Maryland CORE/Trend Water Quality Monitoring Program – 2018

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Maryland Department of Natural Resources (MD DNR), Resource Assessment Service
Publication_Date: 20190501
Title: MD DNR 2018 CORE/Trend Water Quality Monitoring Project
Geospatial_Data_Presentation_Form: Spatial database
Online_Linkage:
[http://www.chesapeakebay.net/data/downloads/cbp_water_quality_database_1984_present]

Description:
Abstract: These are water quality monitoring data from a long-term fixed location monitoring study of stations located in the Chesapeake Bay and Ohio River watersheds. The data are collected from fifty-six stations for a time period beginning January 1986 and extending to the present. Fifty-five of the stations are in non-tidal waters. One station (XGG8251) is in tidal waters.

Purpose:
The Maryland Department of Natural Resources Section 106 Ambient Water Quality Monitoring Program (CORE\Trend) 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 concentrations in Maryland's waters.

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

Water quality data are 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 tributaries from the list of impaired waters.

Supplemental_Information:
Two reports contain information that should be considered when CORE/Trend data are used for data analysis. The reports are named: DAITS 043: Comparability of parameter estimates from whole water and filtered samples for MD Department of Health and Mental Hygiene data (June 2006, revised April 2009) and DAITS 046: Comparison of chlorophyll and pheophytin analyzed at DHMH and CBL (May 2009). Copies of the reports may be downloaded. [http://www.chesapeakebay.net/documents/Completed_DAITS_as_of_9-21-10.pdf].

Data users who desire very detailed information about Water Quality Monitoring data definition, sampling procedures and data processing are encouraged to refer to documents listed below. The documents may be obtained from The Chesapeake Bay Program Office.

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 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, 2018 - June 30, 2019 [http://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/MdDNR_MTQAPP2018.pdf].

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].

Methods and Quality Assurance for Chesapeake Bay Water Quality Monitoring Programs. Chesapeake Bay Program, May 2017, CBP/TRS-319-17 [https://www.chesapeakebay.net/documents/CBPMethodsManualMay2017.pdf].

Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 20180103
Ending_Date: 20181219
Currentness_Reference: Ground Condition
Status:
Progress: In Work
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: USGS Thesaurus
Theme_Keyword: hydrologic processes
Theme_Keyword: watershed management
Theme_Keyword: ecological processes
Theme:
Theme_Keyword_Thesaurus: Global Change Master Directory (GCMD). 2019. GCMD Keywords, Version 8.6. Greenbelt, MD: Earth Science Data and Information System, Earth

Science Projects Division, Goddard Space Flight Center (GSFC) National Aeronautics and Space Administration (NASA). URL (GCMD Keyword Forum Page): [https://wiki.earthdata.nasa.gov/display/gcmdkey]

Theme_Keyword: EARTH SCIENCE>BIOSPHERE>ECOLOGICAL DYNAMICS>ECOSYSTEM FUNCTIONS>NUTRIENT CYCLING

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

Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>WATER CHARACTERISTICS>BIOCHEMICAL OXYGEN DEMAND (BOD)

Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>WATER CHARACTERISTICS>CHLOROPHYLL CONCENTRATIONS

Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>WATER CHARACTERISTICS>CONDUCTIVITY

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Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>GASES>DISSOLVED OXYGEN

Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>NUTRIENTS>NITROGEN

Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>NUTRIENTS>NITROGEN COMPOUNDS

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Theme_Keyword: EARTH SCIENCE>OCEANS>SALINITY/DENSITY>PYCNOCLINE

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Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>SOLIDS>SUSPENDED SOLIDS

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Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>SURFACE WATER>SURFACE WATER PROCESSES/MEASUREMENTS>WATER DEPTH
Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>WATER CHARACTERISTICS>WATER TEMPERATURE

Place:
Place_Keyword_Thesaurus: User Defined Keyword List
Place_Keyword: Chesapeake Bay
Place_Keyword: Hydrologic Unit
Place_Keyword: Major Watershed/Basin
Place_Keyword: Subbasin
Place_Keyword: Tributary
Place:
Place_Keyword_Thesaurus: Common geographic areas
Place_Keyword: United States
Place_Keyword: Maryland
Place_Keyword: Allegany County
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Place_Keyword: Caroline County
Place_Keyword: Frederick County
Place_Keyword: Garrett County
Place_Keyword: Harford County
Place_Keyword: Howard County
Place_Keyword: Montgomery County
Place_Keyword: Prince George's County
Place_Keyword: Queen Anne's County
Place_Keyword: Washington County
Temporal:
Temporal_Keyword_Thesaurus: USGS Thesaurus
Temporal_Keyword: autumn
Temporal_Keyword: spring (season)
Temporal_Keyword: summer
Temporal_Keyword: winter
Access_Constraints: None
Use_Constraints: Acknowledgement of the MD Department of Natural Resources, Resource Assessment Service as a data source, in products developed from these data, would be appreciated. Please use the following citation: Maryland Department of Natural Resources, Resource Assessment Service. Eyes on the Bay. URL: [http://www.eyesonthebay.net].

Point_of_Contact:
Contact_Information:
Contact_Person_Primary:

Contact_Person: Scott Stranko
Contact_Position: Monitoring and Nontidal Assessment Director, Resource Assessment Service
Contact_Address:
Address_Type: Mailing and physical
Address: 580 Taylor Avenue, C-2
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State_or_Province: Maryland
Postal_Code: 21401
Contact_Voice_Telephone: 410.260.8603
Contact_Electronic_Mail_Address: scott.stranko_no_spam_@maryland.gov [remove _no_spam_ for valid email address]

Browse_Graphic:
Browse_Graphic_File_Name: MDDNR Core\Trend Monitoring Project 2018 Station Map: [http://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/metadata/MdDNR_2018_CORE_TrendStns.pdf]. If the map URL raises a file not found error, drill down from [http://eyesonthebay.net].
Browse_Graphic_File_Description: Fifty-six Maryland Department of Natural Resources CORE/Trend water quality monitoring stations.
Browse_Graphic_File_Type: PDF
Data_Set_Credit:
Survey and calibration data were collected by MD DNR Resource Assessment Service (RAS) Annapolis Field Office staff.

The Maryland Department of Health (MDH) analyzed samples for most of the CORE Trend sites.

The Nutrient Analytical Services Laboratory (NASL) at the University of MD Center for Environmental Science Chesapeake Biological Laboratory analyzed samples collected at stations: PIS0033, TF1.0 and XGG8251. NASL analyzed CORE\Trend station chlorophyll a, phaeophytin, chloride and sulfate samples.

The USGS Kentucky Water Science Center Sediment Laboratory analyzed sediment samples collected at stations: ANT0366, CAC0148, CON0180, DER0015, GEO0009, GUN0258, GWN0115, NPA0165, PXT0972, TOW0030 and WIL0013. Sediment samples are also collected at the stations during sampling operations of the Storm and Base-flow projects which are components of Maryland's non-tidal network water quality monitoring program.

The project was made possible with funding provided by the State of Maryland and the United States Environmental Protection Agency Chesapeake Bay Program.

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) and Maryland Department of Health and Mental Hygiene (DHMH) 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. The Chesapeake Bay Program Data Integrity Workgroup (formerly AMQAW) oversees the CSSP. 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.

January 2018: The shorelines and most of the river were frozen when stations POT1595 and POT1596 samples were collected. Shoreline ice was also noted in field data sheets for stations MON0020, MON0155, POT2766, TOW0030 and NBP0689. Large chunks of ice were floating in the river and piled up along the edges at station POT2386. Near station DER0015, possible effects of flowing ice on the gage and discharge were observed. Ice was forming in the river when station WIL0013 samples were collected. The waters at stations ANA0082, PXT0972, MON0269 and XGG8251 were described as 100 percent, 99 percent, 90 percent and 50 percent ice covered, respectively. Heavy rains during the weekend prior to sampling were noted on field sheets for stations WIL0013, POT2766, BDK0000 and NBP0103. Rain fell preceding sampling at stations CON0180 and CON0005. Didymo was not visible at station SAV0000. When station ANT0366 was sampled, presence of road salt was noted both on the bridge and along the road. The water level was high at station NBP0534 due to release of water from the dam upstream. The gage and the discharge at station PAT1076 were frozen. The discharges at stations GWN0115, NPA0165, PAT0285 and JON0184 were frozen.

February 2018: Readings at station PAT0176 were double checked using a second meter. Sensor post-calibration checks for pH 10 were not conducted on the water quality sonde used for sampling at stations DER0015, CB1.0, GUN0476 and GUN0258. Didymo was not seen at station SAV0000. There was snow on the ground at stations MON0155, CAC0031 and POT1596. The MON0020 Bridge was icy. The water at station BPC0035 was very brown. Snow and freezing rain occurred the day before sampling at stations BPC0035, MON0528, MON0269, CAC0148, POT1830, and ANT0044. Heavy rains and snowmelt occurred the weekend prior to sampling at stations WIL0013, BDK0000, POT2766 and TOW0030. Rainfall and snowmelt during the weekend preceding sample collection was noted at stations NBP0103, NBP0023 and NBP0326. The station NBP0326 water level was described as very high.

March 2018: The station WIL0013 pH results were double checked using a second meter. Braddock Run water was very clear at station BDK0000. Didymo was not seen at station SAV0000. Pure sewage was observed discharging from the outflow pipe at station GEO0009 and the effluent was reported to the Maryland Department of the Environment.

April 2018: Construction at station PXT0809 was ongoing. There were scattered showers the day before sampling operations at station TF1.0. A cold front preceded sample collection at station RCM0111. Rainfall occurred the night before the following sites were sampled: DER0015, CB1.0, GUN0476, GUN0258, MON0155, CAC0031, POT1596, POT1595, MON0020, POT1147, POT1472 and SEN0008. High river water levels were observed at stations POT1595, MON0528, MON0020, MON0269, POT1471 and POT1472. Rain showers occurred prior to sample collections at stations MON0528, MON0269, CAC0148, POT1830 and NBP0461. Heavy rain fell the Sunday preceding sampling at stations ANT0203, ANT0366, CON0180, CON0005 and NBP0023. High river flows were noted at stations POT1830 and ANT0044. The water levels at stations ANT0203, CON0005 and NBP0023 were very high. Similarly, the water level at station ANT0366 was high. Waters at stations MON0269, POT1830 and ANT0203 were muddy. The trail leading to station POT2386 was flooded and large debris floated in the river.

May 2018: Descriptions of heavy thunderstorms during the preceding few days were noted on field data sheets for stations WIL0013, BDK0000, NBP0103, POT2766, TOW0030, SAV0000, GEO0009, NBP0461 and NBP0326. The water level at station POT2386 was high and the river was murky. Heavy rain over the prior few days was noted at station NBP0023. Rain fell during the few days before station NBP0689 was sampled. A hydrograph of station NBP0534 was described as rising due to rain over the past few days.

June 2018: The Patapsco river, at stations PAT0176 and PAT0285, was high and muddy. The water level was high at station GUN0125. Scattered showers fell during sampling at station GUN0475. Heavy rain, over the weekend preceding sampling, was noted at stations MON0155, CAC0031 and POT1596. The ramps at stations MON0155 and POT1596 were flooded. There was flooding at station POT1471. The river was flowing over the bank at station TF1.0. Heavy rains during the night prior to sampling were noted at stations WIL0013, NBP0103 and NBP0023. Extremely high water levels were noted at stations WIL0013 and NBP0103 and a

very high water level was logged at station POT2386. There was a large buildup of debris and trash on the upstream side of the CON0005 Bridge.

July 2018: Station POT0159 sampling was conducted from Point of Rocks Bridge due to bridge construction at the normal site. Field notes for station CON0005 recorded the presence of debris under the bridge and construction on the upstream side of the bridge. A downpour occurred prior to sampling operations at station NBP0103. Station POT2766 samples were collected from the beach upstream of the bridge. Evidence of the influence of Braddock Run was noted when station WIL0013 was sampled. Station YOU0925 field notes stated rain in McHenry and dry in Friendsville. Orange colored water was noted at station GEO0009. Didymo was present at station SAV0000.

August 2018: Rain fell the night prior to sampling at stations ANT0044, BPC0035, CAC0148, MON0269, MON0528, POT1830, CB1.0, DER0015, GUN0258 and GUN0476. Station MON0528 field sheet notes observed that that the river flow rate on 22-Jul-2018 was 10,900 cubic feet per second. Station CB1.0 notes stated that the rate of water flow over Conowingo Dam was 400,000 cubic feet per second on 26-Jul-2018. Samples for station POT1471 were collected from the ramp. The creek was very muddy when station DER0015 samples were collected. Heavy rain fell during the week prior to sampling at station PAT0176. The water had a high level and a dark color when station ANT0203 was sampled. Debris blocked more than half of the CON0005 bridge. Storms occurred on the Tuesday prior to station POT2386 sampling and the water was dark. Heavy rain occurred in the area of station NBP0103. Downpours prior to sampling were noted at stations WIL0013 and YOU0925. Rainfall preceded sampling at station POT2766 and samples were collected upstream of the bridge. The water level at station GEO0009 was high. Heavy rain fell the night before samples were collected at stations GEO0009, NBP0326, NBP0461 and NBP0534. Heavy rains fell the day before, overnight and during the morning preceding, sampling at stations NBP0689. SAV0000 and YOU1139. Algae (not Didymo) covered the rocks at station SAV0000.

September 2018: The Susquehanna River rose one foot after samples were collected at station CB1.0. There appeared to be a flood tide when samples were collected at station ANA0082. Station PXT0809 dissolved oxygen readings were double checked with meter 5. The arrival of Hurricane Florence was remarked in sampling notes 17-Sep-2018 when stations ANT0203, ANT0366, CON0005, CON0180 and POT2386 were surveyed. Hurricane Florence was noted in 18-Sep-2018 in comments for stations BDK0000, CAS0479, NBP0023, NBP0103, POT2766, TOW0030, WIL0013 and YOU0925. 19-Sep-2018 sample collections at stations GEO0009, LYO0004, NBP0326, NBP0461, NBP0534, NBP0689, SAV0000 and YOU1139 also noted Hurricane Florence. Debris covered three quarters of the creek when station CON0005 was sampled. Rain poured when station POT2386 was sampled. The station NBP0023 bridge was submerged and samples were collected from the riverbank. When station POT2766 was sampled, the water level was bank top and samples were collected from the bank upstream.

October 2018: A station PAT0107 field data sheet comment stated that the Bloede Dam had been breached upstream since September 2018 samples were collected. Water levels were high at stations CB1.0, MON0020, MON0155, POT1471, POT1472, POT1595 and POT1596.

Similarly, the waters at station GUN0258 were characterized as elevated. The pre-existing large island of debris at station NBP0023 had washed away.

November 2018: The water level at station PIS0033 was very high. The river was high and muddy at stations ANT0203, ANT0044, CAC0031, SEN0008, MON0020, MON0155, MON0269, POT1472 and POT1595. The water at station POT1472 was described as high and muddy but not as dark as the water on the Maryland side at station POT1471. The banks at station ET5.0 were flooded. Station CB1.0 samples were collected 50 feet downstream of the normal location. Debris piled up along 2/3 the length of the station CON0005 bridge. The river was high at station CON0180 and there was flooding adjacent to the USGS gage. The water level was up at station MON0528 and high at station CAC0148. The river at station POT1830 was at flood stage. Station MON0155 samples were collected at the boat launch. Rain fell during the night prior to sampling at stations NBP0023, NBP0103, NBP0326, NBP0461 and TOW0030. Station TOW0030 sampling operations were conducting during the peak of flow. Rain fell during the early morning of the day before samples were collected at stations NBP0534, NBP0689 and SAV0000. Rain fell during the day and the night before sampling at station WIL0013. The United States Geological Survey listed turbidity as 54 NTU when samples were collected at station PAT0176.

December 2018: Station TF1.0 pH sensor post-calibration results fell outside of the acceptable range. The Secchi disk measurement at station XGG8521 exceeded the station total water depth and salinity results were double-checked using a second sonde. Station POT1472 conductivities were double checked using a second sonde. Rain fell the weekend prior to sample collection at stations BDK0000, GEO0009, LYO0004, NBP0023, NBP0326, NBP0461, NBP0689, POT2766, SAV0000, TOW0030 and WIL0013. A large pile of debris blocked three quarters of the station CON0005 bridge. The water level at station NBP0534 reached the top of the river bank. The bridge at station NBP0023 was flooded and samples were collected from the bank on the Maryland side. Station NBP0534 conductivity results were not considered reliable, possibly due to inadequate submersion of the sensor.

Logical_Consistency_Report:

January 2018: It was necessary to collect station CAC0031 samples from the bridge due to ninety-five percent ice coverage of the river. The station POT1596 shoreline was frozen solid and the samples were collected under the bridge. Stations POT1595 and GWN0115 were sampled 100 feet downstream due to ice. The POT1471 samples were collected at the ramp because the ferry was closed. Station NPA0165 samples were collected from the Congoleum Road Bridge. The station POT2766 sampling operations were conducted from the ramp due to shoreline ice. Station CB1.0 samples were collected at the observation platform. Samples at station NBP0326 were collected from the streambank upstream of the bridge.

February 2018: Station POT1471 samples were collected from the ferry ramp. Sampling for stations POT2766 and NBP0326 were conducted upstream of the respective bridges.

March 2018: Station NBP0326 samples were collected from the bank upstream of the bridge.

April 2018: Station CB1.0 samples were collected at the dam. Construction on the CJB0005 lower bridge precluded sampling at usual location and samples were collected from the upper bridge. Flooding at station CON0180 necessitated sampling from the bridge downstream of the gage. Stations POT2766 and NBP0326 samples were collected from the banks upstream of the respective bridges.

May 2018: Station CB1.0 samples were collected at the ramp. As the normal station POT2386 sampling location was submerged and the bank unstable, collections were made from the ramp. The station NBP0326 sampling operations were conducted from the bridge.

June 2018: Samples for station ANT0044 were collected from the bridge at non-tidal network station ANT0047. Station CAC0031 samples were collected from the bank. The ramp at station POT1596 was flooded and collections were made downstream of the ramp. The POT1471 ferry was closed due to flooding and samples were collected from the shore. Station NBP0023 sampling was conducted from the riverbank because the bridge was underwater. Samples for station POT2766 were collected from the bank at the bridge. The normal station POT2386 streambank sampling location was unstable due to very high water levels and samples were collected nearby.

December 2018: Station MON0020 was not accessible and samples were collected 2.1 miles upstream at the Park Mill boat ramp. There was an oily sheen on station PXT0809 water. A station PAT0176 remark stated that Bloede dam removal was complete. (Bloede dam removal began prior to 11-Sep-2018).

There were no known logical consistency issues during July, August, September, October and November.

Completeness_Report:

Biological Oxygen Demand samples are collected at a subset of CORE\Trend project stations: ANA0082, ANT0044, BPC0035, CAC0031, CAC0148, CJB0005, MON0020, MON0155, MON0269, MON0528, PIS0033, POT1184, POT1471, POT1472, POT1595, POT1596, POT1830, RCM0111 and SEN0008. When the Monday following Biological Oxygen Demand sample collection was a holiday, samples were not collected.

Chloride and sulfate sample are collected at the following subset of CORE\Trend stations: GEO0009, NBP0023, NBP0103, NBP0461, NBP0534 and TOW0030.

February 2018: Neither Secchi disk depth nor total depth was recorded at station XGG8521.

May 2018: Secchi disk depth was not recorded at station XGG8251.

June 2018: Station JON0184 was not sampled due to the closure of the access road. Heavy flooding precluded reaching the station POT1472 sampling location. Station POT1595 was not sampled due to lack of access. The canal was closed and the ramp was too muddy.

July 2018: Dissolved oxygen results were not recorded when station BCP0035 samples were collected.

October 2018: Air temperatures readings at stations CB1.0, DER0015, GUN0258 and GUN0476 were not recorded. When station MON0528 was sampled, USGS discharge results were unavailable due to an adjusted gage curve.

November 2018: Only one station PAT0258 particulate phosphate sample pad was submitted to the lab for analysis.

December 2018: Station MON0020 was not accessible due to construction and was not sampled. Station NBP0103was not sampled because the Federal government closed the area due to emergency conditions. Station MON0020 was not accessible due to construction and was not sampled.

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

HydroLab and YSI sondes were maintained and calibrated before and after each survey in accordance with manufacturer's recommendations.

WATER COLUMN SAMPLING PROTOCOLS:

Measurements of temperature, specific conductance, dissolved oxygen and pH were obtained from YSI or Hydrolab water quality sensors immersed just below the water surface.

GRAB SAMPLING DEPTH PROTOCOLS:

Grab samples of water for laboratory analysis were collected at stations at a depth of 0.0m.
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:
CORE/Trend DHMH ECDL LABORATORY ANALYSIS

Maryland Department of Health, Environmental Chemistry Division Laboratory, Baltimore, MD, analyzed total dissolved nitrogen, particulate nitrogen, nitrite, nitrite + nitrate, ammonium, total dissolved phosphorus, particulate phosphorus, orthophosphate, dissolved organic carbon, particulate carbon, total suspended solids, biological oxygen demand, total alkalinity and turbidity for CORE/Trend 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]

Process_Step:
Process_Description:
CORE/Trend NASL LABORATORY ANALYSIS

University of MD Center for Environmental Science Chesapeake Biological Laboratory (CBL), Nutrient Analytical Services Laboratory (NASL), Solomons, MD, analyzed chlorophyll, Phaeophytin, sulfate and chloride for CORE/Trend stations.

NASL began performing chlorophyll analyses in the year 2009. Prior to 2009, chlorophyll analyses were performed by the Maryland Department of Health (DMH) laboratory in Baltimore, MD. Sulfate analyses were performed by DHMH Western Maryland Regional Laboratory until March 2011, no sulfate samples were analyzed in February 2011 due to a reduction in staff. NASL began performing sulfate analyses in April 2011 and chloride analyses in May 2011.
Process_Date: Unknown
Process_Contact:
Contact_Information:

Contact_Person_Primary:
Contact_Person: Jerry Frank
Contact_Position: Manager Nutrient Analytical Services Laboratory
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: 443.681.3855
Contact_Electronic_Mail_Address: frank _nospam_@umces.edu[Remove _nospam_ for valid email address]

Process_Step:
Process_Description:
CORE/Trend USGS-KDSL ANALYSIS

Kentucky Water Science Center Sediment Laboratory, 9818 Bluegrass Parkway, Louisville, KY analyzed sediment samples collected at CORE/Trend stations. Sediment samples are co-sampled under the non-tidal network program.

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: Aimee Downs
Contact_Position: Physical Scientist
Contact_Address:
Address_Type: mailing and physical
Address: USGS Kentucky Water Science Center, Sediment Lab, 9818 Bluegrass Parkway
City: Louisville
State_or_Province: Kentucky
Postal_Code: 40299
Country: USA
Contact_Voice_Telephone: 502.493.1944
Contact_Electronic_Mail_Address: acdowns _nospam_@usgs.gov[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 DMH 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
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]

Spatial_Data_Organization_Information:
Indirect_Spatial_Reference: Anacostia River, Antietam Creek, Big Pipe Creek, Braddock Run, Cabin John Branch, Catoctin Creek, Chester River, Choptank River, Conococheague Creek, Deer Creek, Georges Creek, Gunpowder River, Monocacy River, North Branch Patapsco River, North Branch Potomac River, Patapsco River, Patuxent River, Piscataway Creek, Potomac River, Rock Creek, Savage River, Seneca Creek, Susquehanna River, Town Creek, Wills Creek
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 Maryland CORE Trend project stations during 2018.

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

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 is comprised of the attributes: Agency, BiasPC, Cruise, Depth, Details, EventId, HUC8, Lab, Latitude, Layer, Longitude, LowerPycnocline, MeasureValue, Method, Parameter, PrecisionPC, Problem, Program, Project, Qualifier, SampleDate, SampleReplicateType, SampleTime, SampleReplicateType, SampleType, Source, Station, 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, SampleReplicateType, 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, 2018 - June 30, 2019. [http://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/MdDNR_MTQAPP2018.pdf]

Methods and Quality Assurance for Chesapeake Bay Water Quality Monitoring Programs. Chesapeake Bay Program, May 2017, CBP/TRS-319-17 [https://www.chesapeakebay.net/documents/CBPMethodsManualMay2017.pdf].

An updated data dictionary is a Chesapeake Bay Program work in progress.

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: 71403
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 Text File
Format_Information_Content: Station Information data, Monitoring Event data, and Water Quality data
File_Decompression_Technique: No compression applied
Transfer_Size: 3.8
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 instructions on the web site (see Network Resource Name).
Fees: None

Metadata_Reference_Information:
Metadata_Date: 20191008
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: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998