code: 21401
Country: USA
Contact_Voice_Telephone: 410.260.8630
Contact_Electronic_Mail_Address: renee.karrh_nospam_@maryland.gov[Remove _nospam_ for valid email address]
Browse_Graphic:
Browse_Graphic_File_Name: MDDNR Tributaries Monitoring Project 2017 Station Map [http://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/metadata/MdDNR_TribsStns2017.pdf]. If the map URL raises a file not found error, drill down from [http://eyesonthebay.net].
Browse_Graphic_File_Description: Map of fifty-nine year-2017 Maryland Chesapeake Bay Tributary Water Quality Monitoring Sites.
Browse_Graphic_File_Type: PDF
Data_Set_Credit:

Maryland Department of Natural Resources (MDDNR) Resource Assessment Service (RAS) staff collected the majority of the samples and processed the data. The Nutrient Analytical Services Laboratory (NASL) at the University of Maryland Center for Environmental Science Chesapeake Biological Laboratory analyzed chlorophyll, nutrient and suspended solids samples. The Maryland Department of Health and Mental Hygiene (DHMH) analyzed biological oxygen demand, turbidity and alkalinity samples for Potomac River sites.

The project was made possible with funding provided by The State of Maryland.

Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report:
QUALITY ASSURANCE/QUALITY CONTROL

Maryland Department of Natural Resources followed specific procedures to ensure that the Tributary component of the Chesapeake Bay Water Quality Monitoring Program design was properly implemented and managed with sufficient accuracy, precision and detection limits. Accuracy (closeness to the true value) of collected data was controlled and assured by proper use, calibration and maintenance of both field and laboratory equipment for the measurement of physical and chemical parameters.

The procedures used to control and assure the accuracy of field measurements involved the calibration of field instruments, the verification of calibrations, and equipment maintenance. Most of the details of how data acquired with YSI sondes and Hydrolab sondes were quality assured and quality controlled are described in the process description elements in the Lineage portion of this metadata record.

Daily quality control checks which included the running of blanks and standards were used to control and assure laboratory accuracy.

Accuracy of Chesapeake Biological Laboratory, Nutrient Analytical Services Laboratory (CBL NASL) results was also assessed through DNR's participation in the Chesapeake Bay Coordinated Split Sample Program (CSSP) a split sampling program in which five laboratories involved in Chesapeake Bay monitoring analyze the coordinated split samples. CSSP was established in June 1989 to establish a measure of comparability between sampling and analytical operations for water quality monitoring throughout the Chesapeake Bay and its tributaries. DNR followed the protocols in the Chesapeake Bay Coordinated Split Sample Program Implementation Guidelines (EPA 1991) and its revisions. Split samples were collected quarterly. Results were analyzed by appropriate statistical methods to determine if results differed significantly among labs. If a difference occurred, discussions began regarding techniques and potential methods changes to resolve discrepancies.

ADDITIONAL COMMENTS

January 2017: Ice 1/4th inch thick was observed at stations TF1.3 and TF1.4. Conductance readings were double checked at station WT5.1. Scoping is a term used to describe situations when strong currents and or winds make it difficult to maintain the water quality data sonde at a

depth long enough for readings to stabilize. Meter scoping was noted at station EE3.2. Pycnoclines did not exist at stations: EE3.2, EE3.1, EE2.1, EE1.1, LE2.3, ET4.2, ET5.2 and RET2.4 and the above pycnocline and below pycnocline samples were collected from 1/3 and 2/3 of total water column depths, respectively at each of the stations. The 0.5m and 1m water samples at station EE1.1 were collected at the same depth. Morning Showers preceding sampling at stations ET7.1 and WIW0141.

February 2017: Secchi disk depths were measured in the sun at stations ET7.1 and TF1.3. The 0.5m and 1m samples, at stations ET4.2 and LE1.4, were taken from water collected at the same depth. Station ET4.2 bottom and below pycnocline samples were collected at the same depth. Because pyncoclines were not extant at stations EE3.1, EE3.2, EE1.1, EE2.1, ET5.2 and LE2.3, above pycnocline and below pycnocline samples were collected from 1/3 and 2/3 of total water column depths, respectively at each station. Rain preceded sampling at station EE2.2.

March 2017: Flowing ice sheets were noted during sampling at station ET4.1. Secchi disk measurements at stations TF1.3 and WIW0001 were greater than the station total depths. Due to absence of pycnoclines at stations EE3.1, EE3.2, LE2.3 and RET2.4, at each station, above pycnocline and below pycnocline samples were collected from 1/3 and 2/3 of total water column depths, respectively.

April 2017: Station ET3.1 specific conductance at 3m was double-checked. Station WIW0141 Secchi disk depth measurement was greater than the total station depth. There were no pycnoclines at stations EE3.1, ET5.2, and LE2.3 and above pycnocline and below pycnocline samples were collected from 1/3 and 2/3 of total water column depths, respectively, at each station.

May 2017: Station LE2.2 bottom data sonde readings were double checked. No pycnoclines were extant at stations EE2.1, EE3.1, EE3.2, ET5.2 and LE2.3, therefore, at each station, above pycnocline and below pycnocline samples were collected from 1/3 and 2/3 of total water column depths, respectively.

June 2017: Meter scoping, below 8m, was noted at station LE2.3. Hydrogen sulfide odors were observed at in bottom sample waters at stations EE2.2, LE2.3 and WT8.1. Lack of pycnoclines at stations EE2.1, EE3.1, EE3.2 and ET5.2 necessitated collection of above pycnocline and below pycnocline samples from 1/3 and 2/3 of total water column depths, respectively, at each station.

July 2017: At stations EE1.1 and ET4.2 bottom and below pycnocline samples were obtained from water collected at the same depth. Due to absence of pycnoclines at stations EE2.1, EE3.1, EE3.2 and ET5.2, at each station, above pycnocline and below pycnocline samples were collected from 1/3 and 2/3 of total water column depths, respectively.

August 2017: Meter scoping was noted at station LE2.3.

September 2017: The LE2.3 bottom and below pycnocline samples were collected using different bottles.

October 2017: The bottom dissolved oxygen at station WT6.1 was verified. Field log notes for stations MAT0078 and PIS0033 observed that the site water appeared stagnant. Pycnoclines were not extant at stations EE1.1, EE2.1, EE3.1, EE3.2, ET4.2, ET5.2, LE2.3, RET2.4 and WT5.1. Therefore, the above pycnocline and below pycnocline samples were collected from 1/3 and 2/3 of total water column depths, respectively, at each station.

November 2017: Station LE1.4 0.5m and 1.0m samples were collected at the same depth. Rain, during the night preceding sampling, was noted on field log sheets for stations: LE1.2, and LE2.3. The above pycnocline and below pycnocline samples were collected from 1/3 and 2/3 of total water column depths, due to no pycnocline at stations: EE1.1, EE2.1, EE3.1, ET4.2 and RET2.4.

December 2017: Station WT6.1 water column sonde-readings were checked twice. Due to absence of pycnoclines at stations EE1.1, EE2.1, EE3.2, EE3.2, ET5.2, LE2.2, LE2.3 and RET2.4, at each station, above pycnocline and below pycnocline samples were collected from 1/3 and 2/3 of total water column depths, respectively.

Logical_Consistency_Report:

Due to funding constraints, the number of sites sampled was reduced by one in 2017. Tributary water quality monitoring project sampling at station XHH4742 ceased in January 2017.

January 2017: Station TF1.5 was sampled 1000 feet downstream from the normal site, due to ice.

February 2017: Samples at station ET7.1 were taken from the parked ferry.

March 2017: Station TF1.3 sampling was conducted from the pier.

May 2017: Station WIW0141 samples were collected from the ferry.

June 2017: Station TF1.3 samples were collected from the fishing pier.

July 2017: Only water column readings were taken at station LE2.3. Due to severe storms and primary research platform steering failure, The Patuxent boat survey was conducted using RV Fishhawk.

August 2017: Samples at station TF1.3 were collected below the bridge.

September 2017: Low tidal conditions rendered Station TF1.5 inaccessible and samples were not collected at the site.

November 2017: Station WIW0141 samples were collected from the ferry.

There were no known issues during sampling conducted during April, October and December 2017.

Completeness_Report:

Biological Oxygen Demand, Turbidity and Alkalinity samples are collected at a subset of Potomac River Tributaries project stations: MAT0016, MAT0078, PIS0033, RET2.4, RET2.2, RET2.1, TF2.4, TF2.3, TF2.2, TF2.1 and XFB1986. When the Monday following Biological Oxygen Demand sample collection was a holiday, samples were not collected.

January 2017: LI-COR was not measured at station: CB5.1W due to dangerous conditions. At station TF1.5 the routinely-collected station TF1.5 above pycnocline and below pycnocline water samples were not collected. Station EE3.3 is not sampled in January.

February 2017: LI-COR was not measured at stations: CB5.1W and LE1.4 due to rough conditions. Station EE3.3 is not sampled in January. Total station depth was not recorded at station ET7.1. Station WIW0141 was not sampled due to high winds and dangerous conditions. Secchi disk depth was not measured at station LE2.2.

March 2017: Samples were not collected at Station ET1.1 due to rough conditions. Station LE2.3 was not sampled. Station TF1.5 was not sampled due to extreme low tide from the high winds. Secchi disk depths were not measured at stations WT6.1, WT7.1, WT8.1, WT8.2 and WT8.3. LI-COR was not measured at station LE1.4 due to a dangerous sea state. LI-COR readings were not taken at stations: LE1.1, LE1.2, LE1.3, RET1.1, TF1.7 and TF1.6 due equipment issues. Total dissolved nitrogen sample tube 79 broke during sampling operations at station WT6.1.

May 2017: Total depth was not recorded at station WIW0141.

June 2017: Instrument failure precluded LI-COR measurements at stations: LE1.1, LE1.2, LE1.3, RET1.1, TF1.5, TF1.6 and TF1.7. No bottom sample was collected at station ET10.1 because the alpha bottle line was too short.

July 2017: Station LE2.3 was not sampled 10-Jul-2017 due to rough conditions. When station LE2.3 was re-occupied 17-Jul-2017, only water column readings were taken. No water samples were collected at station LE2.3 and it was too rough for LI-COR sampling. Total depth was not recorded when station WIW0141 was sampled. Secchi disk depth was not recorded at station LE2.1.

August 2017: Air temperature was not measured 14-Aug-2017 at stations TF1.0, TF1.2, TF1.3, TF1.4 and WXT0001 due to a broken thermometer. Total depth was not measured at station TF1.3. Station LE2.3 is routinely sampled on mainstem surveys but the station was not sampled during the second mainstem survey 30-Aug-2017.

September 2017: The air temperature value was not recorded at station TF1.2. Percentage cloud cover was not logged at station TF1.3.

October 2017: An extreme low tide precluded sample collection at station TF1.5. Secchi disk depth and total station depth were not recorded at station TF1.3. The 4.5 meter pycnocline break at station LE2.2 was missed. Total depth at station WIW0141 was not recorded.

November 2017: LI-COR readings were not measured at stations LE1.2, LE1.3 and LE1.4 due to rough conditions. Station total depth was not recorded at station WIW0141.

December 2017: Secchi disk depth was not measured at station LE2.3.

There were no known completeness issues in April 2017.

Lineage:
Process_Step:
Process_Description:
SONDE CALIBRATION and POST-CALIBRATION

The Yellow Springs Instrument (YSI) data sondes and HydroLab multi-parameter sondes were maintained and calibrated before and after each cruise in accordance with manufacturer's recommendations. During 2017, YSI series 6820 V2, Hydrolab series 4A and Hydrolab series 5 sondes were deployed. Field sheet dissolved oxygen method and equipment-set unit number values were used to track sondes used for station water quality measurements.

SONDE PROFILE SAMPLING PROTOCOLS:

A profile of temperature, specific conductance, dissolved oxygen, and pH was obtained from the water column at 0.5m, 1.0m, 2.0m and 3.0m depth intervals below the surface. Thereafter readings were taken at 2.0m intervals and at the bottom. Tributary bottom equals total depth minus one meter (not rounded). If the change in dissolved oxygen exceeded 1.0 mg/L or if the change in specific conductance equaled or exceeded 1,000 micromhos/cm over any 2.0m interval, readings were taken at 1.0m intervals between these two readings. For total depths less than or equal to 10.0m, readings were taken at 1.0m intervals.

GRAB SAMPLING DEPTH PROTOCOLS:

At stations where two depths were sampled, collections were taken at 0.5m below the surface, and 1.0m above the bottom. If the station total depth was equal to 1.5m, the bottom sample was also collected at 0.5m. Great caution was exercised when taking bottom samples; if the bottom was disturbed and bottom sediments appeared to have been included, the sample was dumped out and collected after the sediments had settled. Alternately, the sample was collected slightly higher in the water column and the new bottom sample depth was noted.

At stations where 4 depths were sampled and a pycnocline existed, collections were taken at 0.5m below the surface, 1.5m above the upper boundary of the pycnocline, 1.5 m below the lower boundary of the pycnocline, and 1 m above the bottom.

At stations where 4 depths were sampled and there was no discernable pycnocline, samples were taken at 0.5m below the surface, at the closest profile depth one third the distance from the surface to the bottom, at the closest profile depth two thirds the distance from the surface to the bottom, and 1 m above the bottom.

Note that six Patuxent River stations, at which samples are also collected from four depths, use a different fixed-depth protocol for sampling mid-water depths. At station TF1.5 and RET1.1, samples are collected at 3m and 6m. Mid-water-column samples at stations LE1.1 and LE1.4 are collected at 3 m and 9m. Samples are collected at 3m and 12m depths at stations LE1.2 and LE1.3.

LIGHT ATTENUATION SENSOR CALIBRATION

Once every two years, per LI-COR® Bioscientific recommendations, the ambient and underwater sensors (used to measure Photosynthetic Active Radiation (PAR)) were factory re-calibrated. Upon return from the factory, updated, sensor specific, correction values were entered into the displays before the equipment was deployed. A LI-COR® equipment tracking maintenance log was used to provide a permanent record of all re-calibrations, battery replacements, lowering-line checks and equipment repairs.

LIGHT ATTENUATION SAMPLING PROTOCOLS

Vertical profiles of light penetration were obtained. An initial reading with the underwater sensor just below the surface of the water (0.1 m) was followed by measurements at either 0.25-m or 0.50-m intervals until a value less than ten percent (10 %) of the surface reading (0.1 m) was attained.

SECCHI DEPTH:

Water transparency was determined, to the nearest 0.1m using a 20-cm standard Secchi disk lowered into the water column with a calibrated rope. Observations were made on the shady side of the sampling location.

Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Kristen Heyer
Contact_Position: Manager, Water Quality Monitoring
Contact_Address:
Address_Type: mailing and physical
Address: 1919 Lincoln Drive
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401

Country: USA
Contact_Voice_Telephone: 410.263.3369
Contact_Electronic_Mail_Address: kristen.heyer_nospam_@maryland.gov[Remove _nospam_ for valid email address]

Process_Step:
Process_Description:
LABORATORY ANALYSIS - CBL

University of Maryland Center for Environmental Science (UMCES) Chesapeake Biological Laboratory (CBL), Nutrient Analytical Services Laboratory (NASL) analyzed total dissolved nitrogen, particulate nitrogen, nitrite, nitrite + nitrate, ammonium, total dissolved phosphorus, particulate phosphorus, orthophosphate, dissolved organic carbon, particulate carbon, total suspended solids, and volatile suspended solids.

The NASL began performing chlorophyll analyses in the year 2009. Prior to 2009, chlorophyll analyses were performed by the Maryland Department of Health and Mental Hygiene.

Further information about laboratory analytical procedures may be obtained from the "Process_Contact".
Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Jerry Frank
Contact_Position: Manager of Analytical Services
Contact_Address:
Address_Type: mailing and physical
Address: Chesapeake Biological Laboratory, Center for Environmental and Estuarine Studies, The University of Maryland System, 146 Williams St; P.O. Box 38
City: Solomons
State_or_Province: Maryland
Postal_Code: 20688
Country: USA
Contact_Voice_Telephone: 410.326.7252
Contact_Electronic_Mail_Address: frank _nospam_@umces.edu[Remove _nospam_ for valid email address]

Process_Step:
Process_Description:
VERIFICATION AND DATA MANAGEMENT:

Each month DNR Tawes Office and Field Office personnel conducted data QA/QC procedures. All of the water quality calibration "grab" sample data were plotted. Outliers and anomalous values were thoroughly researched. Staff compared unusual values to historic

values from the site and values from nearby sites. Weather events were considered, event logs were reviewed and CBL analytical laboratory staff and DNR field staff members were consulted regarding possible legitimate causes for outlying values. In cases where values were not considered to be legitimate, they were masked from the published dataset with the approval of the field staff and the Quality Assurance Officer.

Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Diana Domotor
Contact_Position: Data Analyst
Contact_Address:
Address_Type: mailing and physical
Address: 580 Taylor Ave., D2
City: Annapolis
State_or_Province: MD
Postal_Code: 21401
Contact_Voice_Telephone: 410.260.8630
Contact_Electronic_Mail_Address: diana.domotor_nospam_@maryland.gov[Remove _nospam_ for valid email address]

Process_Step:
Process_Description:
DHMH ECDL LABORATORY ANALYSIS

Maryland Department of Health and Mental Hygiene, Environmental Chemistry Division Laboratory, Baltimore, MD, analyzed biological oxygen demand, total alkalinity and turbidity for Potomac River stations.

Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Shahla Ameli
Contact_Position: Laboratory Scientist Supervisor
Contact_Address:
Address_Type: mailing and physical
Address: 1770 Ashland Ave.
City: Baltimore
State_or_Province: Maryland
Postal_Code: 21205
Country: USA
Contact_Voice_Telephone: 433.681.3855
Contact_Electronic_Mail_Address: shahla.ameli_nospam_@maryland.gov [Remove _nospam_ for valid email address]

Spatial_Data_Organization_Information:
Indirect_Spatial_Reference: Back River, Big Annemessex River, Bohemia River, Bush River, C&D Canal, Chesapeake Bay, Chester River, Choptank River, Corsica River, Eastern Bay, Elk River, Fishing Bay, Gunpowder River, Little Choptank River, Magothy River, Manokin River, Middle River, Nanticoke River, Northeast River, Patapsco River, Potomac River, Patuxent River, Pocomoke River, Pocomoke Sound, Rhode River, Sassafras River, Severn River, South River, Tangier Sound, West River and Wicomico River.
Direct_Spatial_Reference_Method: Point

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Geographic:
Latitude_Resolution: 0.0001
Longitude_Resolution: 0.0001
Geographic_Coordinate_Units: Decimal degrees
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1983
Ellipsoid_Name: Geodetic Reference System 80
Semi-major_Axis: 6378137
Denominator_of_Flattening_Ratio: 298.257

Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
This metadata record is a description of the Maryland Department of Natural Resources Chesapeake Bay Water Quality Monitoring Program - Chemical and Physical Properties Component Database for the Maryland Chesapeake Bay Tributaries. Project data are an aggregation of data collected at fifty-nine Maryland tributary stations during 2017.

The data are contained in five related entities (tables): Light_Attenuation_Data, Monitoring_Event_Data, Optical_Density_Data Station_Information, and Water_Quality_Data. Each table contains attributes (fields).

The entity Light_Attenuation_Data is comprised of the attributes: Agency, BiasPC, Cruise, Depth, Details, EventId, Lab, Latitude, Layer, Longitude, LowerPycnocline, MeasureValue, Method, MonitoringStation, Parameter, PrecisionPC, Problem, Program, Project, Qualifier, SampleDate, SampleReplicateType, SampleTime, SampleType, Source, Station, TotalDepth, Unit and UpperPycnocline.

The entity Monitoring_Event_Data is comprised of the attributes: Agency, CloudCover, Cruise, Details, EventId, FieldActivityEventType, FieldActivityRemark, FlowStage, GaugeHeight, Latitude, Longitude, LowerPycnocline, MonitoringStation, PrecipType, Pressure, Program, Project, SampleDate, SampleTime, Source, Station, TideStage, TotalDepth, UpperPycnocline, WaveHeight, WindDirection and WindSpeed.

The entity Optical_Density_Data is comprised of the attributes: Agency, BiasPC, Cruise, Depth, Details, EventId, Lab, Latitude, Layer, Longitude, LowerPycnocline, MeasureValue, Method, MonitoringStation, Parameter, PrecisionPC, Problem, Program, Project, Qualifier, SampleDate, SampleReplicateType, SampleTime, SampleType, Source, Station, TotalDepth, Unit and UpperPycnocline.

The entity Station_Information is comprised of the attributes: CBSeg2003, CBSeg2003Description, CBSegmentShed2009, CBSegmentShed2009Description, CountyCity, FallLine, FIPS, HUC12, HUC8, Latitude, LLDatum, Longitude, State, Station, StationDescription, USGSGage, UTMX, and UTMY.

The entity Water_Quality_Data is comprised of the attributes: Agency, BiasPC, Cruise, Depth, Details, EventId, Lab, Latitude, Layer, Longitude, LowerPycnocline, MeasureValue, Method, MonitoringStation, Parameter, PrecisionPC, Problem, Program, Project, Qualifier, SampleDate, SampleReplicateType, SampleTime, SampleType, Source, Station, TotalDepth, Unit and UpperPycnocline.

Entity_and_Attribute_Detail_Citation:
Water Quality Database - Database Design and Data Dictionary, Prepared For: U.S. Environmental Protection Agency, Region III, Chesapeake Bay Program Office, January 2004. [http://archive.chesapeakebay.net/pubs/cbwqdb2004_RB.PDF]. An updated version of the data dictionary is a Chesapeake Bay Program work in progress.

The Quality Assurance Project Plan for the Maryland Department of Natural Resources Chesapeake Bay Water Quality Monitoring Program - Chemical and Physical Properties Component for the period July 1, 2017 - June 30, 2018 [http://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/MdDNR_MTQAPP2017.pdf]

Distribution_Information:
Distributor:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Mike Mallonee
Contact_Position: Water Quality Database Manager
Contact_Address:
Address_Type: Mailing and Physical
Address: 410 Severn Avenue, Suite 109
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21403
Country: USA
Contact_Voice_Telephone: 410.267.5785
Contact_Electronic_Mail_Address: mmallone@_no_spam_chesapeakebay.net[Remove _nospam_ for valid email address]
Resource_Description: Downloadable data

Distribution_Liability: None of the Chesapeake Bay Program partners nor any of their employees, contractors, or subcontractors make any warranty, expressed or implied, nor assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or data contained within the web site. Reference to any specific commercial products, processes, or services or the use of any trade, firm, or corporation name is for the information and convenience of the public and does not constitute endorsement, recommendation or favoring by the Chesapeake Bay Program partners.

Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Format_Name: ASCII file, formatted for text attributes, declared format
Format_Information_Content: Light_Attenuation_Data, Monitoring_Event_Data, Optical_Density_Data, Station_Information and Water_Quality_Data.
File_Decompression_Technique: No compression applied
Transfer_Size: 11.4

Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name:
[http://www.chesapeakebay.net/data/downloads/cbp_water_quality_database_1984_present]
Access_Instructions: Data are available through the Chesapeake Bay Programs CIMS data hub. Select Water Quality Database (1984-Present). Access the data by following web site (see network resource name) instructions.
Fees: None

Metadata_Reference_Information:
Metadata_Date: 20180718
Metadata_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Ben Cole
Contact_Organization: Maryland Department of Natural Resources, Resource Assessment Service
Contact_Position: Natural Resource Biologist
Contact_Address:
Address_Type: Mailing and Physical
Address: 580 Taylor Avenue, D2
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401
Country: USA
Contact_Voice_Telephone: 410.260.8630

Contact_Electronic_Mail_Address: benjamin.cole_nospam_@maryland.gov [Remove _nospam_ for valid email address]
Metadata_Standard_Name: Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998