Maryland Chesapeake Bay Tributary Water Quality Monitoring Program - 2010

Metadata:

Identification Information:
Citation:
  Citation Information:
    Originator: Maryland Department of Natural Resources, Resource Assessment Service
    Publication Date: 20110401
    Title: Md DNR Chesapeake Bay Tributary Water Quality Monitoring Program 2010
    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 water quality monitoring data collected at seventy tributary stations. Samples at all tributary stations are collected monthly.

    This 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 its tributaries and these measurements 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 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 the two documents listed below. The documents may be obtained from The Chesapeake Bay Program Office.


The most current version of the Water Quality Data Dictionary - Online may be found at: [http://archive.chesapeakebay.net/data/data_dict.cfm?DB_CODE=CBP_WQDB].


Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
   Beginning_Date: 20100101
   Ending_Date: 20101231
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: 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 Creek
Place_Keyword: Back River
Place_Keyword: Big Annemessx River
Place_Keyword: Bohemia River
Place_Keyword: Bush River
Place_Keyword: Chester River
Place_Keyword: Chicamacomico 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: Transquaking River
Place_Keyword: Wicomico River

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: rkarrh_No_Spam_@dnr.state.md.us [Remove _No_Spam_ for valid email address]
  Browse_Graphic:
    Browse_Graphic_File_Description: Map of seventy 2009-2010 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,
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 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.

**Logical Consistency Report:**

January 2010 - Post-calibration of pH values at stations: CB5.1W, LE1.1, LE1.2, LE1.3, LE1.4, RET1.1, TF1.5, TF1.6 and TF1.7 were outside of the acceptable range. The Secchi disk depth at station TF1.3 was not measured in the shade.

February 2010 - The XGG8251 sample was collected from the bridge. Samples from station ET7.1 were collected from the ferry and Secchi measurement was made at the dock.

March 2010 - The occurrence of heavy rains 13-Mar-2010 were remarked in comments logged for stations BXXK0031, ET1.1, ET10.1, ET2.1, ET2.2, ET2.3, ET3.1, ET4.1 and POK0087. High water and strong current were noted when samples for station TRQ0088 were collected from the bridge. The WIW0141 sample was collected from the ferry bulkhead. LICOR readings at stations RET1.1 and TF1.7 did not stabilize.

April 2010 - Adjustments were made to station EE3.0 conductivity and salinity values based on meter post-calibration results. The station TF1.3 sample was collected at the park. Secchi disk depth was greater than total depth.

May 2010 - The LICOR reading at station TF1.7 at 0.5m depth was negative. The station TF1.3 sample was collected from the ferry.
June 2010 - The station TF1.3 sample was collected from the bridge. Dissolved oxygen readings at station XHH4742 seemed unusual but post-calibration values were within acceptable range and the membrane was intact. Post calibration pH values of the meter used to measure samples at stations ET3.1, ET6.1, TRQ0146, TRQ0203, TRQ0224, WIW0141 and XDJ9007 were outside of acceptable range.

July 2010 - The station TF1.3 Secchi disk depth, measured at the south bank, was greater than total depth. Erratic dissolved oxygen readings were observed at stations WT8.1 and WT8.2. Station WIW0141 samples were collected from the ferry. Specific conductance data measured at station ET6.1 were rejected during quality assurance.

August 2010 - The station TF1.3 sample was collected from the bridge. Unusually high tide levels were noted at stations BXXK0031 and POK0087. The station WIW0141 sample was collected from the ferry and the Secchi measurement was not made in the shade.

September 2010 - Very high current velocity was noted at station ET10.1.

October 2010 - The station TF1.3 sample was collected from the bridge. The CTD readings were made in a bucket at station ET3.1. The station XDJ9007 Secchi measurement was not made in the shade. The station WIW0141 sample was collected from the bulkhead.

November 2010 - Green water was observed at station TRQ0203. Remarks about unusually high water were included in logs for stations BXXK0031, CCM0069, ET10.1, POK0087 and TRQ0088.

December 2010 - Station ET5.1 samples were collected from Ganey's Wharf. Station ET5.2 samples were collected from S. fishing pier. Station XGG8251 samples were collected from the drawbridge. Station ET7.1 samples were collected from the pier. Surface and 1m samples at stations ET1.1 and ET4.2 were collected at the same depth.

Completeness_Report:

January 2010 - No known issues.

February 2010 - The following stations were not sampled: EE2.2, EE3.3, ET1.1, ET6.2, MNK0146, TF1.3, TF1.4, TF1.5, TRQ0203, TRQ0224, WT3.1, WXT0001 and XHH4742. Air temperature was not measured at stations: CCM0069, ET6.1, WIW0141 and XDJ9007 due to a broken thermometer. Total depth was not measured at stations ET7.1 and WIW0141. Secchi measurements were not made at station XGG8251. A bottom sample was not collected at station ET7.1. The LICOR sensor was at the factory for re-calibration and LICOR readings were not taken at stations: CB5.1W, LE1.1, LE1.2, LE1.3, LE1.4, RET1.1, TF1.6 and TF1.7.

March 2010 - Air temperature was not measured at stations: TF1.0, TF1.2, TF1.3, TF1.4 and WXT0001. LICOR readings were not taken at stations: CB5.1W and TF1.6. Total depth measurement at station TRQ0088 was not possible due to strong current.
April 2010 - LICOR readings were not measured at station CB5.1W due to rough seas. A water column profile was not taken at station ET10.1 due to short cable length.

May 2010 - Secchi depth and total depth were not measured at station TF1.3.

June 2010 - Total depth was not measured at station TF1.3. Secchi depth was not measured at station ET4.1.

July 2010 - Stations EE3.2, EE3.3 and ET6.2 were not sampled due to high winds and dangerous conditions. Secchi depth was not measured at station WIW0141. A water column profile was not taken at station ET10.1 due to strong current.

August 2010 - Secchi depth and total depth were not measured at station TF1.3. Total depth was not measured at station WIW0141.

September 2010 - LICOR readings were not measured at stations: CB5.1W, LE1.1, LE1.2, LE1.3, LE1.4, RET1.1, TF1.5, TF1.6 and TF1.7. Station WT6.1 was not sampled due to high winds. Station MNK0146 was not sampled due to low water. Inclement weather prevented sampling at stations EE2.1 and EE2.2. Secchi depth was not measured at stations ET4.1 and TF1.3. Total depth was not measured at stations TF1.3 and TRQ0203. Air temperature was not measured at stations: BXK0031 and ET5.1.

October 2010 - Total depth was not measured at station BXK0031 due to strong current. Secchi depth and total depth were not measured at station TF1.3.

November 2010 - Station XHH4742 was not sampled.

December 2010 - Bottom water samples was not collected at stations: ET5.1 and ET7.1. Total Depth was not measured at station WIW0141. Stations EE2.2, ET6.2, XC14078 and EE2.1 were not sampled due to wind. Stations EE3.0, EE3.1, ET1.1, MNK0146, WT1.1, WT2.1, WT3.1, WT4.1 and XHH474 were not sampled due to wind and ice. Stations EE3.2, EE3.3, ET8.1 and ET9.1 were not sampled due to bad weather.

Lineage:
Process Step:
Process Description:
SONDE CALIBRATION and POST-CALIBRATION

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

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 1.0 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 the distance from the
surface to the bottom, at the closest profile depth two thirds the distance from the surface to the
bottom, and 1.0 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.

PHOTOSYNTHETIC ACTIVE RADIATION (PAR):

PAR readings were taken in the field in order to calculate a light attenuation coefficient. PAR
measurements were taken with a LICOR quantum meter (Model LI-1000 Data Logger) with an
attached underwater probe (Model LI-192SA). The probe was a flat, upwardly-directed probe.

A vertical profile of light penetration was begun by taking an initial reading with the sensor
just below the surface of the water (0.1 m). Subsequent readings were taken at either 0.25 m or
0.50 m intervals depending on the turbidity of the water column, (taking shallower readings in
more turbid water). Depth readings were continued until a value less than ten percent (10%) of the
surface reading was attained. Once the readings stabilized, at least five readings were allowed to
flash on the instrument display before recording the data reading for a specific depth. The mean of
the previous five readings that appeared on the instrument display were recorded in the data logger.

Light measurements made for each profile are log-scale regressed against depth to determine
the compensation depth, i.e., the depth of penetration of one percent (1 %) of the surface PAR. The
compensation depth is used in computing the integrated carbon production for that water column.
When light profiles are not available, the Secchi disk depth is used to calculate the compensation depth. A regression has been made between the Secchi depth and the compensation depth for the same water column (for those stations where both Secchi data and LICOR data are taken). By using this regression, a compensation depth can be estimated from a Secchi depth.

**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:** SBOWEN_nospam_@dnr.state.md.us[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.

Since 2009, the NASL has performed chlorophyll analyses. 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:** Carl Zimmerman

**Contact Position:** Director of Chesapeake Biological Laboratory Analytical Services/Quality Assurance Officer

**Contact Address:**

**Address Type:** mailing and physical
Address: Chesapeake Biological Laboratory, Center for Environmental and Estuarine Studies, The University of Maryland System, 1 Williams St; P.O. Box 38
City: Solomons
State or Province: Maryland
Postal Code: 20688
Country: USA
Contact_Voice_Telephone: 410 326-4281
Contact_Electronic_Mail_Address: carlz_nospam_@cbl.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: 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: rkarrh_Nospam_@dnr.state.md.us [Remove _Nospam_ for valid email address]

Spatial Data Organization Information:
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 70 Maryland tributary stations during 2010.

  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, DESCRIPTION, WATER_BODY, CBP_BASIN, TS_BASIN, BASIN, CBSEG_2003, CBSEG_2003_DESCRIPTION, HUC8, CATALOGING_UNIT_DESCRIPTION, HUC11, WATERSHED, FIPS, STATE, COUNTY/CITY, FALL_LINE, LATITUDE, LONGITUDE, LL_DATUM, UTM_X and UTM_Y

  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, AIR_TEMP, WIND_SPEED, WIND_DIRECTION, PRECIP_TYPE, TIDE_STAGE, WAVE_HEIGHT, CLOUD_COVER, GAGE_HEIGHT, PRESSURE, FLOW_STAGE, DETAILS and WATER_BODY.

  The entity Water_Quality_Data is comprised of the attributes: EVENT_ID, SOURCE, PROJECT, STATION, SAMPLE_DATE, SAMPLE_TIME, DEPTH, LAYER, SAMPLE_TYPE, SAMPLE_ID, PARAMETER, QUALIFIER, VALUE, UNIT, METHOD, LAB, PROBLEM, DETAILS, TOTAL_DEPTH, UPPER_PYCNOCLINE, LOWER_PYCNOCLINE, LAT, and LONG.
The entity Light_Attenuation_Data is comprised of the attributes: EVENT_ID, SOURCE, PROJECT, STATION, SAMPLE_DATE, SAMPLE_TIME, SAMPLE_REPLICATE_TYPE, DEPTH, EPAR_S, EPARU_Z, EPARD_Z, UNIT, METHOD, DETAILS, WATER_BODY, TOTAL_DEPTH, UPPER_PYCNOCLINE, and LOWER_PYCNOCLINE.

Entity_and_Attribute_Detail_Citation:

The most current version of the Water Quality Data Dictionary - Online may be found at: [http://archive.chesapeakebay.net/data/data_dict.cfm?DB_CODE=CBP_WQDB].


Distribution_Information:
Distributor:
Contact_Information:
Contact_Person_Primary:
   Contact_Person: Michael Mallonee
   Contact_Position: Water Quality Data Manager
Contact_Address:
   Address_Type: Mailing and Physical
   Address: 410 Severn Avenue, Suite 109
   City: Annapolis
   State_or_Province: Maryland
   Postal_Code: 21403
   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, and Water Quality data, Light Attenuation data
File_Decompression_Technique: No compression applied
Transfer_Size: 10

Digital Transfer Option:
Online_Option:
  Computer_Contact_Information:
    Network_Address:
      Network_Resource_Name: <http://www.chesapeakebay.net/data_waterquality.aspx>
    Access_Instructions: Data are available though 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: 20110408
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: bcole_Nospam@dnr.state.md.us [Remove _Nospam_ for valid email address]
Metadata_Standard_Name: Content Standards for Digital Geospatial Metadata