Maryland Chesapeake Bay Tributary Water Quality Monitoring Program - 2015

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Maryland Department of Natural Resources, Resource Assessment Service
Publication_Date: 20160322
Title: MD DNR Chesapeake Bay Tributary Water Quality Monitoring Program 2015
Geospatial_Data_Presentation_Form: Spatial dataset
Online_Linkage: [http://www.chesapeakebay.net/data/index.htm]

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

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

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

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

Purpose:
The Maryland Department of Natural Resources Chesapeake Bay Water Quality Monitoring Program is part of a cooperative effort between the Federal government and State and local governments in the Chesapeake Bay watershed to assess the status and trends of

nutrient and sediment concentrations in Maryland's Chesapeake Bay mainstem and its tidal tributaries.

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

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

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

Data users who desire very detailed information about Water Quality Monitoring data definition, sampling procedures and data processing are encouraged to refer to three documents listed below. The 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 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, 2015 - June 30, 2016 can be found using publication type 'Quality Assurance Project Plan' to search the monitoring stories and publications page of [http://www.eyesonthebay.net]

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]

Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 20150105
Ending_Date: 20151217
Currentness_Reference: Ground Condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -79.4938

East_Bounding_Coordinate: -75.0405
North_Bounding_Coordinate: 39.7425
South_Bounding_Coordinate: 37.8713
Keywords:
Theme:
Theme_Keyword_Thesaurus: Global Change Master Directory (GCMD). 2015. GCMD Keywords, Version 8.1. Greenbelt, MD: Global Change Data Center, Science and Exploration Directorate, Goddard Space Flight Center (GSFC) National Aeronautics and Space Administration (NASA). URL: [http://gcmd.nasa.gov/learn/keywords.html]
Theme_Keyword: Biosphere > Aquatic Ecosystems > Estuarine Habitat
Theme_Keyword: Biosphere > Aquatic Ecosystems > Rivers/Stream Habitat
Theme_Keyword: Biosphere > Ecological Dynamics > Ecosystem Functions > Nutrient Cycling
Theme_Keyword: Biosphere > Ecological Dynamics > Ecosystem Functions > Primary Production
Theme_Keyword: Terrestrial Hydrosphere > Surface Water > Rivers/Streams
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Chlorophyll
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Conductivity
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Light Transmission
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Nitrogen Compounds
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Nutrients
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Oxygen
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > pH
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Phosphorous Compounds
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Suspended Solids
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Turbidity
Theme_Keyword: Terrestrial Hydrosphere > Water Quality/Water Chemistry > Water Temperature
Place:
Place_Keyword_Thesaurus: Producer Defined
Place_Keyword: Chesapeake Bay
Place_Keyword: Maryland
Place_Keyword: Monitoring Segment
Place_Keyword: Tidal Tributaries
Place_Keyword: Back River
Place_Keyword: Big Annemessex River
Place_Keyword: Bohemia River
Place_Keyword: Bush River
Place_Keyword: Chester River
Place_Keyword: Choptank River
Place_Keyword: Corsica River

Place_Keyword: Eastern Bay
Place_Keyword: Elk River
Place_Keyword: Fishing Bay
Place_Keyword: Gunpowder River
Place_Keyword: Little Choptank River
Place_Keyword: Magothy River
Place_Keyword: Middle River
Place_Keyword: Manokin River
Place_Keyword: Nanticoke River
Place_Keyword: Northeast River
Place_Keyword: Patapsco River
Place_Keyword: Patuxent River
Place_Keyword: Pocomoke River
Place_Keyword: Potomac River
Place_Keyword: Rhode River
Place_Keyword: Sassafras River
Place_Keyword: Severn River
Place_Keyword: South River
Place_Keyword: Wicomico River

Temporal:
Temporal_Keyword_Thesaurus: None
Temporal_Keyword: 2015

Access_Constraints: None
Use_Constraints: None
Point_of_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Renee Karrh
Contact_Position: Program Manager
Contact_Address:
Address_Type: Mailing and physical
Address: 580 Taylor Avenue, D2
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401
Contact_Voice_Telephone: 410 260-8630
Contact_Electronic_Mail_Address: renee.karrh_nospam_@maryland.gov[Remove _nospam_ for valid email address]
Browse_Graphic:
Browse_Graphic_File_Name: MDDNR Tributaries Monitoring Project 2015 Station Map can be found using publication type 'map' to search the monitoring stories and publications page of [http://www.eyesonthebay.net]
Browse_Graphic_File_Description: Map of sixty year-2015 Maryland Chesapeake Bay Tributary Water Quality Monitoring Sites.

Browse_Graphic_File_Type: PDF
Data_Set_Credit:
Maryland Department of Natural Resources (MDDNR) Resource Assessment Service (RAS) staff collected the majority of samples and processed the data. The Nutrient Analytical Services Laboratory (NASL) at the Chesapeake Biological Laboratory (Univ. of MD) analyzed chlorophyll, nutrient and suspended solids samples.

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

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

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

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

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

ADDITIONAL COMMENTS

January 2015: At stations EE3.0, EE3.1 and EE2.2, surface and 1.0 m samples were obtained from water collected at the same depth and, due to the absence of a pycnocline, above pycnocline and below pycnocline samples were taken from one third and two thirds of station

total depth, respectively. At stations EE1.1 and WT5.1 it was noted that, by the time the water quality sonde was returned to the surface, conductivity readings had changed.

February 2015: It was not possible to conduct post calibration checks on the dissolved oxygen probe used at stations LE1.2, LE1.3 and LE1.4 due to failure of the probe. Out of range pH probe post-calibration results compromised pH results measured at stations: ET6.1, ET5.1 ET10.1 and WIW0141. Stations EE3.1 and EE3.2 above pycnocline and below pycnocline water samples were taken from one third and two thirds of station total depth, respectively, due to the absence of a pycnocline. Very low water was noted in the station TF1.3 field log. Roughly fifty dead fish were reported in the icy waters when station ET3.1 was sampled. Surface and 1.0 m samples at station WT5.1 came from water collected at the same depth.

March 2015: There were no pyncoclines at stations EE2.1 and EE2.1. The dissolved oxygen readings at station LE2.2 were confirmed by readings on a second water quality sonde. Rain fell during sample collections at stations PIS0033 and MAT0078.

April 2015: Above pycnocline and below pycnocline samples at stations EE1.1, EE2.1, EE3.1, EE3.2 and ET5.2 were collected from one third and two thirds of station water column depth. Post-calibration checks of pH probes, used to measure water quality at stations ET3.1, ET4.1, ET6.1 and ET10.0, were lower than the standard range values. Scattered rain showers fell the night before station ET6.1 was sampled. Heavy rainfall was reported the preceding night and during the morning of the day water samples were collected at stations LE1.1, LE1.2, LE1.3 and LE1.4.

May 2015: Scattered rain and thunderstorms occurred the weekend before stations PIS0033 and MAT0078 were sampled. Similarly, scattered thunderstorms were reported the night preceding sample collection at stations: LE1.1, LE1.2, LE1.3, LE1.4 and RET1.1. When samples were collected at stations TF1.3, TF1.4 and WXT0001, the river was characterized as muddy. Above pycnocline and below pycnocline samples at stations EE3.1, EE3.2, ET5.2 and were collected from one third and two thirds of station water column depth.

June 2015: An oil absorbing boom was deployed bank to bank fifty yards below station MAT0078 on the day samples were collected. No oil odor was detected. Stations' EE1.1, EE3.1, ET4.2, LE2.2, RET2.4 and WT5.1 above pycnocline and below pycnocline samples were collected at one third and two thirds of the water column depths, respectively. A stormy night preceded sampling at station WT5.1. Heavy rain fell two days before samples were collected at stations WT1.1, WT2.1, WT3.1 and WT4.1.

July 2015: The total depth at the center of the bridge at station TF1.3 was described as greater than three meters. Rain showers fell during the morning samples were collected at stations ET1.1, ET2.1, ET2.2 and ET3.2. There were no pyncoclines at stations EE2.1, EE3.1, ET4.2 and ET5.2, therefore above pycnocline and below pycnocline samples were collected at one third and two thirds of the water column depth. Thunderstorms occurred the nights preceding the days samples were collected at stations EE3.2, ET3.1 and ET4.1.

August 2015: The air temperature reading was questionable at stations TF1.5 and TF1.6. Significant meter scoping was noted at station ET10.1. There were no pycnoclines at stations: EE2.1, EE3.1, EE3.2, ET4.2, ET5.2, and RET2.4, therefore above pycnocline and below pycnocline samples were collected at one third and two thirds of the water column depth. The occurrence of thunderstorms the previous night was noted at stations EE3.0, ET6.2, ET7.1 and WIW0141.

September 2015: The 6 meter depth sonde readings at station LE1.2 were double-checked. The Secchi disk depth was greater than the total depth at station TF1.3. There were no pyncoclines at stations EE2.1, EE3.1, EE3.2, ET4.2 and ET5.2, so above pycnocline and below pycnocline samples were collected at one third and two thirds of the water column depth. Showers occurred the evening preceding sampling at stations TF1.3, TF1.4 and WXT0001.

October 2015: Rainfall the evening preceding sampling at stations TF1.3, TF1.4 and WXT0001 was noted. The Secchi disk depth was greater than the total depth at station TF1.3. The above pycnocline and below pycnocline samples were collected at one third and two thirds of the water column depth at stations EE2.1, EE3.1 and ET5.2.

November 2015: Periodic plumes of oil rising to the water surface was noted at both station LE1.2 and station LE1.3. The water for the surface and 1 meter samples at station EE2.1 was collected at a single depth. Due to the absence of pycnoclines, above pycnocline and below pycnocline samples were collected at one third and two thirds of the water column depth at stations: EE1.1, EE2.1, EE3.1, EE3.2, ET4.2 and ET5.2.

December 2015: The Secchi disk measurement was made in the sun at station LE1.1. The above pycnocline and below pycnocline samples were collected at one third and two thirds of the water column depth at stations: EE1.1, EE2.1, EE3.1, EE3.2, ET4.2 and ET5.2 because there were no pycnoclines.

Logical_Consistency_Report:

Beginning in 2014, due to funding, nine stations sampled in previous years, were dropped from the tributaries water quality monitoring program: BXK0031, CCM0069, MNK0146, POK0087, TRQ0088, TRQ0146, XAK7810, XCI4078 and XDJ9007.

January 2015: Ice conditions necessitated variations from normal sampling locations at three sites. Station ET5.2 samples were collected from the Talbot County side for the fishing pier. At station ET3.1, samples were collected at a different pier due to Ice along shore and usual pier. Station ET5.1 sampling was conducted from the boat ramp dock.

February 2015: Station TF1.3 samples were collected from the dock. Sampling at station ET5.2 was done on the Dorchester County side of the fishing pier.

March 2015: Station ET4.1 samples were collected from the upstream side of the bridge due to construction activity. Station TF1.3 samples were collected from the bridge.

April 2015: Station WIW0141 sampling was conducted from the Ferry.

May 2015: Station WIW0141 samples were collected from the Ferry and station TF1.3 samples were collected from the route 4 bridge.

June 2015: Station TF1.3 was sampled from the fishing pier and station WIW0141 sampling was conducted from the Ferry.

There were no known issues during sampling conducted during July 2015.

August, September, October, November and December water samples for station WIW0141 were collected from the ferry.

Completeness_Report:

January 2015: Station TF1.5 was not sampled due to low tide. Secchi disk depth was not measured at station ET5.2. Due to ice conditions at station ET5.1, only surface samples were collected. Sampling event end time was not recorded at station MAT0078.

February 2015: Total depth was not measured at station TF1.3. Secchi disk depth was not recorded and only surface and bottom samples were collected at station ET5.2. At station ET5.1, just the surface sample was collected. Secchi disk depth was not measured at stations: TF1.3, WT6.1, WT7.1, WT8.1 WT8.2 and WT8.3.

March 2015: Total depth was not measured at station WIW0141. Due to a locked gate, it was not possible to sample station WXT0001.

April 2015: High tide conditions resulted in no samples being collected at station XHH4742.

May 2015: When station WIW0141 was sampled, total depth was not measured. Silicate samples were not collected at stations ET5.1, ET5.2 and WT5.1. Secchi disk depth and total depth were not measured at station TF1.3. Due to power-line work, stations TF1.5, TF1.6 and TF1.7 were not sampled.

June 2015: Total depth was not measured at stations TF1.3 and WIW0141.

July 2015: Wave height was not recorded at station TF1.4. Total depth was not measured at station WIW0141.

August 2015: Total depth was not measured at station WIW0141.

September 2015: Total depth was not measured at station WIW0141.

October 2015: Station XHH4742 was not sampled.

There were no known completeness issues during November and December 2015 sampling.

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

The Yellow Springs Instrument (YSI) data sondes and HydroLab multi-parameter sondes were maintained and calibrated before and after each cruise in accordance with manufacturer's recommendations. During year 2014, YSI series 6820 and 6920 and Hydrolab series 3 (rarely), series 4A, and series 5 sondes were deployed. Field sheet dissolved oxygen method and equipment-set unit number values were used to track sondes used for station water quality measurements.

HYDROLAB PROFILE SAMPLING PROTOCOLS:

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

GRAB SAMPLING DEPTH PROTOCOLS:

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

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

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

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

SECCHI DEPTH:

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

Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Kristen Heyer
Contact_Position: Project Chief (Acting), Monitoring Field Office, DNR
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: 410 990-4600
Contact_Electronic_Mail_Address: kristen.heyer_nospam_@maryland.gov[Remove _nospam_ for valid email address]

Process_Step:
Process_Description:
LABORATORY ANALYSIS - CBL

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

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

Further information about laboratory analytical procedures may be obtained from the "Process_Contact".
Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Jerry Frank
Contact_Position: Manager Nutrient Analytical Services Laboratory, Faculty Research Assistant IV

Contact_Address:
Address_Type: mailing and physical
Address: Chesapeake Biological Laboratory, Center for Environmental and Estuarine Studies, The University of Maryland System, 146 Williams St; P.O. Box 38
City: Solomons
State_or_Province: Maryland
Postal_Code: 20688
Country: USA
Contact_Voice_Telephone: 410 326-7252
Contact_Electronic_Mail_Address: frank _nospam_@umces.edu[Remove _nospam_ for valid email address]

Process_Step:
Process_Description:
VERIFICATION AND DATA MANAGEMENT:

Each month DNR Tawes Office and Field Office personnel conducted data QA/QC procedures. All of the water quality calibration "grab" sample data were plotted. Outliers and anomalous values were thoroughly researched. Staff compared unusual values to historic values from the site and values from nearby sites. Weather events were considered, event logs were reviewed and CBL analytical laboratory staff and DNR field staff members were consulted regarding possible legitimate causes for outlying values. In cases where values were not considered to be legitimate, they were masked from the published dataset with the approval of the field staff and the Quality Assurance Officer.
Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Diana Domotor
Contact_Position: Administrator II
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: Back River, Big Annemessex River, Bohemia River, Bush River, C&D Canal, Chesapeake Bay, Chester River, Choptank River, Corsica River, Eastern Bay, Elk River, Fishing Bay, Gunpowder River, Little Choptank River, Magothy River, Manokin River, Middle River, Nanticoke River, Northeast River, Patapsco River, Potomac River, Patuxent

River, Pocomoke River, Pocomoke Sound, Rhode River, Sassafras River, Severn River, South River, Tangier Sound, West River and Wicomico River.
Direct_Spatial_Reference_Method: Point

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

Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
This metadata record is a description of the Maryland Department of Natural Resources Chesapeake Bay Water Quality Monitoring Program - Chemical and Physical Properties Component Database for the Maryland Chesapeake Bay Tributaries. Project data are an aggregation of data collected at sixty Maryland tributary stations during 2015.

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

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

The entity Monitoring_Event_Data is comprised of the attributes: Details, GaugeHeight, EventId, Source, Program, Project, Station, Latitude, Longitude, EventStartDate, EventStartTime, Cruise, TotalDepth, UpperPycnocline, LowerPycnocline, WindSpeed, WindDirection, PrecipType, TideStage, CloudCover, Pressure and FlowStage.

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

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, 2015 - June 30, 2016 can be found using publication type 'Quality Assurance Project Plan' to search the monitoring stories and publications page of [http://www.eyesonthebay.net]

Distribution_Information:
Distributor:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Michael 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
Contact_Voice_Telephone: 410 267-5785
Contact_Electronic_Mail_Address: mmallone@_no_spam_chesapeakebay.net[Remove _nospam_ for valid email address]
Resource_Description: Downloadable data
Distribution_Liability: None of the Chesapeake Bay Program partners nor any of their employees, contractors, or subcontractors make any warranty, expressed or implied, nor assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or data contained within the web site. Reference to any specific commercial products, processes, or services or the use of any trade, firm, or corporation name is for the information and convenience of the public and does not constitute endorsement, recommendation or favoring by the Chesapeake Bay Program partners.

Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Format_Name: ASCII file, formatted for text attributes, declared format
Format_Information_Content: Station Information data, Monitoring Event data, and Water Quality data
File_Decompression_Technique: No compression applied
Transfer_Size: 6.7

Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:

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

Metadata_Reference_Information:
Metadata_Date: 20160606
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, D-2
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401
Country: USA
Contact_Voice_Telephone: 410 260-8630
Contact_Facsimile_Telephone: 410 260-8640
Contact_Electronic_Mail_Address: benjamin.cole_nospam_@maryland.gov[Remove _nospam_ for valid email address]
Metadata_Standard_Name: Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998