Maryland Chesapeake Bay Mainstem Water Quality Monitoring Program - 2014

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Maryland Department of Natural Resources, Resource Assessment Service
Publication_Date: 20140309
Title: MD Dept. of Natural Resources, Chesapeake Bay Mainstem Water Quality Monitoring 2014
Geospatial_Data_Presentation_Form: Spatial dataset
Online_Linkage: http://www.chesapeakebay.net/data/index.htm

Description:
Abstract:
The physical/chemical component of the Maryland Chesapeake Bay Water Quality Monitoring Program consists of data collected at twenty-two stations located in Maryland's Chesapeake Bay mainstem. (Note the station count was incorrectly listed as twenty-one in previous mainstem project metadata records).

Sampling was conducted twice monthly in June, July and August of 2014, and once monthly during February, March, April, May, September, October and December for a total of fourteen samplings in the period of 18-Feb-2014 through 17-Dec-2014. Sampling during the first June and July cruises was limited to physical measurements collected to better assess dissolved oxygen levels in the mainstem deep waters. No samples were collected November through February at eastern and western transect stations, resulting in only ten mainstem flanking station samplings a year. Water quality was not surveyed in January 2014 due to lack of U.S. Environmental Protection Agency funding.

The water quality monitoring program began in 1984 and is ongoing. The program assesses the water quality by evaluating the levels of nutrients and closely related habitat impacts such as dissolved oxygen and water clarity. One of the main goals of the Chesapeake Bay restoration is to reduce the impacts of excess nutrients on the Bay and these measures provide some of the most direct linkages to management programs that are achieving this goal. The Chesapeake Bay Program jurisdictions have agreed to reduce nitrogen, phosphorus and sediment pollution to the Bay.

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.

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 the 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 two 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, 2014 - June 30, 2015
[http://mddnr.chesapeakebay.net/eyesonthebay/documents/MdDNR_MTQAPP2014.pdf]

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

Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 20140218
Ending_Date: 20141217
Currentness_Reference: Ground Condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -80.53758
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 > 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
Temporal:
Temporal_Keyword_Thesaurus: Global Change Master Directory Science Keywords
Temporal_Keyword: 2014
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
Country: USA
Contact_Voice_Telephone: 410-260-8630
Contact_Electronic_Mail_Address: renee.karrh_nospam_@maryland.gov[Remove _nospam_ for valid email address]
Browse_Graphic:
Browse_Graphic_File_Name:
[http://mddnr.chesapeakebay.net/eyesonthebay/documents/metadata/MD_DNR_MainstemStns 2014.pdf]
Browse_Graphic_File_Description: Map of twenty-two 2014 Maryland Chesapeake Bay Mainstem 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, 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 Mainstem 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 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 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 2014: Mainstem water quality monitoring sampling was not conducted because it was not funded by EPA due to budget limitations for 2015.

February 2014: The cruise was conducted in two days. Eight inches for snow fell on the first day and winds on the second day were gale force. When the station CB4.4 bottom sample was measured, scoping of the data sonde was noted. Meter Comments for stations: CB5.3, CB5.2, CB5.1, CB4.4, CB4.3C, CB4.2C, CB4.1C and CB3.3C stated that the conductivity post calibration results (1448) were lower than the calibration standard (24820). At station CB5.3, the sonde weight touched bottom at 26 meters depth. At station CB5.1, the sonde weight toughed bottom at 34 meters depth and the meter was scoping. Scoping is a term used to describe situations when strong currents and or winds make it difficult to maintain the water quality data sonde at a depth long enough for readings to stabilize.

March 2014: At station CB4.4, data sonde scoping during the bottom sample was noted. Station CB3.2 surface salinity and conductivity reading changed from readings measured at the start of sampling. Station CB2.2 conductivity measurements were not stable at the 5 meter depth.

April 2014: Data sonde scoping, while acquiring readings in the lower half of the water column, was noted at station CB5.1. Scoping at the bottom occurred at station CB4.4.

May 2014: A ship passed during station CB4.2C sampling 1-May-2014.

Air temperatures were unusually warm the afternoon of 12-May-2014. A cruise report note stated that bottom dissolved oxygen at station CB4.3W at the bottom (9.0 meters) was 1.7mg/L. Small flecks on the water surface were observed when station CB4.3W was sampled 13-May-2014. Station CB4.1W LICOR readings were considered sketchy. Data sonde scoping at the bottom was noted 14-May-2014 at stations CB3.3C, CB2.2 and CB1.1. On the same day, scoping at the 17 meter depth at station CB3.1 and station CB2.2 conductivity readings were unstable at 6 meters depth.

June 2014: During the Jun 2-4, 2014 survey, a note in the cruise report observed that there was no pycnocline at station CB2.2 and that it was all fresh water. Meter scoping was noted at station CB5.3 at the 17 meter depth. A dip in station CB4.2W dissolved oxygen values was remarked. On June 4, comments related to thunder storms the previous evening were recorded at stations CB3.2, CB3.1, CB2.2, CB2.1 and CB1.1.

During the June 23-25 survey, while sampling station CB3.3C, the sample pump/data sonde array hit bottom at 25 meters depth. While sampling station CB3.2, the sample pump/data sonde array hit bottom at 12 meters depth.

July 2014: The 7-July-2014 surface water quality sample at station CB5.2 was collected with the hull pump. During the July 7-9 cruise, Hydrogen sulfide odors were noted in the below pycnocline and bottom samples collected at stations CB5.1, CB4.4,CB4.3E, CB4.3C, CB4.2C CB4.1E and CB4.1C. The occurrence of thunder storms was remarked in field data sheet notes for stations CB3.2, CB3.1, CB2.2, CB2.1 and CB1.1.

During the July 22-24 cruise, a surface dissolved oxygen reading of 15.8mg/L at station CB4.1W inspired collection of a phytoplankton sample with the hull pump.

Phytoplankton evaluation results revealed dead and dying Prorocentrum minimum cells at an approximate concentration of 4.3 x 10^7 cells/L. Station CB5.3 data sonde readings at 21 meters depth were double checked. Meter scoping was noted, when bottom readings at station CB4.1E were acquired.

August 2014: A new digital thermometer was used to measure air temperature beginning 4-Aug-2014. Hydrogen sulfide odors were noted in below pycnocline and bottom water samples at stations CB4.3E, CB4.2C, CB4.1C and CB3.3C. A Hach Hydrogen Sulfide Color Disc Test Kit measurement of hydrogen sulfide in the CB3.3C sample returned a result of <0.10 mg/L H2S. A hydrogen sulfide smell was also remarked in the below pycnocline sample at station CB4.1E. At station CB3.2 a bottom dissolved oxygen reading of 0.33 mg/L was recorded. Water quality data sonde readings at 18 meter and 16 meter depths at station CB5.1 were double checked. Dissolved Oxygen readings at stationCB4.4 were checked twice at station CB4.4.

During the August 25-27 cruise, hydrogen sulfide odors were noted in bottom water at stations CB5.2, CB4.3C, CB4.3E, CB4.2C and CB3.3W. Hydrogen sulfide odors were noted in both below pycnocline and bottom water at stations CB4.1C, CB4.1E, and CB3.3C. Meter scoping at the bottom was noted at stations: CB5.2 and CB4.1C.

September 2014: The September cruise report stated that the freezer, used to hold AA vials and the filter pads, was not powered for an unknown period overnight. Meter scoping was noted at station CB4.1C. Scoping was also observed at the bottom at station CB4.3C.

October 2014: A bottom dissolved oxygen reading of 1.5 mg/L was reported at station CB4.3C. Rough conditions 22-Oct-2014 made water sample filtration difficult. Meter scoping was noted at station CB5.3.

November 2014: Meter scoping at the bottom was noted at station CB5.3.

December 2014: Gallon sampling bottles were not available 15-Dec-2014. Therefore water samples were collected using the duplicate sample bucket and plankton bottles.

Logical_Consistency_Report:

For logistical reasons, station LE2.3, a Potomac River water quality sampling project station, is routinely sampled during Chesapeake Bay mainstem sampling cruises. For most of the year, tributaries monitoring project boat stations are sampled using small boats. The larger mainstem sampling vessel is used when weather and safety are concerns. In addition to mainstem stations sampling, one or more of the following tributaries project stations may be sampled using the larger vessel during December, January and February surveys: EE2.2, EE2.1, EE1.1, ET4.2 and WT5.1.

January 2014: No samples were collected during January 2014 because it was not funded by EPA due to budget limitations for 2015.

February 2014: Surface and 1 meter water quality sample at stations CB5.1, CB4.4 and CB4.3C were collected using water collected at the same depth.

March 2014: Normally, monthly sampling of the Chesapeake Bay mainstem is conducted over three days due to weather. March 2014 cruise sampling was condensed to two days. Surface and 1 meter water quality sample at stations CB4.4 and CB2.1 were collected using water collected at the same depth.

April 2014: Ship schedule and weather caused problems in April 2014. The following April mainstem survey stations were sampled 1-May-2014: CB4.3C, CB4.2C, CB4.1C, CB3.3C, CB3.2, CB3.1 and CB2.2.

May 2014: Routine May mainstem survey samples were collected May 12-14 at stations: CB5.3, CB5.2, CB5.1, CB4.4, CB4.3E, CB4.3C, CB4.3W, CB4.2W, CB4.2C, CB4.2E, CB4.1E, CB4.1C, CB4.1W, CB3.3E, CB3.3C, CB3.3W, CB3.2, CB3.1, CB2.2, CB2.1 and CB1.1. The below pycnocline and bottom water quality samples at station CB3.1 were collected using water collected at the same depth on 14-May-2014.

June 2014: There were two cruises: June 2-4, 2014 and June 23-25, 2014. Nutrient samples were collected during the first cruise. Sampling on the second cruise was limited to hydrocasts, as planned. This cruise was performed to assess summer low dissolved oxygen conditions.

July 2014: There were two cruises: July 7-9, 2014 and July 22-24, 2014. Nutrient samples were collected during the first cruise. Sampling on the second cruise was limited to hydrocasts, as planned. This cruise was performed to assess summer low dissolved oxygen conditions.

During the July-7-9 survey, water collected from the same depth was used for both the 1 meter and 0.5 meter samples at station CB5.3. Due to sample pump issues, the surface and 1 meter water samples at station CB5.2 were collected using the hull pump. At station CB4.4, water for the surface and 1 meter samples was collected at the same depth and the conductivity reading was taken at the surface. The bottom and below pycnocline sample waters were collected in one bottle at station CB4.3E and the 1 meter and 0.5 meter sample water came from the same depth. Waters collected for the 0.5 meter and 1 meter samples at station CB3.3C came from the same depth.

There were two August 2014 cruises. Full suites of nutrient samples were collected on both cruises.

August 4-6, 2014: When station CB3.2 was sampled, there was no pycnocline; above pycnocline and below pycnocline samples were collected at 1/3 and 2/3 of the station total depth, respectively. The bottom and below pycnocline water samples at station CB2.2 were acquired from the same bottle. Surface and 1 meter depth samples at stations: CB5.3 and CB5.2 were collected at the same depth.

August 25-27, 2014: No known issues. This cruise was performed to assess summer low dissolved oxygen conditions. Full nutrient samples were also collected.

September 2014: There was no pycnocline when stations CB5.2 and CB5.1were sampled, so above-pycnocline and below-pycnocline samples were collected at 1/3 and 2/3 of the station total depth, respectively. Surface and 1 meter depth samples at stations: CB4.2C and CB4.2E were collected at the same depth.

October 2014: It was only possible to lower the water sampling pump to a depth of 33 meters at station CB5.1. Station Total Depth was 35 meters. Above pycnocline and below pycnocline samples were collected at 1/3 and 2/3 of the station total depth, respectively because no pycnocline existed at the following stations: CB5.3, CB5.2, CB4.4, CB4.3C, CB4.3E, CB4.2C, CB4.1C, CB4.1E, CB3.3C and CB2.2. Surface and 1 meter depth water samples at stations: CB5.2, CB5.1, CB4.4, CB3.2, CB3.1, CB2.2, CB2.1 and CB1.1 were collected at the same depth.

November 2014: Above pycnocline and below pycnocline samples were collected at 1/3 and 2/3 of the station total depth, respectively because no pycnocline existed at the following stations: CB5.2, CB5.1CB4.4, CB4.3C, CB4.2C, CB4.1C, CB3.2, CB3.1 and CB2.2. Surface and 1 meter depth water samples at stations: CB5.3, CB5.2, CB5.1 and CB4.4 were collected at the same depth. Similarly, 1 meter and 0.5 meter samples were collected at the same depth when stations CB3.2 and CB3.1 were sampled.

December 2014: Above pycnocline and below pycnocline samples were collected at 1/3 and 2/3 of the station total depth at station CB5.1. Surface and 1 meter depth water samples at station CB4.2C were collected at the same depth.

Completeness_Report:

January 2014: There was no water quality monitoring cruise in January because funding was not available.

March 2014: Stations LE2.3 and CB5.3 were not sampled. LICOR readings were not acquired at station CB3.1 due to instrumentation problems. A dredge pipeline blocked access to station CB1.1.

April 2014: Sampling, on the first day scheduled (14-Apr-2014), was cancelled due to very windy conditions. Samples were collected at stations CB5.3, CB5.2, CB5.1 and CB4.4 on 28-Apr-2014. Stations, scheduled to be sampled 29-Apr2014 and 30-Apr-2014, were not sampled due to gale force winds and thunder storms.

May 2014: Water quality samples originally scheduled for 15-Apr2014 collection were collected 1-May-2014 at stations: CB4.3C, CB4.2C, CB4.1C, CB3.3C, CB3.2, CB3.1 and CB2.2. Routine May mainstem survey samples were collected May 12-14 at stations: CB5.3, CB5.2, CB5.1, CB4.4, CB4.3E, CB4.3C, CB4.3W, CB4.2W, CB4.2C, CB4.2E, CB4.1E, CB4.1C, CB4.1W, CB3.3E, CB3.3C, CB3.3W, CB3.2, CB3.1, CB2.2, CB2.1 and CB1.1.

June 2014: No calibration samples were collected during the second June mainstem water quality monitoring cruise. Sampling was limited to water column profiles using the data sonde.

July 2014: No calibration samples were collected during the second July mainstem water quality monitoring cruise. Sampling was limited to water column profiles using the data sonde.

There are no known completeness issues for the months: February and August-December.

Lineage:

Process_Step:

Process_Description:

SONDE CALIBRATION and POST-CALIBRATION

The Yellow Springs Instrument (YSI) 6000 data sondes were maintained and calibrated before and after each cruise in accordance with manufacturer's recommendations.

WATER COLUMN PROFILE SAMPLING PROTOCOLS:

A profile of temperature, specific conductance, dissolved oxygen, and pH was obtained from the water column by deploying the data sonde 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. 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 1.0 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 of the distance from the surface to the bottom, at the closest profile depth two thirds of the distance from the surface to the bottom, and 1.0 m above the bottom.

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: Sally Bowen
Contact_Position: Project Chief, 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: 410 263-3369
Contact_Electronic_Mail_Address: sally.bowen_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 also performed chlorophyll analyses. Prior to 2009, chlorophyll analyses were performed by the Maryland Department of Mental Health and 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 conduct data QA/QC procedures. All of the water quality calibration "grab" sample data are plotted. Outliers and anomalous values are thoroughly researched. Staff members compare unusual values to historic values from the site and values from nearby sites. Weather events are considered, event logs are reviewed and CBL analytical laboratory staff members and DNR field staff members are consulted regarding possible legitimate causes for outlying values. In cases where values are not considered to be legitimate, they were masked in 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: Renee Karrh
Contact_Position: Program Manager
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: renee.karrh_nospam_@maryland.gov[Remove _nospam_ for valid email address]

Spatial_Data_Organization_Information:
Indirect_Spatial_Reference: Chesapeake Bay, Maryland
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 Mainstem. Project data are an aggregation of data collected at twenty-two Maryland mainstem stations during 2014.

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

The entity Station_Information is comprised of the attributes: Station, Station_Description, USGS_Gage, CBSEG_2003, CBSEG_2003_Description, CB_Segment_Shed_2009, CB_Segment_Shed_2009_Description, HUC12, FIPS, State, County_City, FallLine, Latitude, Longitude, UTMX, UTMY and LL_Datum.

The entity Monitoring_Event_Data is comprised of the attributes: Event_Id, Source, Agency, Program, Project, Station, Event_Start_Date, Event_Start_Time, Cruise, Total_Depth, Upper_Pycnocline, Lower_Pycnocline, Wind_Speed, Wind_Direction, Precip_Type, Tide_Stage, Cloud_Cover, Gauge_Height, Pressure, Flow_Stage and Details.

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

The entity Light_Attenuation_Data is comprised of the attributes: Event_Id, Source, Station, Station_Description, Program, Project, Sample_Date, Sample_Time, Sample_Replicate_Type, SubstanceIdentificationName, Depth, Unit, Method, Details, Upper_Pycnocline and Lower_Pycnocline.

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, 2014 - June 30, 2015 [http://mddnr.chesapeakebay.net/eyesonthebay/documents/MdDNR_MTQAPP2014.pdf]

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
Country: USA
Contact_Voice_Telephone: 800-968-5785
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, Light Attenuation data and Water Quality data.
File_Decompression_Technique: No compression applied
Transfer_Size: 5.2
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: [http://www.chesapeakebay.net/data]
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: 20150417
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_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