Maryland CORE/Trend Water Quality Monitoring Program – 2022

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Maryland Department of Natural Resources (MD DNR), Resource Assessment Service.
Publication_Date: 20230517
Title: MD DNR 2022 CORE/Trend Water Quality Monitoring Project
Geospatial_Data_Presentation_Form: Spatial database
Online_Linkage:
[https://www.chesapeakebay.net/what/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-four stations for a time period beginning January 1986 and extending to the present. Fifty-three 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:
CORE/Trend stations GEO0009, WIL0013, TOW0030, ANT0366, CAC0148, PXT0972, NPA0165, GWN0115, GUN0258, and DER0015 are also used as sampling locations for the Maryland Non-Tidal Network Monitoring Program. The Non-Tidal Network Monitoring Program collects baseflow and stormflow samples to aid in the determination of nutrient and sediment loads to the Chesapeake Bay. Details of the Non-Tidal Network Monitoring Program

can be found here:
[https://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/NTN_QAPP1920.pdf]

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. [https://d18lev1ok5leia.cloudfront.net/chesapeakebay/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.

Water Quality Database - Database Design and Data Dictionary, Prepared For: U.S. Environmental Protection Agency, Region III, Chesapeake Bay Program Office, January 2004. [https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/cbwqdb2004_rb.pdf]. An updated 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
[https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/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://d38c6ppuviqmfp.cloudfront.net/documents/CBPMethodsManualMay2017.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, 2022 - June 30, 2023
[https://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/MdDNR_MTQAPP2022_2023.pdf].

Maryland Department of Natural Resources. Section 106, Ambient Water Quality Monitoring (CORE/Trend Monitoring), Quality Assurance Project Plan. May 24, 2019. [https://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/MDNR106draftQAPP_1920.pdf].

Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 20220105
Ending_Date: 20221215
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). 2023. GCMD Keywords, Version 15.6, 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://forum.earthdata.nasa.gov/app.php/tag/GCMD+Keywords].
Theme_Keyword: EARTH SCIENCE>BIOSPHERE>ECOLOGICAL DYNAMICS>ECOSYSTEM FUNCTIONS>NUTRIENT CYCLING
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Theme_Keyword: EARTH SCIENCE>TERRESTRIAL HYDROSPHERE>WATER QUALITY/WATER CHEMISTRY>WATER CHARACTERISTICS>WATER TEMPERATURE

Place:
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Place_Keyword: Chesapeake Bay
Place_Keyword: Hydrologic Unit
Place_Keyword: Major Watershed/Basin
Place_Keyword: Subbasin
Place_Keyword: Tributary
Place_Keyword: Ohio River
Place:
Place_Keyword_Thesaurus: USGS Common geographic areas
Place_Keyword: United States
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Place_Keyword: Howard County
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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.
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, C2
City: Annapolis
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 2022 Station Map: [https://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/metadata/MdDNR_2022_CORE_TrendStns.pdf]. If the map URL raises a file not found error, drill down from [http://eyesonthebay.net].
Browse_Graphic_File_Description: Fifty-four 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 station

XGG8251. NASL analyzed CORE\Trend station chlorophyll a, phaeophytin, chloride and sulfate samples.

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, 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 (MDH) 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 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.

ADDITIONAL COMMENTS

January 2022: A winter storm brought snow on 3-Jan, causing possible impacts from snow melt and road salt to samples collected 5-Jan and 6-Jan. Heavy snow from Winter Storm Izzy occurred on 16-Jan, a few days prior to sampling at stations ANT0203, ANT0366, and POT2386. A few inches of snow fell the night before sampling at station CCR0001. The edges of the river were frozen at stations CAS0479, CCR0001, POT2766, WIL0013, and YOU0925,

with the water appearing slushy at stations CAS0479 and YOU0925. Two-thirds of the river were frozen, and ice was melting off the bridge at station CON0005. At station LYO0004, the creek was frozen over downstream of the bridge. The water appeared murky at stations NBP0461, NBP0534, and NBP0689, with snow on the ground reported at station NBP0461 and unusually high conductivity noted at station NBP0689. Floating ice was observed in the river at station POT2386. It snowed overnight, and snow fell from the bridge and into the sample collected at station YOU1139. The rocks at station BDK0000 were covered in iron precipitate (yellow boy). There were no signs of didymo at station SAV0000. The secchi disk depth measurement at station XGG8251 was greater than the total depth.

February 2022: Rain, snowmelt, and ice melt were noted in the days prior to sample collection on 22-Jan and 23-Jan. Windy conditions were noted during sampling at station NBP0326. Road salt may have impacted samples collected at stations ANA0082 and CJB0005. Geese were in the area during sampling at station ANT0203. Ice covered 90% of the stream downstream of station BPC0035. At station CAC0148, ice completely covered the stream in the upstream direction and was observed on the streambanks in the downstream direction. Ninety percent ice coverage was noted at station MON0528 (upstream and downstream). The streambanks were frozen at station MON0269. Fog was present during sampling at station PXT0972. At station POT2386, the water appeared slightly murky. Debris blocked a small area in the middle of the bridge at station CON0005. The secchi disk depth measurement at station XGG8251 was greater than the total depth.

March 2022: Early morning rain occurred on 17-Mar, before sample collection at CORE stations. Algae was observed growing on the rocks at station GEO0009, and the water was very clear. At station CAS0479, a fisherman was present upstream during sampling. The water had a greenish tint at station NBP0534 and was slightly murky at station POT2386. Large numbers of box elder beetles were present at station POT2766. Station SAV0000 had no signs of didymo. Thin clouds were reported at station TOW0030.

April 2022: Lots of geese were in the area near station ANT0203 during sampling, and a fisherman was near the sampling area at station CAS0479. At station ANT0366, USGS personnel were on-site during sampling. It rained overnight before sampling at stations CAS0479 and CCR0001, and it rained the morning before sampling at stations CAS0479, CCR0001, NBP0103, and WIL0013. At station CON0005, debris blocked the creek at the center of the bridge. Thin clouds were reported at stations GEO0009, LYO0004, NBP0326, NBP0461, NBP0534, SAV0000, and YOU1139. Algae were present on the rocks at station GEO0009, and the water at station TOW0030 was tinted green. High water levels were observed at stations POT2386 and YOU1139, with the water at POT2386 appearing murky.

May 2022: Rain storms, some with thunder and heavy downpours, occurred the evening of 3-May and the morning of 4-May, impacting samples collected on 4-May and 5-May. Additional storm-related observations were noted at stations SEN0008 (muddy water), YOU0925 (high water level), and CCR0001 (orange/tannic water). Heavy rain continued over the weekend prior to sampling activities on 11-May. The weekend rain event caused high water levels and murky water at stations ANT0203 and CON0180. At station CON0005, three-fourths

of the bridge was blocked by debris from the weekend storm, and at station POT2386 there was evidence that water levels had overflowed the riverbank.

June 2022: Scattered showers occurred the night before sampling at stations CB1.0, DER0015, GUN0258, and GUN0476. Overnight thunderstorms were noted at stations LYO0004 and YOU1139. At station CCR0001, the water appeared tannic and was slow moving. Rain earlier in the day left the parking lot wet at station CON0005, and a large amount of debris blocked 3/4ths of the bridge. At station CON0180, observations of wet ground and brown water were noted. It was windy during sampling at station NBP0326.

July 2022: The water appeared slightly murky at station ANT0366 and tannic at station CCR0001. Thin clouds were reported at station BDK0000. At station CON0005, debris blocked two-thirds of the bridge on the upstream side; downstream, flow was open along the eastern shoreline. Lots of algae were observed at station GEO0009. Heavy rain fell overnight before stations LYO0004 and YOU1139 were sampled. At station WIL0013, the influence of Braddock Run was visible across the entire stream. The water level was low during sampling at station NBP0023, and the water appeared clear.

August 2022: Algae (possible filamentous) were observed at station BDK0000, and the water was clear. The water at station CCR0001 was very tannic. At station CON0005, debris blocked two-thirds of the bridge, with flow along the left eastern streambank open. At the time of sampling, a foul smell was noted in the air at station GEO0009, and algae were present in the water. It rained the night before sampling at stations GUN0125, GWN0115, JON0184, NPA0165, PAT0176, and PAT0285. Lots of SAV were observed at station GUN0125.

September 2022: Thin clouds were reported at station BDK0000 at the time of sampling. The water was described as “bubbly” at stations BDK0000, CCR0001, and NBP0023, and as “frothy” at stations CAS0479 and YOU0925. The water at station CAS0479 also appeared brown. It rained the night prior to sampling at stations CCR001, GUN0258, GUN0476, and POT2386. Morning rain was noted at stations GUN0125, GWN0115, JON0184, and NPA0165. Rain fell during the weekend before and again on the day of sampling at stations CAS0479, CCR0001, TOW0030, WIL0013, and YOU0925. At station CAC0031, a downpour occurred prior to and during sampling. Station YOU1139 was sampled after several days of rain and the water was dirty. At station WIL0013, the influence of Braddock Run was visible across the creek.

October 2022: The remnants of Hurricane Ian brought rain to the region in the days prior to sampling at stations ANT0203, ANT0366, CON0005, CON0180, and POT2386. At station BDK0000, the water appeared grayish and the filter pads looked orange. At station WIL0013, the influence of Braddock Run was observed as an input of greenish/gray water across the creek. Morning showers were reported at stations ANT0044 and POT1830. Algae were observed on the rocks at station GEO0009. At stations ANT0203 and ANT0366, the water appeared clear. The bridge at CON0005 was almost entirely blocked by debris; only the far right side of the bridge had flowing water. The water was murky at station POT2386. At station XGG8251, the Secchi disk depth measurement was greater than the total depth at the station.

November 2022: Rain fell the night before sampling at stations DER0015, GUN0476, and CB1.0, with foggy conditions noted at stations DER0015 and CB1.0. At station GEO0009, the water had a grayish tint and algae were observed on the rocks. Snow flurries were reported at stations NBP0103, NBP0326, POT2766, and TOW0030. Station NBP0689 was sampled during windy conditions, and slush was observed floating downriver at station YOU1139. At station WIL0013, the influence of Braddock Run was visible along the right shoreline. Hurricane Nicole passed through the region on 11-Nov, a few days before stations ANT0203, ANT0366, CON0005, CON0180, and POT2386 were sampled. The water appeared clear at station ANT0203 and murky at station CON0180. At station CON0005, 4/5ths of the bridge was blocked by debris.

December 2022: The meter used at stations PXT0809, PXT0972, DER0015, GUN0258, GUN0476, CB1.0, ANA0082, RCM0111, POT1184, and CJB0005 post-calibrated out of range for pH, but the data appeared normal. It rained during the two days prior to sampling at station ET5.0. Fog was noted at station PXT0972, and flurries were reported at station NBP0103. The clouds were described as thin and wispy at stations GEO0009, NBP0326, and NBP0461. At station ANT0203, partly sunny skies were noted. Algae were observed during sampling at station NBP0326. At station WIL0013, the influence of Braddock Run appeared as light brown water along the right shoreline. Light rain fell earlier in the day at station ANT0366. At station CON0005, 4/5ths of the bridge was blocked by debris.

Logical_Consistency_Report:

For logistical reasons, station XGG8251, a tidal monitoring station, is routinely sampled as part of the Chesapeake Bay tributary monitoring program. The station is sampled using CORE protocols.

ADDITIONAL COMMENTS

January 2022: Station CON0005 was sampled from the right eastern streambank (looking upstream). The sample at station CON0180 was collected about ¼ mile downstream due to parking issues. A wade sample was collected at station MON0020. Station NBP0326 was sampled from the streambank on the downstream side of the bridge. Station POT1471 was sampled from the ferry. Station WIL0013 was sampled from the left eastern streambank, away from the influence of Braddock Run.

February 2022: Station ANT0203 was sampled from the streambank, just downstream of the bridge. Samples collected at stations ANT0366 and CON0180 were filtered at the office for particulate phosphorus and chlorophyll. Station MON0020 was sampled from the Rt. 28 bridge. Station NBP0326 was sampled from the streambank under the bridge.

March 2022: Station CAS0479 was sampled from the streambank. A wade sample was collected at station MON0020. Station NBP0326 was sampled from the streambank under the bridge.

April 2022: The sample at station CON0180 was collected upstream of the gage. Station MON0020 was sampled from the boat ramp at the Park Mills Road bridge. At station NBP0326, the thermometer was hung on the guardrail in partial shade to measure air temperature. There was no shade at station NBP0534 for measuring air temperature.

May 2022: Station CB1.0 was sampled from the walkway. Station CON0180 was sampled downstream of the weir. Station MON0020 was sampled by wading just upstream of the Rt. 28 bridge.

June 2022: The sample at station ANT0203 was collected from the streambank, downstream of the bridge. Station CB1.0 was sampled from the fishing park by the dam. The sample collected at station CJB0005 was processed at Lock #6. Station MON0020 was sampled from the Park Mills boat ramp. Station POT2766 was sampled by walking out from the ramp into moving water, away from an eddy near the bank. At station NBP0326, sampling was conducted from the bank under the bridge, and the thermometer was hung on the guardrail to determine air temperature. At station NBP0023, the air temperature was read from a thermometer that was hung behind a street sign for some shade.

July 2022: Station ANT0203 was sampled from the bridge. At station NBP0326, the air temperature reading was taken from a smartphone because a thermometer hung on the guardrail provided unreliable results. The sample at station NBP0326 was collected from the streambank. Station POT2766 was sampled near the boat ramp.

August 2022: Station ANT0203 was sampled from the bridge. Station CAS0479 was sampled in the center of the creek downstream of the bridge. Station MON0020 was sampled from the Monocacy boat ramp at the bridge on Park Mills Road. Station POT2766 was sampled in a large eddy out from the boat ramp.

September 2022: The sample collected at station CAC0031 was processed at Pinecliff Park. Station DER0015 was sampled from the bridge, and station POT2766 was sampled from the boat ramp. Due to bridge construction, station GEO0009 was sampled upstream at the Waverly Street bridge. Station MON0020 was sampled from the Park Mills boat ramp. Station NBP0326 was sampled from the riverbank, and the air temperature was recorded from a thermometer hung on the guardrail.

October 2022: Station DER0015 was sampled downstream of the site due to road construction. Construction at station GEO0009 required sampling to be conducted at the Waverly Street bridge. Station NBP0326 was sampled from the riverbank under the bridge. At station POT2766, the sample was collected at the original location off of the pebble beach. Station YOU1139 was sampled from the riverbank. Station CON0005 was sampled on the far right side of the bridge, away from instream debris.

November 2022: Station WIL0013 was sampled along the left shoreline, away from the influence of Braddock Run inflow. The sample collected at station CJB0005 was processed off-site at Lock #6.

December 2022: Stations CAC0031 and ANT0203 were sampled from bridges at the respective sites. Station PAT0285 was sampled from the bridge due to a road closure. Station WIL0013 was sampled along the left shore, away from Braddock Run influence. Station CON0005 was sampled along the left shoreline. At station NBP0326, the air temperature reading was taken from a smartphone.

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, 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 samples are collected at the following subset of CORE\Trend stations: CCR0001, GEO0009, LYO0004, NBP0023, NBP0103, NBP0461, NBP0534, TOW0030, and YOU0925.

Station POT1472 was dropped from the CORE monitoring program in October 2022. The station had not been sampled since December 2020 after White's Ferry closed down and access to the Virginia shoreline became unavailable.

Sampling was discontinued at station MON0020 in October 2022. At station MON0020, bridge restoration deleted the roadway shoulders, making sampling from the bridge unsafe. Collecting wading samples at this station was not a viable alternative due to dangerous stream conditions.

ADDITIONAL COMMENTS

January 2022: Station PXT0809 was not sampled due to icy conditions on the steps leading to the site. The water at station TOW0030 was frozen, preventing sampling.

May 2022: The meter used to sample the Western Maryland CORE stations post-calibrated out of range (low) for specific conductance. Thus, conductivity values were deleted for the following stations: BDK0000, CAS0479, CCR0001, GEO0009, LYO0004, NBP0023, NBP0103, NBP0326, NBP0461, NBP0534, NBP0689, POT2766, SAV0000, TOW0030, WIL0013, YOU0925, and YOU1139.

August 2022: Air temperature was not recorded at station ANT0203.

October 2022: Air temperature was not recorded at stations DER0015, GUN0258, GUN0476, and CB1.0.

There were no known completeness issues in February, March, April, June, July, September, November, and December 2022.

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 MDH DES ECL LABORATORY ANALYSIS
Maryland Department of Health, Laboratories Administration, Division of Environmental Sciences, Inorganics 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.

The Maryland Department of Health, Laboratories Administration, Western Maryland Regional Laboratory, Cumberland, MD, analyzed total alkalinity and turbidity for the following stations: CCR0001, CCR0001, YOU0925, CAS0479, WIL0013, BDK0000, NBP0103, NBP0023, POT2766, TOW0030, YOU1139, LYO0004, NBP0689, NBP0534, SAV0000, GEO0009, NBP0461, NBP0326, ANT0203, ANT0366, CON0180, CON0005, and POT2386.

Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Lara Phillips
Contact_Position: Supervisor, Inorganics Laboratory
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: 443.681.3863
Contact_Electronic_Mail_Address: lara.johnson_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, pheophytin, 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 (MDH) laboratory in Baltimore, MD. Sulfate analyses were performed by MDH 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 (Jerome) Frank
Contact_Position: Manager, Nutrient Analytical Services Laboratory
Contact_Address:
Address_Type: mailing and physical
Address: University of Maryland Center for Environmental Science, Chesapeake Biological Laboratory, 146 Williams Street, 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 MDH 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: Mark Trice
Contact_Organization: Maryland Department of Natural Resources, Resource Assessment Service
Contact_Position: Program Chief, Water Quality Informatics
Contact_Address:
Address_Type: mailing and physical
Address: 580 Taylor Avenue, D2
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401
Contact_Voice_Telephone: 410.260.8630
Contact_Electronic_Mail_Address: mark.trice_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, Section 106 Ambient Water Quality Monitoring Program. Project data are an aggregation of data collected at Maryland CORE/Trend project stations during 2022.

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

The entity Monitoring_Event_Data is comprised of the attributes: Agency, CBSeg2003, CBSegmentShed2009, CloudCover, Cruise, Details, EventId, FieldActivityEventType, FieldActivityRemark, FIPS, FlowStage, GaugeHeight, HUC8, HUC12, Latitude, Longitude, LowerPycnocline, MonitoringStation, PrecipType, Pressure, Program, Project, SampleDate, SampleTime, Source, Station, TideStage, TierLevel, TotalDepth, UpperPycnocline, WaveHeight, WindDirection and WindSpeed.

The entity Optical_Density is comprised of the attributes: Agency, BiasPC, CBSeg2003, CBSegmentShed2009, Cruise, Depth, Details, EventId, FIPS, HUC8, HUC12, Lab, Latitude, Layer, Longitude, LowerPycnocline, MeasureValue, Method, MonitoringStation, Parameter, PrecisionPC, Problem, Program, Project, Qualifier, SampleDate, SampleReplicateType, SampleTime, SampleType, Source, Station, TierLevel, 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, CBSeg2003, CBSegmentShed2009, Cruise, Depth, Details, EventId, FIPS, HUC8, HUC12, Lab, Latitude, Layer, Longitude, LowerPycnocline, MeasureValue, Method, MonitoringStation, Parameter, PrecisionPC, Problem, Program, Project, Qualifier, SampleDate, SampleReplicateType, SampleTime, SampleType, Source, Station, TierLevel, 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. [https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/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, 2022 - June 30, 2023 [https://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/MdDNR_MTQAPP2022_2023.pdf].

Methods and Quality Assurance for Chesapeake Bay Water Quality Monitoring Programs. Chesapeake Bay Program, May 2017, CBP/TRS-319-17 [https://d38c6ppuviqmfp.cloudfront.net/documents/CBPMethodsManualMay2017.pdf].

Distribution_Information:
Distributor:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Mike Mallonee
Contact_Position: Water Quality Data Manager
Contact_Address:
Address_Type: Mailing and Physical
Address: 1750 Forest Drive, Suite 130
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401
Country: USA
Contact_Voice_Telephone: 410.267.5785
Contact_Electronic_Mail_Address: mmallone_no_spam_@chesapeakebay.net[Remove _no_spam_ 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: Monitoring Event, Optical Density, Station Information and Water Quality data.
File_Decompression_Technique: No compression applied
Transfer_Size: 4.3
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name:
[https://www.chesapeakebay.net/what/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: 20230523
Metadata_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Mark Trice
Contact_Organization: Maryland Department of Natural Resources, Resource Assessment Service
Contact_Position: Program Chief, Water Quality Informatics
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: mark.trice_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