Maryland CORE/Trend Water Quality Monitoring Program – 2021

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Maryland Department of Natural Resources (MD DNR), Resource Assessment Service.
Publication_Date: 20220429
Title: MD DNR 2021 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 co-sampled under 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://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.

Water Quality Database - Database Design and Data Dictionary, Prepared For: U.S. Environmental Protection Agency, Region III, Chesapeake Bay Program Office, January 2004. [https://archive.chesapeakebay.net/pubs/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://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].

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, 2021 - June 30, 2022 [https://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/MDDNR_QAPP_MainstemTrib_2021_2022_wApp.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: 20210106
Ending_Date: 20211207
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). 2022. GCMD Keywords, Version 13.2. 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:
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_Keyword: Ohio River
Place:
Place_Keyword_Thesaurus: USGS Common geographic areas
Place_Keyword: United States
Place_Keyword: Maryland
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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.

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 2021 Station Map: [https://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/metadata/MdDNR_2021_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 2021: It rained the weekend prior to sampling at stations ANT0203 AND CON0180, and the water level was high. At station BDK0000, algae covered the rocks and the water was tinted green. The water was low and clear during sampling at station CCR0001. At station CON0005, debris was built up against the bridge. Thin clouds were reported at stations GEO0009, LYO0004, NBP0326, and NBP0461. It rained upstream of station POT2386 the weekend prior to sampling and the water looked murky. The streambank was icy at station TOW0030. Sampling at station WIL0013 was conducted in clear water outside of the influence

of Braddock Run discharge. The secchi disk depth measurement at station XGG8251 was greater than the total depth.

February 2021: Ice was reported at several stations. At BPC0035, ice covered 99% of the river cross section. At CAC0148 and MON0269, ice covered 10% of the river cross section. The river was completely frozen at station CAS0479, and sampling was conducted by breaking through the ice. The river upstream of station MON0528 was 100% covered in ice, but there was no ice observed in the downstream direction. At stations TOW0030 and YOU1139, the river was partially frozen; and ice was floating in the river during sampling at station YOU0925. It snowed on 31-Jan, three days prior to sampling at station ET5.0. Snow was reported at stations CAC0031 and MON0155, and heavy snowfall was noted at station YOU0925. The sample at station CJB0005 may have been impacted by road salt. The pH reading was slowly dropping during sampling at station CCR0001. At station CON0005, large logs and debris blocked two-thirds of the bridge, and brown foam had accumulated at the debris. Part of the trail at station POT2386 was eroding away. Some didymo was visible on the rocks at station SAV0000. At station WIL0013, the influence of Braddock Run discharge was evident in the stream. Air temperature at station ANT0366 was read from a thermometer that was hung low near snow. The water at station BDK0000 was orange-colored, and bright green (possibly filamentous) algae was observed growing on the rocks.

March 2021: The water was very clear during sampling at stations BDK0000 and CCR0001. At station CON0005, debris blocked two-thirds of the bridge. Clearing skies were noted at station GEO0009, and thin clouds were observed at stations NBP0689 and POT2386. At station GUN0476, snow was on the ground during sampling. Very slow flow was noted at station SEN0008. At station WIL0013, the influence of Braddock Run inflow could be seen. The secchi disk depth at station XGG8251 was greater than the total depth. At station YOU1139, trash and dead deer littered the sample site. The river was at flood stage during sampling at stations POT1595 and POT1596.

April 2021: The water at stations ANT0366 and CON0005 appeared slightly green during sampling. Two-thirds of the bridge area at station CON0005 was blocked by debris. Fishermen were present upstream of the sample site at stations CAS0479 and WIL0013. A USGS boat was on site during sampling at station POT1595. A fallen tree was blocking the weir at station CON0180. It was noted that the pH probes were reacting very slowly during sampling at station CCR001. Garrett County roads were being swept on sampling dates 21-Apr and 22-Apr, possibly affecting water quality.

May 2021: Heavy rain fell the morning before sampling at stations ANA0082, CJB0005, POT1184, and RCM0111. Thin clouds were reported during sampling at stations ANT0203 and POT2386. Algae was visible on the rocks at station BDK0000. Heavy rain fell earlier in the day at stations CAC0148 and POT1830. At stations CB1.0, DER0015, GUN0258, and GUN0476, overnight rain showers were reported. A fisherman was present upstream of station CAS0479 during sampling. Conditions were windy during sampling at station CCR0001 and the water appeared tannic. The weather was also windy at station YOU0925 and the water level was high. At station CON0005, a large amount of debris was piled up against the bridge and it started to rain during sampling. Submerged aquatic vegetation (SAV) was possibly growing in the water

at station GEO0009. Lots of rain during the week of sampling resulted in a high water level at station YOU1139.

June 2021: Heavy rain occurred the day before sampling at stations CAS0479, GEO0009, and YOU0925. The water appeared dark at station ANT0366. At station CCR0001, overnight rain and tannic water were reported. Cicadas were present at stations CON0005, CON0180, and POT2386. There was dust in the air from nearby street cleaning at station CON0005. At station CON0180, USGS personnel were on site working on the stream gage. Many crayfish were observed in the water at station CON0180. Morning rain was noted at stations GUN0125, GWN0115, PAT0176, and PAT0285. The water at station NBP0023 was clouded by lots of fine sediment. Turbid conditions were also present at station NBP0103 along one side of the stream. Sample collection at station NBP0103 took place outside of the turbid water. The water level was high at station NBP0534, but the water appeared clear. Clear water was also noted at station WIL0013. The water at station TOW0030 appeared slightly dirty from storms over the weekend. It rained during the two days prior to sampling at station YOU1139.

July 2021: It rained the night before sampling at stations BDK0000, CCR0001, LYO0004, WIL0013, YOU0925, and YOU1139. Due to a low water level, some sediment was collected with the water sample at station BDK0000. At station POT1471, a dissolved oxygen reading of 0.0mg/l by Hydrolab meter E prompted a switch to meter Q. Field notes remark on boulders left at station CAC0031. The water at station CCR0001 appeared tannic. At stations GEO0009, POT2386, and SAV0000, algae were observed covering the rocks; and at station SAV0000, those algae were described as filamentous. Windy conditions were noted at station NBP0326. The water was very clear during sampling at station NBP0689. At station POT2386, a group of ducks was in the water prior to sampling.

August 2021: At the time of sampling, the area around station BDK0000 smelled of sewage and the rocks were covered in algae. Crayfish were present at stations ANT0203 and CAS0479. Fog was noted at station DER0015. Heavy rain fell in the area of station GEO0009 on the night before sampling. The day before sampling at station LYO0004, it rained heavily throughout the day. The water was very clear at station NBP0534. Rain earlier in the day was noted at station SAV0000, and the water was clear. At station WIL0013, the influence of Braddock Run inflow was evident across the creek. Heavy rain the day before sampling created very dirty water at station YOU1139.

September 2021: Tropical Storm Ida passed through the area, bringing rain to the region and impacting the CORE samples collected on 1-Sep and 2-Sep. High water levels and brown water were noted at stations ANA0082, CJB0005, and RCM0111. Morning rain fell the day of sampling at stations CJB0005 and RCM0111. On 13-Sep and 14-Sep, local wildfires created hazy conditions at CORE stations. Thin clouds were noted at stations ANT0203 and ANT0366 during sampling. The hillside at station CAC0031 was cleared of trees over the past year. A street sweeper drove by while the samples at station CON0005 were being filtered. Small fish were visible in the water at station GEO0009. At station LYO0004, the stream water appeared dark and the filter pads looked green after filtering the water sample. The influence of Braddock Run was visible along the opposite side of the creek at station WIL0013.

October 2021: A very low water level was noted at station CCR0001. At station CON0005, debris crossed the entire creek, with water flow limited to the right and left sides. The sample at station CON0005 was collected along the left eastern shore. It drizzled earlier in the day and crayfish were observed in the stream at station CON0180. At station MON0155, signs were posted warning to avoid water contact due to a sewage spill. Due to a lack of shade at station NBP0023, the air temperature was measured by a thermometer hung on the van door. The water was very clear at station POT2386. Algae covered the rocks at station WIL0013, mainly along the right eastern shore. The meter used at station XGG8251 was not post-calibrated after sampling.

November 2021: Conowingo Dam was discharging at the time station CB1.0 was sampled. Bridge inspection was taking place during sampling at station NBO0023. The weather was windy at stations NBP0326 and NBP0461. Snow flurries were noted during sampling at station NBP0689. Snow fell the night before and the morning of sampling at station YOU1139, and road treatment occurred in the morning. At station XGG8251, the Secchi disk depth measurement was greater than the total depth at the station.

December 2021: Active dredging was taking place during sampling at station ANA0082. Iron deposits and algae were observed at station BDK0000, and the water at station CCR0001 appeared tannic. There was a build up of debris on the upstream side of the bridge at station CON0005. Algae were visible on the rocks at station GEO0009, and windy conditions were noted at station NBP0326. At station WIL0013, there was construction upstream of the sample site, and the influence Braddock Run was visible within the stream. At station XGG8251, the secchi disk depth measurement was greater than the total depth. Geese were in the water nearby when station YOU0925 was sampled.

Logical_Consistency_Report:

January 2021: Station CAC0148 was sampled from the bridge. The sample at station MON0020 was collected by wading into the water downstream of the bridge. The bridge was gone at station POT2386, so samples were collected at the stream gage. Station POT1471 was sampled from the ferry.

February 2021: Station ANA0082 was sampled from the stationary pier. The sample collected at station CJB0005 was processed at Lock #6. Station CAC0148 was sampled from the bridge. The samples collected at station GUN0125 were processed at the Ironhorse Tavern. The sample at station WIL0013 was collected by the bridge abutment.

March 2021: Wading samples were collected at stations POT1595 and POT1596. Samples collected at station NBP0326 were filtered at the lab. Station MON0020 was sampled under the Park Mills Road bridge.

April 2021: The sample at station ANT0203 was collected from the streambank. Station CON0180 was sampled downstream of the gage. Station POT1471 was sampled from the end of the ferry on the upstream side. Station MON0020 was sampled by wading 20 yards downstream of the bridge.

May 2021: Station MON0020 was sampled from the bridge. Station ANT0203 was sampled from the streambank downstream of the bridge. Stations CAS0479 and POT2766 were also sampled from the bank. Samples collected at station GWN0115 were filtered approximately 25mins after leaving the site, at the station NPA0165 location. Station POT1471 was sampled at the boat ramp.

June 2021: Station NBP0326 was sampled from the streambank under the bridge. Station POT1471 was sampled on the upstream side of the ferry. Station MON0020 was sampled by wading downstream of the bridge.

July 2021: Station ANT0203 was sampled from the riverbank, and station CON0180 was sampled from the weir. The sample at station GEO0009 was collected from the upstream side of the bridge. The USGS gage at station JON0184 was recently moved to the bridge. Station POT1471 was sampled from the upstream side of the ferry. Station MON0020 was sampled by wading downstream of the bridge.

August 2021: The sample at station MON0020 was collected by wading into the water downstream of the bridge. At station ANT0203, the air temperature was read from a thermometer that was hung on the van door, out of direct sun. Station ANT0366 was sampled from the streambank because the water was too shallow under the bridge. The sample at Station CAS0479 was collected downstream of the bridge. Stations NBP0326 and POT2766 were sampled from the streambank and in the pebble beach area, respectively, upstream of the bridge. Station POT1471 was sampled from the upstream side of the ferry. Station PXT0972 was sampled from the bridge.

September 2021: Station MON0020 was sampled at Park Mills Road. Station ANT0203 was sampled from the bank, downstream of the bridge. The sample at station CAS0479 was collected downstream of the bridge. Station CON0005 was sampled from the left streambank (looking upstream). At stations NBP0023 and NBP0326, the thermometer used to measure air temperature was hung on the van door for shade. Station PAT0285 was sampled out of order (last). The sample at station POT2766 was collected at the pebble beach area upstream of the bridge. Station WIL0013 was sampled in the center of the creek, with Braddock Run influence visible across the creek.

October 2021: Station LYO0004 was sampled upstream of the normal location due to disturbance from bridge work. Station MON0020 was sampled from the boat ramp on Park Mills Road. The thermometer was hung from the back door of the van to obtain the air temperature reading at station NBP0023. Station NBP0326 was sampled from the streambank, upstream of the bridge. Station WIL0013 was sampled from the center of the creek. The meter used at station XGG8251 was not post-calibrated after sampling.

November 2021: Station CON0180 was sampled at the weir. Station MON0020 was sampled from the bridge. Wading samples were collected at stations GUN0125, PAT0176, and PAT0285. Station YOU1139 was sampled at the bridge.

There were no known logical consistency issues for December 2021.

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.

Monitoring station POT1472 is located at the western terminus of Whites Ferry. In December 2020, the ferry service ceased operating due to a land dispute over the ferry landing on the western shore. With the ferry out of service, station POT1472 was inaccessible and was not sampled during all of 2021.

ADDITIONAL COMMENTS

January 2021: Ice caused a disruption in the discharge data at station TOW0030.

February 2021: Station MON0020 was not sampled. Cloud cover was not recorded at stations NBP0326 and POT2386. Discharge data was not available at station NBP0689.

March 2021: Station POT1471 could not be sampled due to flooding at the site.

There were no known completeness issues in April, May, June, July, August, September, October, November and December 2021.

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: Diana Domotor
Contact_Position: Data Analyst
Contact_Address:
Address_Type: mailing
Address: 580 Taylor Avenue, 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, Section 106 Ambient Water Quality Monitoring Program. Project data are an aggregation of data collected at Maryland CORE/Trend project stations during 2021.

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://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, 2021 - June 30, 2022 [https://eyesonthebay.dnr.maryland.gov/eyesonthebay/documents/MDDNR_QAPP_MainstemTrib_2021_2022_wApp.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].

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: 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: 2.8
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: 20220616
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