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## VIRGINIA CHESAPEAKE BAY PROGRAM BENTHIC MONITORING SURVEY DATA DICTIONARY

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Virginia Chesapeake Bay Water Quality Monitoring Program: Benthic Components

- Taxonomic Data Dictionary
- Biomass Data Dictionary
- Sediment Data Dictionary
- Water Quality Data Dictionary
- Event and Biota Event Data Dictionary
- Benthic Index of Biotic Integrity Data Dictionary

NOTE THIS DICTIONARY WAS REVISED ON 16 MAY 2008 AND SUPERSEDES ALL OTHER CBP DICTIONARIES FOR THE VIRGINIA BENTHIC MONITORING DATA

The state of Virginia, in cooperation with the US EPA Chesapeake Bay Program, has monitored benthic species abundance's in the Virginia Chesapeake Bay mainstem and tributaries since March 1985. The program is designed to give comprehensive spatial and temporal information on benthic biota. The sampling parameters include water quality measurements, benthic fauna identification, benthic fauna biomass determination, and sediment analysis. In 1996 the program incorporation of rapid assessment methodologies into the benthic monitoring program to assess aspects of community function and habitat heterogeneity. The changes to the program included the addition of a seasonal random strata-sampling component to the ongoing sampling and a short pilot project (1996-2000) using sediment-imaging technology. All benthic sample collection is performed independently from the Virginia Plankton and Water Quality monitoring programs.

# NAMES AND DESCRIPTIONS OF ASSOCIATED DATA DICTIONARY FILES  
2000 Users Guide to Chesapeake Bay Program Living Resources Data Sets

#PROJECT TITLE:  
Virginia Chesapeake Bay Water Quality Monitoring Program: Benthic Monitoring Component

# CURRENT PRINCIPAL INVESTIGATORS  
>PROGRAM MANAGER: Frederick Hoffmann, Virginia Department of Environmental Quality  
>PRINCIPAL INVESTIGATORS: D.M. Dauer, Old Dominion University  
>DATA COORDINATOR: Anthony Rodi, Old Dominion University  
>DATA MANAGER: TBD, Old Dominion University

# CURRENT FUNDING AGENCIES  
Virginia Department of Natural Resources as match grant to US EPA Chesapeake Bay Program

#PROJECT COST  
\$ 182,946 (for all Virginia Benthic Monitoring Programs, fiscal year July 1, 2007-June 30, 2008)

#CURRENT QA/QC OFFICER  
A Rodi, Old Dominion University

#POINT OF CONTACT:  
Jacqueline Johnson  
Living Resources Data Manager  
US EPA Chesapeake Bay Program Office  
410 Severn Avenue, Suite 109

Annapolis, MD 21403  
1-800-968-7229, X729  
1-410-267-5729  
E-Mail [jjohnson@chesapeakebay.net](mailto:jjohnson@chesapeakebay.net)

#LOCATION OF STUDY

Chesapeake Bay and tidal tributaries in the state of Virginia

#DATE INTERVALS

03/13/1985-12/31/2007

#ABSTRACT

The purpose of the Benthic Biological Monitoring Program is to quantitatively characterize the estuarine macro benthic communities on a regional basis. Sedentary benthic organisms represent optimal indicator species because they are unable to leave or avoid stressed habitats. The relatively long life span of many macro benthic species enables an evaluation of previous water quality conditions. The community is composed of species that vary from being extremely tolerant to extremely sensitive to changes in water quality. Comparisons of the relative proportions of these different types of species allow an evaluation of the amount of environmental stress. The long-term goal of this study is to relate spatial and temporal trends of the benthic biota to changes in water quality within the Chesapeake Bay.

Three regions of the lower Bay were identified to sample the major salinity-sedimentary regions of the estuarine gradient with-in the tributaries (Rappahannock, York, Elizabeth and James Rivers) and the mainstem of the lower Bay. Macro benthic communities at the stations for each of these regions had lower abundances, fewer species, and a shallower-dwelling fauna than communities in regions with similar salinity-sedimentary characteristics. Stress from hypoxic or anoxic events may result in such shallow-dwelling, low diversity, low abundance communities.

#STATION NAMES AND DESCRIPTIONS

Please be aware that the sampling design of this survey has changed over time to accommodate changes in the overall objectives for this program. The site selection criteria for some sampling stations have changed but the actual method of sample analysis has not changed significantly. Please read the station names and descriptions section carefully before trying to use this data.

\* The fixed site element of the program consisted samples collected from twenty-six fixed sites from March 1985 through the present. Sampling was conducted quarterly from 1985-1995, after which sampling was conducted twice annually. Not all sites have been collected since project inception or are still being collected. During each sampling event three samples were taken at each site. A sampling site was defined by geography (within a 1 km radius from a fixed location) and my specific depth and substrata criteria. Samples were collected randomly within the 1 KM radius. Stations have been moved from the Chesapeake Bay Program Water Quality station locations or created to better represent the dominant sediment, depth and salinity conditions of a region or to allow the larger sampling vessel required for benthic work on to the station.

*CB5.4*	Main Channel, Mid-Bay, above mouth of Rappahannock River, South Bound Channel
CB5.5	Main Channel, Mid-Bay, above mouth of Rappahannock River, South Bound Channel
CB6.1	Main Channel, Mid-Bay, parallel to mouth of Rappahannock, South Bound Channel
CB6.3	Main Channel. Mid-Bay, mid-way between York and Rappahannock River, south Bound Channel
CB6.4	Main Channel, Mid-Bay, parallel to mouth of York River, South Bound channel
CB7.1S	Main Channel, Mid-Bay, parallel to mouth of Rappahannock, North Bound channel
CB7.2	Main Channel, Mid-Bay, between Rappahannock and York River
*CB7.3E*	Main Channel, Mid-Bay, Between York and James River
*CB8.1*	Main Channel, Mid-Bay, parallel to mouth of James River
*LE3.2*	Rappahannock River, Long Point, upstream of Buoy #R8
*LE3.4*	Rappahannock River, Orchard Point

#LE3.4B#	Rappahannock River, NEW 1994
*LE4.1*	York River, VIMS Slack Water Station #N44
LE4.3	York River, Between AMOCO and Sarah Creeks
#LE4.3B#	York River, off of VIMS in Deep channel
*LE5.2*	James River, off of Buoy C12-13
*LE5.4*	James River, Buoy 9
RET3.1	Rappahannock River, North of Buoy #R10
*RET4.3*	York River, VIMS Slack Water Station #C57
*RET5.2*	James River, Swann's Point
#RET5.2A#	James River, Swann's Point
SBE2	Elizabeth River, South Branch,
*SBE5*	Elizabeth River, South Branch, off of VEPCO
*TF3.3*	Rappahannock River, Buoy #N40
*TF4.2*	York River tributary, Pamunkey River at White House
*TF5.5*	James River, Red Buoy 10
EBB1	Elizabeth River, North Branch, near confluence of Indian River
ELC1	Elizabeth River, Mouth of Craney Island Creek
ELD1	Elizabeth River, Lovett Point
ELF1	Elizabeth River, Near Town Point
LFA1	Elizabeth River Tributary, Lafayette River, Buoy 11
LFB1	Elizabeth River Tributary, Lafayette River, Near Route 460 Bridge
SBA1	Elizabeth River, South Branch, South of tunnel area
SBB1	Elizabeth River, South Branch, across from Pier 3-5
SBC1	Elizabeth River, South Branch, at confluence with Paradise Creek
SBD1	Elizabeth River, South Branch, at confluence with Julian Creek
SBD2	Elizabeth River, South Branch, at confluence with Newton Creek
SBD4	Elizabeth River, South Branch, at confluence with New Mill Creek
WBB1	Elizabeth River, West Branch, at mouth of Sterns Creek
WBB5	Elizabeth River, West Branch, at Bouy R15

Note Following:

\*Name\*- denotes station location has been moved slightly from regular Chesapeake Bay Water Quality monitoring station location.

#Name#- denotes station created for Benthic Monitoring Program

\* The Probability-based sampling component was added in 1996 in coordination with the random strata-sampling program in Maryland waters. Twenty-five stations were randomly selected in each of five strata, the Elizabeth, the James River, the York River, the Rappahannock River and the mainstem of Chesapeake Bay. In each stratum five additional sites were randomly selected as potential replacement sites for any station rejected in the field due to an inability to sample the site (e.g. an oyster reef, or inter-tidal site). Random stations were sampled between July 15, 1996 and September 31, 1996.

>Stations, which were randomly selected from each stratum as follows:

- Station were selected by overlay grids on navigational charts.
- Each stratum was mapped and numbers assigned to all grid locations falling within the stratum.
- Sampling locations was chosen for each stratum at random by a computer generated random number. If a selected grid could not be sampled, another grid was randomly selected until the number of samples per strata desired was reached.

\*EPA-National Coast Assessment sampling was conducted during the 2005-2006 time frames. Sampling for this program used randomly selected Chesapeake Bay Program monitoring sites plus a number of additional sites. The additional sites were selected probabilistically, using the EMAP random tessellation stratified survey design. Rather than being completely random, the nested hexagon design assures that chance spatial groupings of nearby stations don't occur. The two DEQ-specified strata in our program include (1) Atlantic Coastal estuarine waters (Chincoteague to Back Bay) and (2) only 'minor tidal tributaries' within the Bay drainage - to exclude the mainstem Bay, Rappahannock, York and James. Major 'embayments', such as Mobjack Bay, Fleets Bay and Ingram Bay are included, as are tidal embayments on the Virginia side of

the Potomac. We weight our total site distribution to receive 30% on the Atlantic side and 70% within the Bay drainage. Other than that, the distribution within the Bay drainage is completely un-weighted, all minor tidal tributary waters within the Bay drainage have an equal chance of being selected.

#STATION NAMES, AND POSITIONS

>FOR 1996 sampling events, all Random station names are designated in the form XXX-##-YY/YY, where XXX is the Strata or Sampling area designation, # is site number with in a strata or sampling area and Y/YY is the project year of sample collection. In 1997 naming protocol was modified to the form CCT##, where CC is the in-house cruise number, T is the Strata identifier, and ## is the site number for that cruise. All FIXED stations have the standard CBP Station names. The variable SITETYPE in the EVENT FILE indicates whether a sampling site is a fixed, random or special study site. Fixed sampling site stations will have identical latitudes and longitudes.

>Fixed Sites. Sampling station list for Surveys done from March 1985 through present. Station Number, Location, Latitudes (decimal degrees), Latitudes (degrees, minutes and decimal seconds), Longitudes (decimal degrees), Longitudes (degrees, minutes and decimal seconds). All positions listed in the following table and data sets are in NAD83 coordinates.

STATION	NOTES	LATITUDE	LONGITUDE	LATITUDE (DMS)	LONGITUDE (DMS)
CB5.4	F	37.77876	-76.17533	37 46' 43.518"	-77 49' 28.813"
CB5.5	F	37.69183	-76.18967	37 41' 30.587"	-77 48' 37.2"
CB6.1	F	37.58852	-76.16196	37 35' 18.666"	-77 50' 16.939"
CB6.3	F	37.41153	-76.15966	37 24' 41.506"	-77 50' 25.223"
CB6.4	F	37.23658	-76.20441	37 14' 11.685"	-77 47' 44.138"
CB7.1S	F	37.58123	-76.05796	37 34' 52.429"	-77 56' 31.342"
CB7.2	F	37.41153	-76.07966	37 24' 41.506"	-77 55' 13.229"
CB7.3E	F	37.22489	-76.05471	37 13' 29.591"	-77 56' 43.055"
CB8.1	F	36.98541	-76.16807	36 59' 7.478"	-77 49' 54.951"
EBB1	F	36.83793	-76.24185	36 50' 16.557"	-77 45' 29.324"
ELC1	F	36.87975	-76.34721	36 52' 47.088"	-77 39' 10.049"
ELD1	F	36.86156	-76.33536	36 51' 41.605"	-77 39' 52.694"
ELF1	F	36.84881	-76.29660	36 50' 55.714"	-77 42' 12.248"
LE3.2	F	37.67040	-76.55418	37 40' 13.439"	-77 26' 44.969"
LE3.4	F	37.62804	-76.46324	37 37' 40.954"	-77 32' 12.35"
LE3.4B	F	37.62434	-76.46187	37 37' 27.624"	-77 32' 17.274"
LE4.1	F	37.41843	-76.69300	37 25' 6.342"	-77 18' 25.183"
LE4.3	F	37.55514	-76.46322	37 33' 18.507"	-77 32' 12.417"
LE4.3B	F	37.22975	-76.47271	37 13' 47.099"	-77 31' 38.229"
LE5.1	F	37.20996	-76.69628	37 12' 35.865"	-77 18' 13.376"
LE5.2	F	37.05834	-76.59282	37 3' 30.017"	-77 24' 25.86"
LE5.4	F	36.95173	-76.38860	36 57' 6.243"	-77 36' 41.027"
LFA1	F	36.90933	-76.31343	36 54' 33.596"	-77 41' 11.649"
LFB1	F	36.88973	-76.28266	36 53' 23.036"	-77 43' 2.419"
RET3.1	F	37.92021	-76.82128	37 55' 12.756"	-77 10' 43.397"
RET4.3	F	37.51348	-76.78857	37 30' 48.517"	-77 12' 41.166"
RET5.2	F	37.21097	-76.79262	37 12' 39.474"	-77 12' 26.578"
RET5.2A	F	37.20804	-76.70276	37 12' 28.952"	-77 17' 50.047"
SBA1	F	36.82565	-76.29067	36 49' 32.337"	-77 42' 33.571"
SBB1	F	36.81182	-76.28825	36 48' 42.56"	-77 42' 42.296"
SBC1	F	36.79951	-76.29404	36 47' 58.249"	-77 42' 21.458"
SBD1	F	36.77976	-76.31023	36 46' 47.126"	-77 41' 23.176"
SBD2	F	36.76689	-76.29669	36 46' 0.814"	-77 42' 11.918"
SBD4	F	36.74035	-76.29871	36 44' 25.265"	-77 42' 4.658"

STATION	NOTES	LATITUDE	LONGITUDE	LATITUDE (DMS)	LONGITUDE (DMS)
SBE2	F	36.81277	-76.29035	36 48' 45.989"	-77 42' 34.75"
SBE5	F	36.76906	-76.29689	36 46' 8.607"	-77 42' 11.203"
TF3.3	F	38.01898	-76.90987	38 1' 8.336"	-77 5' 24.456"
TF4.2	F	37.56865	-77.01402	37 34' 7.143"	-78 59' 9.537"
TF5.5	F	37.31297	-77.23263	37 18' 46.678"	-78 46' 2.542"
WBB1	F	36.84636	-76.35725	36 50' 46.889"	-77 38' 33.913"
WBB5	F	36.82942	-76.39281	36 49' 45.905"	-77 36' 25.867"

>Random Site Selection Strata. A Strata list for the randomly selected stations for Benthic Surveys done from 1996 through present. Given are the Strata Number, Location, western and eastern Longitude, and northern and southern Latitude Stratum limits in Decimal degrees. All strata bounding coordinates are given in NAD83 coordinates

Strata	Description	LONG W	LONG E	LAT N	LAT S
BAY	Mainstem Chesapeake Bay	76.3080	75.8050	37.7100	36.9490
JAM	James River	77.4380	76.4160	37.5330	36.7390
RAP	Rappahannock River	77.4670	76.2840	38.3150	37.4800
YRK	York River	78.8140	76.4290	37.5260	37.2010

>EPA-National Coast Assessment Samples (NCA). The following is a complete list of the samples considered to be part of this sampling effort. Please note that these stations have both CBP and NCA names. Co-listed stations, random CBP sites also collected as part of the NCA, were selected using standard CBP protocol for random site selection. Non-Colisted sites were selected using NCA's protocol described above. All sites where data was collected as part of NCA have additional water quality (Nutrients, chlorophyll) and toxicity data collected synchronously. These data sets will have data for stations by the NCA names. This ancillary data can be obtained by contacting

Henry Walker  
 USEPA Environmental Effects Research Laboratory  
 Atlantic Ecology Division/ORD  
 27 Tarzwell Drive  
 Narragansett, RI 02882  
 401-782-3134  
 walker.henry@epa.gov

EPA/NCA Name	CBP Name	Stream Name	Co-listed Site	Sampling Year
VA05-0001A	12J51	Chickahominy River	Yes	2005
VA05-0002A	12M52	Chesapeake Bay Mainstem	Yes	2005
VA05-0003A	12J50	Lower James River	Yes	2005
VA05-0004A	12Y52	Pamunkey River	Yes	2005
VA05-0008A	12Y51	York River	Yes	2005
VA05-0010A	12M53	Chesapeake Bay Mainstem	Yes	2005
VA05-0011A	12M56	Chesapeake Bay Mainstem	Yes	2005
VA05-0015A	12M55	Chesapeake Bay Mainstem	Yes	2005
VA05-0018B	12M50	Chesapeake Bay Mainstem	Yes	2005
VA05-0021A	12M51	Chesapeake Bay Mainstem	Yes	2005
VA05-0022A	12R51	Rappahannock River	Yes	2005
VA05-0024A	12M54	Chesapeake Bay Mainstem	Yes	2005
VA05-0025A	12M57	Chesapeake Bay Mainstem	Yes	2005
VA05-0026A	12M62	Ware River	Yes	2005
VA05-0029A	12R50	Corrotoman River	Yes	2005
VA05-0030A	12M59	Pocomoke Sound	Yes	2005
VA05-0037A	12M58	Chesapeake Bay Mainstem	Yes	2005
VA05-0041A	12M60	Lynnhaven Bay	Yes	2005
VA05-0044A	12Y50	Chesapeake Bay Mainstem	Yes	2005

EPA/NCA Name	CBP Name	Stream Name	Co-listed Site	Sampling Year
		/York River		
VA05-0046A	12M63	Piankatank River	Yes	2005
VA05-0050A	12R52	Rappahannock River	Yes	2005
VA06-0059A	13J51	Elizabeth River	Yes	2006
VA06-0067A	13J52	Lower James River	Yes	2006
VA06-0081A	13J53	Chickahominy River	Yes	2006
VA06-0089A	13J54	Appomattox River	Yes	2006
VA06-0077A	13J55	Lower James River	Yes	2006
VA06-0053A	13M51	Chesapeake Bay Mainstem	Yes	2006
VA06-0055A	13M52	Chesapeake Bay Mainstem	Yes	2006
VA06-0058A	13M53	Chesapeake Bay Mainstem	Yes	2006
VA06-0069A	13M54	Chesapeake Bay Mainstem	Yes	2006
VA06-0071A	13M55	Chesapeake Bay Mainstem	Yes	2006
VA06-0073A	13M56	Chesapeake Bay Mainstem	Yes	2006
VA06-0084A	13M57	Chesapeake Bay Mainstem	Yes	2006
VA06-0092A	13M58	Mobjack Bay	Yes	2006
VA06-0100A	13M59	Chesapeake Bay Mainstem	Yes	2006
VA06-0080A	13M60	Piankatank River	Yes	2006
VA06-0090A	13M61	Northwest Branch	Yes	2006
VA06-0060A	13R51	Rappahannock River	Yes	2006
VA06-0076A	13R52	Rappahannock River	Yes	2006
VA06-0098A	13R54	Rappahannock River	Yes	2006
VA06-0052B	13C76	Mockhorn Island Area	Yes	2006
VA06-0054A	13C77	Chincoteague Bay	Yes	2006
VA06-0056A	13C78	Burtons Bay	Yes	2006
VA06-0057C	13C79	Hog Island Bay	Yes	2006
VA06-0063A	13C80	Back Bay	Yes	2006
VA06-0068A	13C81	Magothy Bay	Yes	2006
VA06-0070A	13C82	Chincoteague Bay	Yes	2006
VA06-0072B	13C83	Chincoteague Bay	Yes	2006
VA06-0075A	13C84	Back Bay	Yes	2006
VA06-0079A	13C85	Back Bay	Yes	2006
VA06-0087A	13C86	lcw canal	Yes	2006
VA06-0094A	13C87	Chincoteague Bay	Yes	2006
VA06-0095A	13C88	Hog Island Bay	Yes	2006
VA06-0096C	13C89	Metompkin Bay	Yes	2006
VA06-0097A	13C90	Sand Channel	Yes	2006
VA06-0051A	13J76	Lower James River	Yes	2006
VA06-0061A	13J77	Lower James River	Yes	2006
VA06-0065A	13J78	Upper James River	Yes	2006
VA06-0066A	13J79	Lower James River	Yes	2006
VA06-0082A	13J80	Warwick River	Yes	2006
VA06-0083A	13J81	Upper James River	Yes	2006
VA06-0085A	13J82	Lower James River	Yes	2006
VA06-0091A	13J83	Albermarle-Chesapeake Canal	Yes	2006
VA06-0099A	13J84	Lower James River	Yes	2006
VA06-0093A	13M76	Piankatank River	Yes	2006

EPA/NCA Name	CBP Name	Stream Name	Co-listed Site	Sampling Year
VA06-0064A	13R76	Rappahannock River	Yes	2006
VA06-0074A	13R77	Rappahannock River	Yes	2006
VA06-0088A	13R78	Rappahannock River	Yes	2006
VA06-0062A	13Y76	York River	Yes	2006
VA06-0078A	13Y77	York River	Yes	2006
VA06-0086A	13Y78	York River	Yes	2006

#### # METHODOLOGY DESCRIBING CHAIN OF CUSTODY FOR LAB SAMPLES

All sample residues for benthic community analyses are washed into pre-labeled cloth bags. Each bag label consists of a code that identifies the sample as collected (1) from one of the tributaries or main bay, (2) the collection site with in the tributary or mainstem and (3) the replicate number. All samples from a particular tributary or mainstem are placed in to a 5 gallon bucket pre-labeled with a tributary or mainstem code. After each sampling station is completed the bucket is sealed. After all stations of each tributary or the mainstem are sampled the bucket is sealed and stored below deck until off loaded at the end of the cruise. Achieved samples are handled as above except that all archived samples are placed into a separate 5-gallon bucket that is pre-labeled to record the date of the cruise. Cruise dates are not indicated on the pre-labeled bags for buckets for the non-achieved replicates. All replicates from one cruise are completely analyzed prior to the next cruise and the pre-labeled bags are reused.

Sediment samples for particle size and total volatile solids analysis are placed into pre-labeled plastic bags that use the same labels as above. New pre-labeled bags are used for each cruise. All sediment samples are analyzed prior the next cruise. The chief scientist is responsible for ensuring that all samples are placed into the proper pre-labeled bags, into the proper pre-labeled sealed buckets and securely stored on shipboard. On return of the vessel to the dock the chief scientist is responsible for the loading of all samples onto the trucks, the transportation of the samples to the lab, and storage of samples upon arrival at the lab.

Water quality measurements of bottom salinity, temperature, and dissolved oxygen are collected prior to sediment sample collection. The chief scientist is responsible for ensuring that all sample information is recorded correctly on to field data sheets. On return of the vessel to the dock the chief scientist is responsible for the loading of all samples and field log onto the trucks the transportation of the samples to the lab and storage of samples upon arrival at the lab.

#### # BIOLOGICAL ENUMERATION TECHNIQUES

In the lab, field samples are rinsed in fresh water and emptied onto a 0.5mm sieve. For coarse sediments an elutriation technique is used to wash out and concentrate small organisms. All macro benthic specimens are removed and placed into pre-labeled vials containing 70% Isopropyl alcohol. Organisms are then sorted using a dissecting microscope. All specimens are then identified to the lowest practical taxonomic level. Identification was aided by stereoscopic zoom dissecting microscopes, fiber optic illuminators, magnifying lamps and a phase contrast compound microscope.

#### #FORMULAS AND CALCULATIONS

Multiplication of organism count per taxon by gear conversion factor will give concentration of organisms per area value.

#### #INDEX OF BIOTIC INTEGRETU CALCULATIONS

All Chesapeake Bay Index of Biotic Integrity Data has been calculated using the protocol described in

Alden, R. W., III, D. M. Dauer, J. A. Ranasinghe, L. C. Scott, and R. J. Llansó. 2002. Statistical verification of the Chesapeake Bay Benthic Index of Biotic Integrity. *Environmetrics*, 13:473-498.

Further details can be found at

<http://www.chesapeakebay.odu.edu/Reports/Benthic/BIBIcalc.pdf>

# BIOLOGICAL VARIABLE QA/QC PLAN FOR PROJECT

At each station, three replicate box core samples were collected and processed individually. At least 5% of all samples identified by each technician are reworked by the Benthic Ecology Lab manager for quality control of taxonomic identification, enumeration, and biomass estimation. If error exceeds 5%, as second sample is QC'd; if the second QC fails, all samples previously sorted by that technician are resorted. A discrepancy of less than 0.1% in ash free weight calculations is considered acceptable. The personnel sorting and identifying each sample are recorded on lab data sheets.

# VARIABLE NAMES, MEASUREMENT UNITS, AND DESCRIPTIONS

NOTE DIFFERENCES IN TAXON COUNT AND SEDIMENT ANALYSIS PROTOCOL FOR RANDOM AND FIXED SITES.

>PARAMETER: COUNT (# of a benthic taxon per sample) RANDOM STATION PROTOCOL

-COLLECTION METHODS: Each station was sampled one with a spade-type box-coring device. A rectangular corer (10.5 x 17.5 x 35 cm) has a hinged curving arm which seals the box sample in situ. A relatively small surface area is collected (184 cm<sup>2</sup>) which reduces process times and increases the statistical precision of abundance estimates. Any sample, which appeared disturbed, was discarded. Samples are transferred in to a 0.5 mm sieve bucket. The bottom of the bucket is immersed in a 30-gallon trash can filled with water and shaken and swirled to suspend large material allowing silt and fine sand to pass through the sieve. The residual material is washed into the pre-labeled cloth sample bags. Samples are relaxed for 15 minutes in an Isopropyl alcohol solution. Samples are then fixed in a 10 % buffered ambient water-formalin solution. A 1% solution of rose Bengal stain is premixed into the formalin solution.

-SAMPLE PRESERVATIVES: 10% buffered formalin in ambient seawater, rose Bengal, isopropyl alcohol

-SAMPLE STORAGE ENVIRONMENT: Cloth bag in sealed plastic bucket, held at room temperature.

-TIME IN STORAGE: Until commencement of processing, no longer than 90 days.

-LAB TECHNIQUES WITH REFERENCES:

Each sample was sorted separately and the individuals identifier to the lowest practical taxon and enumerated.

>PARAMETER: COUNT (# of a benthic taxon per sample) FIXED STATION PROTOCOL

-COLLECTION METHODS: Each station was sampled in duplicate with a Young Modified box-coring device. A surface area of (0.04 meters<sup>2</sup>) is collected. Any sample, which appeared disturbed, was discarded. A one-grab sample is transferred in to a 0.5 mm sieve bucket. The bottom of the bucket is immersed in a 30-gallon trashcan filled with water and shaken and swirled to suspend large material allowing silt and fine sand to pass through the sieve. The residual material is washed into the pre-labeled cloth sample bags. Samples are relaxed for 15 minutes in a 10% Isopropyl alcohol/ambient seawater solution. Samples are then fixed in a 10 % buffered ambient water-formalin solution. A 1% solution of rose bengal stain is premixed into the formalin solution. The second sample has a 60 ml sediment sample taken from the top 2 centimeters and the remainder is discarded.

-SAMPLE PRESERVATIVES: 10% buffered formalin in ambient seawater, rose bengal, isopropyl alcohol

-SAMPLE STORAGE ENVIRONMENT: Cloth bag in sealed plastic bucket, held at room temperature.

-TIME IN STORAGE: Until commencement of processing, no longer than 90 days.

-LAB TECHNIQUES WITH REFERENCES:

Each sample was sorted separately and the individuals identifier to the lowest practical taxon and enumerated.

>PARAMETER: COUNT (# of a benthic taxon per sample) EPA COASTAL ASSESSMENT STATION PROTOCOL

-COLLECTION METHODS: Each station had two petite ponar grabs taken and composited into one sample. The combined sample had a surface area of 500 square cm. collected. Any grab which appeared disturbed, was discarded. Samples are transferred in to a 0.5 mm sieve bucket. The bottom of the bucket is immersed in a 30-gallon trash can filled with water and shaken and swirled to suspend large material allowing silt and fine



sand to pass through the sieve. The residual material is washed into the pre-labeled cloth sample bags. Samples are relaxed for 15 minutes in an Isopropyl alcohol solution. Samples are then fixed in a 10 % buffered ambient water-formalin solution. A 1% solution of rose Bengal stain is premixed into the formalin solution.

-SAMPLE PRESERVATIVES: 10% buffered formalin in ambient seawater, rose Bengal, isopropyl alcohol

-SAMPLE STORAGE ENVIRONMENT: Cloth bag in sealed plastic bucket, held at room temperature.

-TIME IN STORAGE: Until commencement of processing, no longer than 90 days.

-LAB TECHNIQUES WITH REFERENCES:

Each sample was sorted separately and the individuals identifier to the lowest practical taxon and enumerated.

>PARAMETER: AFDW (taxon ash free dry weight) FIXED STATION PROTOCOL

-COLLECTION METHODS: Each station was sampled in duplicate with a Young Modified box-coring device. A surface area of (0.04 meters\*\*2) is collected. Any sample, which appeared disturbed, was discarded. One grab samples is transferred in to a 0.5 mm sieve bucket. Samples are transferred in to a 0.5 mm sieve bucket. The bottom of the bucket is immersed in a 30 gallon trash can filled with water and shaken and whirled to suspend large material allowing silt and fine sand to pass through the sieve. The residual material is washed into the pre-labeled cloth sample bags. Samples are relaxed for 15 minutes in an Isopropyl alcohol solution. Samples are then fixed in a 10% buffered ambient water-formalin solution. A 1% solution of rose

bengal stain is premixed into the formalin solution.

-SAMPLE PRESERVATIVES: 10% buffered formalin with rose Bengal, Isopropyl alcohol

-SAMPLE STORAGE ENVIRONMENT: Cloth bag inside a plastic bucket, at room temp

-TIME IN STORAGE: Until commencement of processing, no more than 90 days.

-LABORATORY TECHNIQUES WITH REFERENCES:

Sorted detritus-free samples are processed. Dried samples are ignited in a muffle furnace (550 C) for approximately eight hours. Samples are removed to a desiccator and weighed when cool. Weights are reported by species.

>PARAMETER: AFDW (taxon ash free dry weight) Random STATION PROTOCOL

-COLLECTION METHODS: Each station was sampled in triplicate with a spade-type box-coring device. A rectangular corer (10.5 x 17.5 x 35 cm) has a hinged curving arm which seals the box sample in situ. A relatively small surface area is collected (184 cm\*\*2) which reduces process times and increases the statistical precision of abundance estimates. Any sample, which appeared disturbed, was discarded. Samples are transferred in to a 0.5 mm sieve bucket. The bottom of the bucket is immersed in a 30-gallon trashcan filled with water and shaken and swirled to suspend large material allowing silt and fine sand to pass through the sieve. The residual material is washed into the pre-labeled cloth sample bags. Samples are relaxed for 15 minutes in an Isopropyl alcohol solution. Samples are then fixed in a 10% buffered ambient water-formalin solution. A 1% solution of rose Bengal stain is premixed into the formalin solution. The second sample has a 60 ml sediment sample taken from the top 2 centimeters and the remainder is discarded.

-SAMPLE PRESERVATIVES: 10% buffered formalin with rose Bengal, Isopropyl alcohol

-SAMPLE STORAGE ENVIRONMENT: Cloth bag inside a plastic bucket, at room temp

-TIME IN STORAGE: Until commencement of processing, no more than 90 days.

-LABORATORY TECHNIQUES WITH REFERENCES:

Sorted detritus-free samples are processed. Dried samples are ignited in a muffle furnace (550 C) for approximately eight hours. Samples are removed to a desiccator and weighed when cool. Weights are reported by species.

>PARAMETER: COUNT (# of a benthic taxon per sample) EPA COASTAL ASSESSMENT STATION PROTOCOL

-COLLECTION METHODS: Each station had two petite ponar grabs taken and composited into one sample. The combined sample had a surface area of 500 square cm. collected. Any grab which appeared disturbed, was discarded. Samples are transferred in to a 0.5 mm sieve bucket. The bottom of the bucket is immersed in a 30-gallon trash can filled with water and shaken and swirled to suspend large material allowing silt and fine

sand to pass through the sieve. The residual material is washed into the pre-labeled cloth sample bags. Samples are relaxed for 15 minutes in an Isopropyl alcohol solution. Samples are then fixed in a 10 % buffered ambient water-formalin solution. A 1% solution of rose Bengal stain is premixed into the formalin solution.

-SAMPLE PRESERVATIVES: 10% buffered formalin in ambient seawater, rose Bengal, isopropyl alcohol

-SAMPLE STORAGE ENVIRONMENT: Cloth bag in sealed plastic bucket, held at room temperature.

-TIME IN STORAGE: Until commencement of processing, no longer than 90 days.

-LAB TECHNIQUES WITH REFERENCES:

Sorted detritus-free samples are processed. Dried samples are ignited in a muffle furnace (550 C) for approximately eight hours. Samples are removed to a desiccator and weighed when cool. Weights are reported by species.

>PARAMETER: KURTOSIS (Folk Kurtosis), MEDDIAM (Folk Mean), SKEWNESS (Folk Skew ness) PERFORMED ON FIXED SITE SAMPLES ONLY

-COLLECTION METHODS: At each station once each date, an 8 dram sub-sample of surface sediment was taken from each grab for analysis prior to sieving for organisms.

-SAMPLE PRESERVATIVES: Frozen

-SAMPLE STORAGE ENVIRONMENT: Frozen

-TIME IN STORAGE: Until thawed for analysis, no more than 30 days.

-LAB TECHNIQUES WITH REFERENCES:

Particle size analysis was conducted using methods of Folk (1974), MCBRIDE in Carver 71, and the Math Tables Handbook. The sand fraction was dry sieved and the silt-clay fraction was quantified by pipit analysis. Particle size distribution was determined by graphic and moment measures methods using a computer program

>PARAMETER: LATITUDE (decimal degrees-NAD83) and LONGITUDE (decimal degrees-NAD83)

-COLLECTION METHODS: Loran-C, NAD27 coordinates from 1985-1996, all NAD27 coordinates were converted not NAD83 positions in 2000; GPS, NAD83 coordinates 1996 to present.

-SAMPLE PRESERVATIVES: None

-SAMPLE STORAGE ENVIRONMENT: None

-TIME IN STORAGE: None

-LAB TECHNIQUES WITH REFERENCES: Fixed Station positions in data set are approximations of actual positions in the field. Station latitudes and longitudes are input into a Loran-C/GPS receiver and sampling begins when boat reaches pre-programmed coordinates. Loran-C is accurate to +/- 1500 ft. Random station positions are the actual GPS coordinates for each sampling event.

>PARAMETER: SAND (Sand content, %)

-COLLECTION METHODS:

FIXED SITE SAMPLES-At each station once each date, an 8-dram sub-sample of surface sediment was taken from each grab for analysis prior to sieving for organisms.

RANDOM SITE SAMPLES- The second grab sample has a 60 ml sediment sample taken from the top 2 centimeters and the remainder is discarded.

-SAMPLE PRESERVATIVES: Frozen

-SAMPLE STORAGE ENVIRONMENT: Frozen

-TIME IN STORAGE: Until thawed for analysis, no more than 30 days.

-LAB TECHNIQUES WITH REFERENCES:

For each sample 15 ml of sediment is placed on a 63 um sieve. De-ionized water is used to pass fine particles through sieve. The material remaining on the sieve is the sand fraction. The sample is rinsed onto a dish and dried in the drying oven for 12 hours. The material is placed into a nested sieve series (2000,1000,500,250,125,63 um and a solid pad) and placed on a vibra-pad for 10 minutes. Materials retained in each sieve are then weighed and recorded for parameter calculations.

>PARAMETER: SAMPLE\_DEPTH (Sample Depth, meters)

-COLLECTION METHODS:

From 1985-Present: A Ship depth meter was used to determine sample depths, only bottom samples taken.

-SAMPLE PRESERVATIVES: N/A

-SAMPLE STORAGE ENVIRONMENT: N/A  
-TIME IN STORAGE: N/A  
-LAB TECHNIQUES WITH REFERENCES: N/A

>PARAMETER: DO, (Dissolved Oxygen, ppm)  
-COLLECTION METHODS: From 1985 through 1992 a YSI model 58 Oxygen meter was used.  
From 1993 to present, a YSI model 33 CTD is used for data collection.  
-SAMPLE PRESERVATIVES: N/A  
-SAMPLE STORAGE ENVIRONMENT: N/A  
-TIME IN STORAGE: N/A  
-LAB TECHNIQUES WITH REFERENCES: N/A

>PARAMETER: SALINTY (Salinity, ppt)  
-COLLECTION METHODS: From 1985 through 1992 a Toroidal conductivity cell with thermistor correction attached to RS5 Salinometer. From 1993 to Present, a YSI model 33 CTD is used for data collection.  
-SAMPLE PRESERVATIVES: N/A  
-SAMPLE STORAGE ENVIRONMENT: N/A  
-TIME IN STORAGE: N/A  
-LAB TECHNIQUES WITH REFERENCES: N/A

>PARAMETER: SILTCLAY (Silt-Clay content, %), SILT (Silt content, %)  
-COLLECTION METHODS:  
FIXED SITE SAMPLES- At each station once each date, an 8 dram sub-sample of surface sediment was taken from each grab for analysis prior to sieving for organisms.  
RANDOM SITE SAMPLES- The second grab sample has a 60 ml sediment sample taken from the top 2 centimeters and the remainder is discarded.  
-SAMPLE PRESERVATIVES: Frozen  
-SAMPLE STORAGE ENVIRONMENT: Frozen  
-TIME IN STORAGE: Until thawed for analysis, no more than 30 days.  
-LAB TECHNIQUES WITH REFERENCES:  
For each sample 15 ml of sediment is placed on a 63 um sieve. Deionized water is used to pass fine particles through sieve. The resultant water contains the silt-clay fraction. The water silt mixture poured into a one liter graduated cylinder and is brought up to a volume of one liter. The sample is mixed, and five 20 ml samples are drawn at timed intervals. The first sample is drawn immediately at depths of 20 cm below the surface and placed in a pre-weighed beaker. The remaining four samples are taken at 10 cm below water surface at times of one-minute min, 7 minutes and 44 seconds, 31 minutes and two hours and three minutes. All samples are placed in pre-weighed beakers. The water in the beakers is allowed to evaporate in a drying oven. Weights are recorded and parameters are calculated.

>PARAMETER: TOTAL\_DEPTH (Total Depth, meters)  
-COLLECTION METHODS: YSI CTD or Ships depth meter  
-SAMPLE PRESERVATIVES: None  
-SAMPLE STORAGE ENVIRONMENT: None  
-TIME IN STORAGE: None  
-LAB TECHNIQUES WITH REFERENCES: Water column salinity, temperature and depth is recorded prior to benthic sampling.

>PARAMETER: WTEMP (Temperature, centigrade)  
-COLLECTION METHODS: From 1985 through 1992 a Thermistor attached to RS5 Salinometer was used.  
From 1993 to present, a YSI model 33 CTD was used for data collection.  
-SAMPLE PRESERVATIVES: N/A  
-SAMPLE STORAGE ENVIRONMENT: N/A  
-TIME IN STORAGE: N/A  
-LAB TECHNIQUES WITH REFERENCES: N/A

>PARAMETER: VOLORG (Volatile Organics, %) PERFORMED ON FIXED SITES ONLY

**-COLLECTION METHODS:**

**FIXED SITE SAMPLES-** At each station once each date, an 8 dram subsample of surface sediment was taken from each grab for analysis prior to sieving for organisms.

**-SAMPLE PRESERVATIVES:** Frozen

**-SAMPLE STORAGE ENVIRONMENT:** Frozen

**-TIME IN STORAGE:** Until thawed for analysis

**-LAB TECHNIQUES WITH REFERENCES:**

Ten-milliliter samples of sediment are placed in pre-weighed pans. Sediments are weighed and placed in a muffle furnace. Samples are dried and ash free dry weight is then determined. Organic content of the sediment is estimated as the ash-free dry weight of the sediment expressed as a percentage of the dry weight of the sediment.

**>DATA ENTRY METHOD:** Raw data files are created by an in-house data entry program entitled Benthic. The program has numerous steps in the program to insure data verification. Data sets are then transported to the Old Dominion University mainframe. Hard copies of the data sets on the main frame are then compared to field sheets for errors. Project files are then converted into SAS data sets.

**>DATA VERIFICATION:** Visually verified twice and checked by computer programs.

**# SPECIES IN HOUSE CODE AND SCIENTIFIC NAME**

Old Dominion University Benthic Species Codes

**> IN HOUSE SPECIES LIST**

The current list of IN HOUSE codes and Latin Names used by Old Dominion University are as follows:

SPEC_CODE	LBL	TSN
1	SPIOPHANES BOMBYX	0066897
2	AOPRIONOSPIO PYGMAEA	0066847
3	NEPHTYS PICTA	0066030
4	POLYGORDIUS SPP.	0068419
5	ARICIDEA WASSI	0066673
6	ARICIDEA CATHERINAE	0066765
7	OLIGOCHAETA SPP.	0068422
8	CIRRATULIDAE SPP.	0067116
9	SPIO SETOSA	0066868
10	MAGELONA SP.	0067043
11	AMASTIGOS CAPERATUS	BAY0003
12	TELLINA AGILIS	0081088
13	AMPELISCA VERRILLI	0093331
14	PROTOHAUSTORIUS SPP.	0094008
15	SPISULA SOLIDISSIMA	0080944
16	NEMERTEA SPP.	0057411
17	NASSARIUS TRIVITTATUS	0074109
18	PROTODORVILLEA KEFERSTEINI	0066496
19	SCHISTOMERINGOS CAECA	0066527
20	ANTHOZOA SPP.	0051938
21	TURBELLARIA SPP.	0053964
22	AMPHARETE ACUTIFRONS	0067735
23	AMPHARETE AMERICANA	0067738
24	ASABELLIDES OCULATA	0067786
25	AMPHINOMIDAE SP.	0065164
26	ARABELLIDAE SPP.	0066422
27	DRILONEREIS LONGA	0066426
28	DRILONEREIS MAGNA	0066431
29	CAPITELLA CAPITATA	0067415

SPEC_CODE	LBL	TSN
30	CAPITELLA SPP.	0067414
31	CAPITELLIDAE SPP.	0067413
32	MEDIOMASTUS AMBISETA	0067439
33	NOTOMASTUS HEMIPODUS	0067431
34	NOTOMASTUS LATERICEUS	0067429
35	SPIOCHAETOPTERUS COSTARUM	0067107
36	SCHISTOMERINGOS RUDOLPHI	0066523
37	MARPHYSA BELLI	0066302
38	PHERUSA EHLERSI	0067248
39	GLYCERA AMERICANA	0066106
40	GLYCERA CAPITATA	0066103
41	GLYCERA DIBRANCHIATA	0066107
42	GLYCERA ROBUSTUS	0066108
43	GLYCERA SPP.	0066102
44	HEMIPODUS ROSEUS	0066124
45	GONIADELLA GRACILIS	0066148
46	MICROPHthalmus SCZELKOWII	0065477
47	LUMBRINERIDES ACUTA	0066408
48	LUMBRINERIS FRAGILIS	0066338
49	LUMBRINERIS TENUIS	0066351
50	NINOE NIGRIPES	0066405
51	CLYMENELLA TORQUATA	0067528
52	CLYMENELLA SPP.	0067526
53	MACROCLYMENE ZONALIS	0067632
54	AGLAOPHAMUS CIRCINATA	0066053
55	AGLAOPHAMUS VERRILLI	0066052
56	WEBSTERNEREIS TRIDENTATA	0065972
57	DIOPATRA CUPREA	0066180
58	ONUPHIS EREMITA	0066164

SPEC_CODE	LBL	TSN
59	OPHELIA SP.	0067353
60	TRAVISIA PARVA	0067372
61	LEITOSCOLOPLOS FRAGILIS	0066656
62	LEITOSCOLOPLOS ROBUSTUS	0182728
63	SCOLOPLOS RUBRA	0066603
64	SCOLOPLOS SPP.	0066594
65	OWENIA FUSIFORMIS	0067647
66	BHAWANIA HETEROSETA	0065159
67	AEDICIRA SP.	0066660
68	ARICIDEA FRAGILIS	0066678
69	CIRROPHORUS FURCATUS	0066714
70	PARADONEIS LYRA	0066743
71	PARAONIS FULGENS	0066697
72	PARAONIS PYGOENIGMATICA	0066699
73	PARAONIDAE SPP.	0066659
74	PECTINARIA GOULDII	0067709
75	ETEONE HETEROPODA	0065266
76	ETEONE LACTEA	0065267
77	ETEONE LONGA	0065263
78	EUMIDA SANGUINEA	0065343
79	PARANAITIS POLYNOIDES	0065324
80	PARANAITIS SPECIOSA	0065321
81	PHYLLODOCE ARENAE	0065366
82	PHYLLODOCE CASTANEA	0065319
83	PHYLLODOCE MUCOSA	0065239
84	ANCISTROSYLLIS HARTMANAE	0065543
85	SIGAMBRA BASSI	0065554
86	SIGAMBRA TENTACULATA	0065552
87	PISIONE REMOTA	0065143
88	ANTINOELLA SARSI	0064411
89	HARMOTHOE EXTENUATA	0064509
90	SABELLARIA VULGARIS	0067671
91	POTAMILLA SPP.	0068126
92	SCALIBREGMA INFLATUM	0067313
93	PHOLOE MINUTA	0065074
94	SIGALION ARENICOLA	0065094
95	STHENELAIS BOA	0065084
96	STHENELAIS LIMICOLA	0065086
97	BOCCARDIA SP.	0066878
98	MINUSPIO CIRRIFERA	0067027
99	PARAPRIONOSPIO PINNATA	0066937
100	POLYDORA COMMENSALIS	0066800
101	POLYDORA CORNUTA	0204501
102	POLYDORA SOCIALIS	0066791
103	SCOLELEPIS BOUSFIELDI	0066944
104	SCOLELEPIS SQUAMATA	0066943
105	STREBLOSPIO BENEDICTI	0066939
106	AUTOLYTUS SPP.	0065588
107	BRANIA PUSILLA	0065765
108	PARAPIONOSYLLIS LONGICIRRATA	0065824
109	PIONOSYLLIS SP.	0065616
110	PROCERAEA SP.	0065589

SPEC_CODE	LBL	TSN
111	STREPTOSYLLIS PETTIBONEAE	0065822
112	SYLLIDES CONVOLUTA	0065807
113	PISTA PALMATA	0067947
114	POLYCIRRUS EXIMIUS	0067963
115	TEREBELLIDAE SPP.	0067899
116	RICTAXIS PUNCTOSTRIATUS	0076083
117	HAMINOEA SOLITARIA	0076258
118	CREPIDULA FORNICATA	0072623
119	CREPIDULA PLANA	0072627
120	ANACHIS LAFRESNAYI	0073631
121	MITRELLA LUNATA	0073552
122	HYALINA SP.	0074415
123	MARGINELLA ROSCIDA	0074408
124	LUNATIA HEROS	0072924
125	NATICA PUSILLA	0072888
126	POLINICES DUPLICATUS	0072918
127	PLEUROBRANCHAEA TARDA	0078130
128	ODOSTOMIA SP. A	0075447
129	ODOSTOMIA SP. B	0075447
130	TURBONILLA INTERRUPTA	0075687
131	CYLICHNELLA BIDENTATA	0076141
132	MANGELIA CERINA	0074567
133	TURRIDAE SPP.	0074555
134	ANADARA TRANSVERSA	0079340
135	CERASTODERMA PINNULATUM	0080900
136	PARVILUCINA MULTILINEATA	0080388
137	LYONSIA HYALINA	0081926
138	CRASSINELLA LUNULATA	0080851
139	MULINIA LATERALIS	0080959
140	MYSELLA PLANULATA	0080661
141	MYTILUS EDULIS	0079454
142	YOLDIA LIMATULA	0079273
143	YOLDIA SP.	0079258
144	NUCULA PROXIMA	0079132
145	CRASSOSTREA VIRGINICA	0079872
146	PANDORA BUSHIANA	0081900
147	PANDORA GOULDIANA	0081896
148	PANDORA TRILINEATA	0081895
149	ENSIS DIRECTUS	0081022
150	SILIQUA COSTATA	0081012
151	MACOMA TENTA	0081055
152	GEMMA GEMMA	0081511
153	MERCENARIA MERCENARIA	0081496
154	AMPELISCA VADORUM	0093330
155	BYBLIS SERRATA	0093364
156	LEMBOS WEBSTERI	0093459
157	PSEUDUNCIOLA OBLIQUUA	0093640
158	UNCIOLA DISSIMILIS	0093635
159	UNCIOLA SERRATA	0093633
160	UNCIOLA SPP.	0093629
161	BATEA CATHARINENSIS	0093528
162	CAPRELLIDAE SPP.	0095375

SPEC_CODE	LBL	TSN
163	COROPHIUM SPP.	0093589
164	ERICHTHONIUS BRASILIENSIS	0093613
165	ACANTHOHAUSTORIUS MILLSI	0093982
166	BATHYPOREIA PARKERI	0193514
167	BATHYPOREIA SP.	0093990
168	HAUSTORIUS CANADENSIS	0094019
169	LILJEBORGIA SP.	0094209
170	LISTRIELLA BARNARDI	0094213
171	LISTRIELLA CLYMENELLAE	0094214
172	AMEROCULODES SPECIES COMPLEX	0656551
173	SYNCHELIDIUM AMERICANUM	0094567
174	GAMMEROPSIS SP. CF. SUTHERLANDI	BAY0108
175	MICROPROTOPUS RANEYI	0094122
176	RHEPOXYNIUS EPISTOMUS	0094728
177	TRICHOPOXUS FLORIDANUS	0094701
178	PARAMETOPELLA STELLERI	0094926
179	STENOHOE MINUTA	0094936
180	SYNOPIIDAE. SP.	0094989
181	CYATHURA SPP.	0092148
182	PTILANTHURA TENUIS	0092155
183	EDOTEA TRILOBA	0092627
184	PSEUDOLEPTOCUMA MINOR	0091040
185	DIASTYLIS SP.	0090836
186	OXYUROSTYLIS SMITHI	0090923
187	EUDORELLA TRUNCATULA	0090803
188	EUDORELLA SPP.	0090799
189	LEPTOGNATHA CAECA	BAY0138
190	ALBUNEA PARETTI	0098122
191	CANCER IRRORATUS	0098679
193	LIBINIA EMARGINATA	0098455
194	MAJIDAE SPP.	0098417
195	PAGURUS SPP.	0097775
196	MYSIDOPSIS BIGELOWI	0090139
197	PHASCOLION STROMBI	0154734
198	PHORONIS SPP.	0155462
199	ASTERIAS FORBESII	0157217
200	ECHINARACHNIUS PARMA	0158016
201	MELLITA QUINQUIESPERFORATA	0158020
202	LEPTOSYNAPTA INHAERENS	0158431
203	BRANCHIOSTOMA VIRGINIAE	0206924
204	BIVALVIA SPP.	0079118
205	SPIONIDAE SPP.	0066781
206	DRILONEREIS SPP.	0066423
207	PHYLLODOCIDAE SPP.	0065228
208	STHENELAIS SPP.	0065082
209	CERIANTHUS AMERICANUS	0051987
210	CHAETOGNATHA SPP.	0158650
211	UNCIOLA IRRORATA	0093632
212	NOTOCIRRUS SPINIFERUS	0066450
213	SPHAERODOROPSIS SP.	0066073
214	MICROPHTHALMUS FRAGILIS	0204411
215	SACCOGLOSSUS SPP.	0158624

SPEC_CODE	LBL	TSN
216	CAUDINA ARENATA	0158527
217	GASTROPODA SPP.	0069459
218	CHIRODOTEA SPP.	0092637
219	LISTRIELLA SP.	0094212
220	PARAMETOPELLA CYPRIS	0094927
221	AMPHARETE PARVIDENTATA	0067739
222	AMPHARETIDAE SPP.	0067718
223	AMPHARETE ARCTICA	0067728
224	SCOLELEPIS SP.	0066942
225	DIADUMENE LEUCOLENA	0052749
226	SYLLIDAE SPP.	0065587
227	NEREIDAE SPP.	0065870
228	PISTA CRISTATA	0067941
229	SOLEMYA VELUM	0079316
230	CYCLASPIS VARIANS	0091033
231	NEPHTYS INCISA	0066028
232	POLYDORA WEBSTERI	0066802
233	NEPHTYS BUCERA	0066027
234	OPHIUROIDEA SPP.	0157325
235	ARBACIA PUNCTUATA	0157906
236	CHAETOPLEURA APICULATA	0078958
237	ASTEROIDEA SPP.	0156862
238	CRENELLA DECUSSATA	0079459
239	SIGAMBRA SPP.	0065551
240	POLYDORA SPP.	0066789
241	DORVILLEIDAE SPP.	0066478
242	PSEUDEURYTHOE PAUCIBRANCHIATA	0065176
243	NEREIS ACUMINATA	0065926
244	SYLLIDES FULVA	0065811
245	BRANIA WELFLEETENSIS	0065762
246	SYLLIDES JAPONICA	0065804
247	SHAEROSYLLIS SP.	BAY0250
248	NEPHTYIDAE SPP.	0066010
249	SCAPHOPODA SP.	0082115
250	ABRA SPP.	0081301
251	PISTA QUADRILOBATA	0067951
252	PERIPLOMA SPP.	0081941
253	ACANTHODORIS PILOSA	0078359
254	SPHAEROSYLLIS HYSTRIX	0065739
255	SYLLIDES PAPILLOSA	BAY0262
256	OVALIPES OCELLATUS	0098714
257	EUCERAMUS PRAELONGUS	0098081
258	ACTEOCINA CANALICULATA	0076117
259	PINNOTHERES OSTREUM	0098976
260	DISSODACTYLUS MELLITAE	0098966
261	GAMMARUS DAIBERI	0093779
262	SABACO ELONGATUS	BAY0341
263	HIRUDINEA SP.	0069290
264	PODARKEOPSIS LEVIFUSCINA	0555698
265	LEPIDONOTUS SUBLEVIS	0064610
266	POLYDORA CAULLERYI	0066794
267	CIROLINA POLITA	0092231

SPEC_CODE	LBL	TSN
268	EXOgone HEBES	0065730
269	ONUPHIDAE SPP.	0066157
270	DORIDELLA OBSCURA	0078439
271	NEOMYSIS AMERICANA	0090062
272	PODARKE OBSCURA	0065517
273	THOR FLORIDANUS	0096918
274	ONCHIDORIS ASPERA	0078377
275	MALDANIDAE SPP.	0067515
276	LEMBOS SMITHI	0093458
277	RILDARDANUS SPP.	0093490
278	ASYCHIS CAROLINAE	0067524
279	EPITONIUM HUMPHREYSI	0072259
280	PANDORA SPP.	0081889
281	CYCLASPIS PUSTULATA	0091032
282	MELITA SPP.	0093806
283	HYPERIIDAE SPP.	0095108
284	MICROPHTHALMUS SIMILIS	0065480
285	ARMANDIA MACULATA	0067347
286	NUDIBRANCHIA SPP.	0078156
287	ELASMOPUS LEVIS	0093761
288	TURBONILLA SPP.	0075676
289	LUMBRINERIDAE SPP.	0066335
290	ANCINUS DEPRESSUS	0092334
291	BATHYPOREIA QUODDYENSIS	0093991
292	PARAPHOXUS SPINOSUS	0094756
293	EUPLEURA CAUDATA	0073300
294	OPHELIA DENTICULATA	0067358
295	NANNOSQUILLA GRAYI	0099156
296	POTAMILLA RENIFORMIS	0068136
297	LOIMIA MEDUSA	0068015
298	GLYCINDE SOLITARIA	0066132
299	HETEROMASTUS FILIFORMIS	0067420
300	BRANIA CLAVATA	0065761
301	SYLLIDES VERRILLI	0065813
302	HYDROIDES DIANTHUS	0068282
303	CAPITOMASTUS ACICULATUS	0204558
304	PHERUSA SP.	0067241
305	MARENZELLERIA VIRIDIS	0573739
306	MICROPHTHALMUS SP.	0065476
307	POTAMILLA NEGLECTA	0068127
308	GYPTIS VITTATA	0065470
309	PARAHESIONE LUTEOLA	0065493
310	POLYNOIDAE SP.	0064397
311	ANACHIS OBESA	0073622
312	NASSARIUS VIBEX	0074107
313	CYCLOSTREMISCUS BEALLI	0071115
314	EPITONIUM SP.	0072233
315	EPITONIUM MULTISTRATUM	0072247
316	EPITONIUM RUPICOLA	0072249
317	BUSYCON CARICA	0074071
318	CORYPHELLA SP.	0078645
319	POLYCERA SP.	0078312

SPEC_CODE	LBL	TSN
320	MACOMA BALTHICA	0081052
321	MACOMA MITCHELLI	0081054
322	MYA ARENARIA	0081692
323	CHIONE CANCELLATA	0081523
324	ALIGENA ELEVATA	0080685
325	ANADARA OVALIS	0079342
326	ISCHADIUM RECURVUM	0079561
327	EUCRASSATELLA SPECIOSA	0080856
328	PYCNOGONIDA SPP.	0083545
329	CYATHURA POLITA	0092149
330	ERICHSONELLA FILIFORMIS	0092619
331	AMPELISCA ABDITA	0093329
332	MELITA NITIDA	0093812
333	MELITA APPENDICULATA	0093813
334	PARAPLEUSTES AESTUARIUS	BAY0199
335	PLEUSTIDAE SP.	0094768
336	LEPTOCHEIRUS PLUMULOSUS	0093486
337	CERAPUS TUBULARIS	0093587
338	GAMMARUS MUCRONATUS	0093783
339	PHOTIS MACROCOXA	0094069
340	STENOTHOE SP.	0094934
341	LEUCON AMERICANUS	0090790
342	DECAPODA SPP.	0095599
343	PINNIXA SAYANA	0099002
344	PINNIXA CHAETOPTERANA	0098998
345	PINNOTHERIDAE SPP.	0098964
346	PANOPEUS HERBSTII	0098778
347	HEXAPANOPEUS ANGUSTIFRONS	0098764
348	PINNIXA CRISTATA	0099004
349	CALLINECTES SAPIDUS	0098696
350	UPOGEBIA AFFINIS	0098209
351	OGYRIDES ALPHAEROSTRIS	0096737
352	XANTHIDAE SPP.	0098748
353	CNEMIDOCARPA MOLLIS	0159254
354	ECHIURA SPP.	0154972
355	PRIAPULIDA SPP.	0155153
356	NEANTHES SUCCINEA	0065918
357	EPITONIUM ANGULATUM	0072252
358	GAMMARUS SP.	0093773
359	FLABELLIGERA SP.	0067236
360	SPHAEROSYLLIS SP.	0065735
361	DIASTYLIS POLITA	0090858
362	SABELLIDAE SP.	0068076
363	CHIRODOTEA STENOPS	BAY0068
364	HESSIONURA ELONGATA	0065334
365	POLYCHAETA SP. JUVENILE	0064358
366	PERIPLOMA SP. JUVENILE	0081941
367	ARICIDEA CERRUTII	0066749
368	FLABELLIGERA AFFINIS	0067238
369	HOLOTHUROIDEA SPP.	0158140
370	NEPHTYS SP.	0066011
371	LEPIDAMETRIA COMMENSALIS	0064703

SPEC_CODE	LBL	TSN
372	TUBIFICOIDES SPP	0068687
373	ODOSTOMIA SPP.	0075447
374	CYRTOPLEURA COSTATA	0081796
375	MONOCOROPHIUM TUBERCULATUM	0656762
376	SACCOGLOSSUS KOWALEVSKII	0158626
377	CHAETOPTERUS VARIOPEATUS	0067097
378	CIRRIFORMIA GRANDIS	0067122
379	AULODRILUS PIGUETI	0068680
380	QUISTADRILUS MULTISETOSUS	0068794
381	OLIGOCHAETA SP. X (NO SETAE)	0068422
382	CASSIDINIDEA LUNIFRONS	0092347
383	EURYPANOPEUS DEPRESSUS	0098759
384	PARACAPRELLA TENUIS	0095434
385	MICROPHIOPHOLIS ATRA	BAY0346
386	EUPLANA GRACILIS	0054139
387	STYLOCHUS ELLIPTICUS	0054089
388	TURBELLARIA SP. 1 (PIGMENTED FORM)	0053964
389	AMPHITRITE ORNATA	0067902
390	ANCISTROSYLLIS JONESI	0065544
391	ARABELLA IRICOLOR	0066441
392	CAULLERIELLA KILLARIENSIS	0067131
393	CHAETOZONE SETOSA	0067157
394	EXOgone DISPAR	0065722
395	EXOgone VERUGERA	0065727
396	HOBSONIA FLORIDA	0067755
397	LEVINSENIA GRACILIS	0066729
398	MELINNA MACULATA	0067766
399	MINUSPIO CIRROBRANCHIATA	0067032
400	NEREIS SPP.	0065902
401	NOTOMASTUS LOBATUS	0067432
402	NOTOMASTUS SP. A EWING	0067423
403	ORBINIID SPP. (JUVENILES)	0066570
404	PHYLLODOCE SP. (JUVENILES)	0065359
405	PRIONOSPIO STEENSTRUPI	0066845
406	DEMONAX MICROPHthalmus	0068222
407	SCOLELEPIS TEXANA	0066949
408	MONTICELLINA DORSOBRANCIALIS	0204530
409	THARYX SETIGERA	0067145
410	LIMNODRILUS HOFFMEISTERI	0068639
411	LIMNODRILUS PROFUNDICOLA	0068649
412	LIMNODRILUS SP. JUV.	0068638
413	NAIS VARIABILIS	0068959
414	TUBIFICOIDES BENEDENI	0068592
415	TUBIFICOIDES GABRIELLAE	0068590
416	TUBIFICOIDES HETEROCHAETUS	0068595
417	TUBIFICOIDES WASSELLI	0068692
418	TUBIFICOIDES SP. A	0068687
419	TUBIFICOIDES SP. B	0068687
420	BUSYCON SP. (JUVENILES)	0074070
421	ODOSTOMIA BISUTURALIS	0075988
422	UROSALPINX CINEREA	0073264
423	GEUKENSIA DEMISSA	0079555

SPEC_CODE	LBL	TSN
424	PISIDIUM SP.	0081400
425	RANGIA CUNEATA	0080962
426	CHIRODOTEA COECA	0092640
427	CHIRODOTEA NIGRESCENS	0092642
428	CAPRELLA EQUILIBRA	0095410
429	CAPRELLA PENANTIS	0095419
430	COROPHIUM ACHERUSICUM	0093590
431	COROPHIUM LACUSTRE	0093594
432	COROPHIUM SIMILE	0093595
433	IDUNELLA SP.	0094206
434	MONOCULODES INTERMEDIUS	0094536
435	PLEUSYMTES GLABER	0094797
436	NEOPANOPE SAYI	0098775
437	PINNIXA RETINENS	0099001
438	PINNIXA SPP.	0098993
439	RHITHROPANOPEUS HARRISII	0098790
440	ABLABEYMYIA PARAJANTA	0128112
441	CHAOBORUS ALBATUS	0125905
442	CHAOBORUS PUNCTIPENNIS	0125923
443	CLINOTANYPUS PINGUIS	0127998
444	CRYPTOCHIRONOMUS FULVUS	0129376
445	DICROTENDIPES NERVOSUS	0129452
446	PROCLADIUS SUBLETTEI	0128316
447	TANYTARSINI SP.	0129872
448	TRICHOPTERA SP.	0115095
449	LEPTOSYNAPTA TENUIS	0158432
450	THYONELLA PERVICAX	0158269
451	BALANOGLOSSUS AURANTICUS	0158629
452	MOLGULA LUTULENTA	0159581
453	POLYCHAETE FRAGMENTS	0064358
454	DOSINIA DISCUS	0081489
455	TAGELUS DIVISUS	0081274
456	LIMNODRILUS CERVIX	0068652
457	BRANCHIURA SOWERBYI	0068621
458	POLYPEDILUM FALLAX	0129676
459	ARGULUS SP.	0089407
460	GAMMARUS PALUSTRIS	0093782
461	GILVOSSIUS SETIMANUS	0552843
462	LYSIDICE NINETTA	0066320
463	CORBICULA FLUMINEA	0081387
464	CABIRA INCERTA	0065565
465	HARMOTHOE SP. A	0064502
466	NEREIDAE SP. A	0065870
467	THALASSEMA SP.	0155118
468	ANACHIS TRANSLINATA	0073621
469	PHOTIS SP.	0094061
470	CALLIANASSA BIFORMIS	0097744
471	CRICOTOPUS SP.	0128575
472	AMPELISCA SPP. JUVENILES	0093321
473	BALCIS INTERMEDIA	0072453
474	PHOTIS REINHARDI	0094063
475	MYSTIDES BOREALIS	0065307



SPEC_CODE	LBL	TSN
476	CHIRONOMUS DECORUS	0129280
477	PARATENDIPES SP.	0129623
478	PHYLLODOCE FRAGILIS	0065337
479	ANCISTROSYLLIS SPP.	0065541
480	SKENEOPSIS PLANORBIS	0071217
481	ILYANASSA OBSOLETA	0074169
482	HALOCLAVA PRODUCTA	0052513
483	THALASSINOIDEA SPP.	0097699
484	ECHINOIDEA SPP.	0157821
485	PAGURUS LONGICARPUS	0097807
486	LIBINIA DUBIA	0098454
487	SPIO PETTIBONEAE	0066870
488	POLYPEDILUM CONVICTUM	0129671
489	LAONEREIS CULVERI	0065965
490	ARICIDEA SPP.	0066666
491	AMPHIPODA SPP.	0093294
492	HUTCHINONIELLA MACRACANTHA	0083682
493	CRANGONIDAE SPP.	0097106
494	LEPTALPHEUS FORCEPS	0096732
495	MANGELIA PLICOSA	0074568
496	PRIONOSPIO PERKINSI	0066854
497	BOCCARDIA HAMATA	0066886
498	LEPIDONOTUS VARIABILIS	0064611
499	TUBIFICOIDES BROWNAE	0068688
500	IDUNELLA SMITHI	BAY0133
501	TUBIFICOIDES DIAZI	0068689
502	HEMICHORDATA SPP.	0158616
503	AORIDAE SPP.	0093440
504	GYPTIS SPP.	0065468
505	CHIRONOMUS ATTENUATUS	0129268
506	CHIRONOMUS RIPARIUS	0129313
507	DJALMABETISTA PULCHER	0128272
508	CRYPTOCHIRONOMOUS PARAFULVUS	0129382
509	ALMYRACUMA PROXIMOCULI	0090979
510	LEITOSCOLOPLOS SPP.	0066653
511	COROPHIUM ACUTUM	0093602
512	ISOCHAETIDES FREYI	0068810
513	CHIRONOMIDAE SPP. LARVAE	0127917
514	SQUILLA EMPUSA	0099143
515	LIMNODRILUS UDEKEMIANUS	0068644
516	TUBIFICOIDES SPP. GROUP I	0068687
517	CRANGON SEPTEMSPINOSA	0097110
518	TAGELUS PLEBEIUS	0081272
519	ANOMIA SIMPLEX	0079798
520	ENCHYTRAEIDAE SPP.	0068510
521	GLYPTOTENDIPES SPP.	0129483
522	XENOCHIRONOMUS SPP.	0129837
523	ETEONE SPP.	0065258
524	POTAMOTHRIX VEJDOVSKYI	0068790
525	PSUEDOCHIRONOMUS FULVIVENTRIS	0129858
526	CAPITELLA JONESI	0067450
527	NUCULANA MESSANENSIS	0079212

SPEC_CODE	LBL	TSN
528	PRISTINELLA JENKINAE	0069030
529	WAPSA MOBILIS	0068866
530	COROPHIUM VOLUTATOR	0093601
531	MACOMA SPP.	0081033
532	AMPHICTEIS FLORIDUS	0067753
533	PSYCHODIDAE SPP.	0125351
534	PRISTINELLA SIMA	0069028
535	XENOCHIRONOMUS FESTIVUS	0129841
536	PILARGIDAE SPP.	0065540
537	OECETIS INCONSPICUA	0116613
538	PALPOMYIA SPP.	0127859
539	CHIRONOMUS SPP.	0129254
540	SAMYTHELLA ELONGATA	0067802
541	SABELLIDES OCTOCIRRA	0067773
542	HYDROIDES PROTULICOLA	0068283
543	HYDROBIA SPP.	0070494
544	PRISTINELLA OSBORNI	0069026
545	GAMMARUS TIGRINUS	0093781
546	COROPHIUM INSOSIDIUM	0093600
547	CHIRONOMINI SPP.	0129229
548	MARPHYSA SANQUINEA	0066301
549	SABELLARIA GRACILIS	0067678
550	SERPULIDAE SPP.	0068232
551	BOCCARDIELLA LIGERICA	0067012
552	SPHAERIUM SPP.	0081391
553	EPHEMPTERA SPP.	0100502
554	PENTAMERA PULCHERIMA	0158230
555	PETRICOLA PHOLADIFORMIS	0081627
556	POLYPEDILUM SPP.	0129657
557	NAIS SPP.	0068946
558	CERITHIOPSIS GREENI	0072032
559	COELOTANYPUS SPP.	0128010
560	HARNISCHIA SPP.	0129516
561	OLIGOCHAETA SP A(SERRATE CHAETAE)	0068422
562	CAPITELLIDES SPP.	0067449
563	TELLINA SP. 1	0081074
564	ARMANDIA AGILIS	0067346
565	CAULLERIELLA SPP.	0067126
566	TELLINA SPP.	0081074
567	APOPRIONOSPIO DAYI	0067024
568	TELLINA SP. 2	0081074
569	OPHELINA CYLINDRICAUDA	0067387
570	PRIONOSPIO SPP.	0066838
571	PRIONOSPIO CRISTATA	0066849
572	OLIVELLA MUTICA	0074253
573	DONAX VARIABILIS	0081248
574	EXOSPHAEROMA SPP.	0092301
575	NASSARIUS SPP.	0074103
576	POLYCIRRUS SPP.	0067959
577	ODONTOSYLLIS FULGURANS	0065789
578	ANACHIS SPP.	0073616
579	ANACHIS AVARA	0073617

SPEC_CODE	LBL	TSN
580	PARACEREIS CAUDATA	0092290
581	HIPPOLYTIDAE SPP.	0096746
582	SIPUNCULA SPP.	0154520
583	GYRINIDAE SPP.	0112653
584	TROPISTERNUS SPP.	0112938
585	PELTODYTES SPP.	0111923
586	BEROSSUS SPP.	0112812
587	LACCOBIUS SPP.	0112858
588	SCIRTES SPP.	0113929
589	HELODIDAE SPP.	0113923
590	AESHINIDAE SPP.	BAY0002
592	CALLIBAETIS SPP	0100903
593	ENGALLAGMA SPP.	BAY0097
594	CAENIS SPP.	0101478
595	OCHTERUS SPP.(NYMPH)	0103788
596	TABANUS SPP.	0131527
598	PROCLADIUS SPP.	0128277
599	PENTANEURA SPP.	0128215
600	CERATOPOGONIDAE SPP.	0127076
601	ERIOPTERA SPP.	0120503
602	TIPULIDAE SPP. (PUPAE)	0118840
603	PSILOTRETA SPP. (PUPAE)	0116497
604	SIGARA SPP.	0103369
605	NOTONECTA SPP.	0103558
606	RANATRA SPP.	0103748
607	PELOCARIS FEMORATUS	0103667
608	PSEUDOSUCCINEA COLUMELLA	0076529
609	NEOPLANORBIS SPP.	0076649
610	MYTILOPSIS SPP.	0081333
611	PALAEOMONETES PUGIO	0096390
612	DERO SPP.	0068898
613	ILYODRILUS TEMPLETONI	0068662
614	TANYPUS SPP.	0128324
615	PSECTROTANYPUS SPP.	0128048
616	HEXAGENIA SPP.	0101537
617	CIRROPHORUS SPP.	0066708
618	ALPHEUS HETEROCHAEIS	0096602
619	AMPITHOIDAE SPP.	0093408
620	CERATONEREIS IRRITABILIS	0065874
621	SEMELE PURPURASCENS	0081295
622	CHIRONOMIDAE SPP. PUPAE	0127917
623	AEGATHOA MEDIALIS?	0092440
624	SPHAERIIDAE SPP.	0112737
625	POLYONYX GIBBESI	0098083
626	ORTHOCLADIINAE SPP.	0128457
627	TUBIFICIDAE SPP.	0068585
628	CARAZIELLA HOBSONAE	0067003
629	CHIRIDOTEA ALMYRA	0092638
630	BARNEA TRUNCATA	0081798
631	PARANAIS FRICI	0068865
632	PAGURUS PUBESCENS	0097811
633	CRASSISPIRA OSTREARUM	0074901

SPEC_CODE	LBL	TSN
634	PROCERAEA CORNUTA	0065591
635	MODIOLUS AMERICANUS	0079506
636	ODONATA SPP.	0101593
637	CIRROPHOROUS LYRIFORMIS	0066709
638	TANAIDACEA SPP.	0091061
639	PROTOHAUSTORIUS DEICHMANNAE	0094009
640	PARAHAUSTORIUS HOLMESI	0094005
641	PLATYNEREIS DUMERILII	0065950
642	LYSIANOPSIS ALBA	0094466
643	CYATHURA BURBANKI	0092150
644	GAMMARUS FASCIATUS	0093780
645	EUPOLYMNIA SPP.	0067906
646	BUSYCON CANALICULATUM	0074097
647	AEDICIRA ALBATROSSAE	0066663
648	HYDRPSYCHE SPP.	0115453
649	MALMGRENIELLA TAYLORI	BAY0335
650	MYTILOPSIS LEUCOPHAEATA	0081335
651	MANAYUNKIA SPECIOSA	0068172
652	KURTZIELLA ASTROSTYLA	0074804
653	JASSA FALCATA	0094171
654	MICROSPPIO PIGMENTATA	0066972
655	NATARSIA SPP.	0128070
656	TELLINIDAE SPP.	0081032
657	EPOICOCLADIUS SPP.	0128682
658	ANCISTROSYLLIS COMMENSALIS	0065548
659	PARANAIS LITORALIS	0068863
660	TANYSTYLUM ORBICULARE	0083618
661	IDOTEIDAE SPP.	0092564
662	DROMOGOMPHUS ARMATUS	0101731
663	OPTIOSERVUS SPP.	0114177
664	EDWARDSIA ELEGANS	0052489
665	NEOTEA PONDEROSA	BAY0295
666	IDUNELLA BOWENAE	0094208
667	SERPULA SPP.	0068243
668	PAGURUS ANNULIPES	0097804
669	PTILANTHURA TRICARINA	0092156
670	FLABELLIGERIDAE SPP.	0067224
671	CALLIANASSIDAE SPP.	0097732
672	GLYCERA SPHYRABRANCHA	0066118
673	SEILA ADAMSI	0072111
674	PYRAMIDELLA SPP.	0075947
675	LOIMIA VIRIDIS	0068016
676	AUTOLYTUS PROLIFER	0065595
677	EUNICEA SPP.	0052183
678	SCLERODACTYLA BRIAREUS	0158297
679	MELANELLA SPP.	0072440
680	GLYCERA SP. A	0066102
681	STEGOPHRYXUS HYPTIUS	0093152
682	ACANTHOHAUSTORIUS SPINOSUS	0093983
683	SPIO SPP.	0066864
684	LOIMIA SPP.	0068014
685	ANOPLDACTYLUS PETIOLATUS	0083646

SPEC_CODE	LBL	TSN
686	PIROMIS ROBERTI	0067272
687	SOLENI VIRIDIS	0081017
688	PISANIA TINCTA	0073844
689	PYRAMIDELLA CRENULATA	0075950
690	LYSILLA SPP.	0068002
691	ABRA AEQUALIS	0081302
692	POLYDORA QUADRILOBATA	0066798
693	MODIOLUS MODIOLUS	0079501
694	UNCINIS UNCINATA	0068990
695	NANOCLADIUS SPP.	0128844
696	TUBIFEX SPP.	0068622
697	CAULLERIELLA SP. A	0067126
698	OLIGOCHAETA SP. M	0068422
699	PARAHAUSTORIOUS LONGIMERUS	0094006
700	IDOTEA SPP.	0092588
701	LEPIDOPA WEBSTERI	0098104
702	Streptosyllis arenae	0065818
703	STREPTOSPINGERA HETEROSETA	BAY0296
704	MARGINELLA SPP.	0074384
705	LYSIANASSIDAE SPP.	0094224
706	ODIOTOMIA IMPRESSA	0075990
707	CUMINGIA TELLINOIDES	0081317
708	BOREOTROPHON SPP.	0073330
709	CERITHIIDAE SPP.	0071975
710	COSSURA SOYERI	0067210
711	DONAX SPP.	0081245
712	NUCULANA SPP.	0079188
713	STREPTOSYLLIS ARENAE	0065818
714	CHIRIDOTEA ARENICOLA	0092639
715	MANCOCUMA STELLIFERA	0091030
716	LEPIDACTYLUS DYTISCUS	0093998
717	KIEFFERULUS SPP.	0129522
718	Prionospio heterobranchia	0066843
719	Ampithoe longimana	0093423
720	Ampithoe valida	0093424
721	Sialis spp.	0115002
722	Palaemonetes vulgaris	0096391
723	Hesionidae spp.	0065467
724	AMEROCULODES SPECIES COMPLEX	0656551
725	Syllides floridanus	0065815
726	Protohaustorius wigleyi	0094010
727	Travisia spp.	0067364
728	Acanthohaustorius intermedius	0093981
729	Pseudohaustorius caroliniensis	0094015

SPEC_CODE	LBL	TSN
730	Unionidae spp.	0079913
731	Polymesoda caroliniana	0081383
732	Bratislavia unidentata	0069023
733	Sphaerosyllis taylori	0065747
734	Dero digitata	0068904
735	Tasserkidrilus harmani	0068806
736	Pagurus acadianus	0097803
737	Leucothoidae spp.	0094196
738	Diptera spp.	0118831
739	Teredo navalis	0081862
740	Brachyura	0098276
741	Sphaeroma quadridentatum	0092339
743	Cymadusa compta	0093430
745	ISOPODA SPP	0092120
746	Limnodrilus spp.	0068638
747	Gomphidae spp.	0101664
748	Stictochironomus spp.	0129785
749	Monopylephorus rubroniveus	0068728
750	Asellus spp.	0092658
751	Ancylidae spp.	0076568
752	Synidotea spp.	0092564
753	Cymnellus fraternus	0117092
754	Syllides spp.	0065803
755	Bivalvia sp. B	0079118
756	Stylaria lacustris	0068872
757	Terebra dislocata	0075409
758	Pleurocera spp.	0071549
759	Hargeria rapax	0092068
760	Marshallora nigrocincta	0567862
761	Neohaustorius schmitzi	0094002
762	Aulodrilus limnobius	0068682
763	Kurtziella cerina	0074806
764	Simulium spp.	0126774
765	Columbellidae spp.	0073532
766	Hippolyte pleuracanthus	0096750
767	Odontosyllis longiseta	0065791
768	Hauchiella sp.	0068034
769	PINNIXA LUNZI	0099000
999	NO ORGANISMS FOUND	BAY0291

# VARIABLES NAMES AND DESCRIPTIONS FOR DATA FILES  
Structures for data files on <http://www.chesapeakebay.net>

> BENTHIC SURVEY EVENT DATA

Name	Type	Width	Description
SOURCE	Text	6	Data Collection Agency
SAMPLE_DATE	Date/Time	8	Sampling Date (YYYYMMDD)
LATITUDE	Number	4	Latitude (decimal degrees-NAD83)
LONGITUDE	Number	4	Longitude (decimal degrees-NAD83)
R_DATE	Date/Time	8	Data Version Date (YYYYMMDD)
SITE_TYPE	Text	10	Sampling Site Type
STATION	Text	15	Sampling Station
TOTAL_DEPTH	Number	4	Total Station Depth (meters)
SAMPLE_TIME	Date/Time	8	Sample Collection Time (HHMM)

> BENTHIC WATER QUALITY SURVEYS

Name	Type	Width	Description
SOURCE	Text	6	Data Collection Agency
SAMPLE_TYPE	Text	7	Sample Type
STATION	Text	15	Sampling Station
SAMPLE_DATE	Date/Time	8	Sampling Date (YYYYMMDD)
SAMPLE_DEPTH	Number	4	Sample Collection Depth
SAMPLE_NUMBER	Number	4	Sample Number
PARAMETER	Text	15	Sampling Parameter
VALUE	Number	4	Parameter Value
UNITS	Text	15	Parameter Reporting Unit
METHOD	Text	8	Parameter Sampling Method Code
R_DATE	Date/Time	8	Data Version Date (YYYYMMDD)

>BENTHIC SEDIMENT SURVEY DATA

Name	Type	Width	Description
SOURCE	Text	6	Data Collection Agency
SAMPLE_TYPE	Text	7	Sample Type
STATION	Text	15	Sampling Station
SAMPLE_DATE	Date/Time	8	Sampling Date (YYYYMMDD)
TOTAL_DEPTH	Number	4	Total Station Depth
SAMPLE_NUMBER	Number	4	Sample Number
PARAMETER	Text	15	Sampling Parameter
VALUE	Number	8	Parameter Value
UNITS	Text	15	Parameter Reporting Unit
METHODS	Text	8	Parameter Sampling Method Code
R_DATE	Date/Time	8	Data Version Date (YYYYMMDD)

> BENTHIC SURVEY BIOTA EVENT DATA

Name	Type	Width	Description
SOURCE	Text	6	Data Collection Agency
SAMPLE_DATE	Date/Time	8	Sampling Date (YYYYMMDD)
LATITUDE	Number	4	Latitude (decimal degrees-NAD83)
LONGITUDE	Number	4	Longitude (decimal degrees-NAD83)
PENETR	Number	4	Gear Penetration Depth (cm)
R_DATE	Date/Time	8	Data Version Date (YYYYMMDD)
SAMPLE_NUMBER	Number	4	Sample Number
SITE_TYPE	Text	10	Sampling Site Type
STATION	Text	15	Sampling Station
TOTAL_DEPTH	Number	4	Total Station Depth (meters)
SAMPLE_TIME	Date/Time	8	Sample Collection Time (HHMM)

>BENTHIC TAXONOMIC SURVEY DATA

Name	Type	Width	Description
SOURCE	Text	6	Data Collection Agency
SAMPLE_TYPE	Text	7	Sample Type
STATION	Text	15	Sampling Station
SAMPLE_DATE	Date/Time	8	Sampling Date (YYYYMMDD)
SAMPLE_NUMBER	Number	4	Replicate Number
GMETHOD	Text	3	Chesapeake Bay Program Gear Code Method
CONVFACT	Number	8	Conversion Factor-#/sample to #/meter**2
NET_MESH	Number	4	Screen mesh width (millimeter)
TSN	Text	7	ITIS Taxon Serial Number
LIFE_STAGE	Text	45	CBP Life Stage Code
LATIN_NAME	Text	45	Species Latin Name
COUNT	Number	4	Total Count of Taxa in Sample
UNITS	Text	15	Unit of Count
NODCCODE	Text	12	National Oceanographic Data Center Species Code
SPEC_CODE	Text	14	Agency Species Code
SER_NUM	Text	12	Sample Serial Number
R_DATE	Date/Time	8	Data Version Date (YYYYMMDD)

>BENTHIC BIOMASS SURVEY DATA

Name	Type	Width	Description
SOURCE	Text	6	Data Collection Agency
SAMPLE_TYPE	Text	7	Sample Type
STATION	Text	15	Sampling Station
SAMPLE_DATE	Date/Time	8	Sampling Date (YYYYMMDD)
SAMPLE_NUMBER	Number	4	Replicate Number
GMETHOD	Text	3	Chesapeake Bay Program Gear Code Method
CONVFACT	Number	8	Conversion Factor-#/sample to #/meter**2
NET_MESH	Number	4	Screen mesh width (millimeter)
TSN	Text	7	ITIS Taxon Serial Number

Name	Type	Width	Description
LIFESTAGE	Text	45	CBP Life Stage Code
LATIN_NAME	Text	45	Species Latin Name
PARAMETER	Text	15	Parameter
VALUE_TYPE	Text	10	Measurement Type
AFDW_TAX	Number	8	Taxa Biomass in Sample
UNITS	Text	15	Unit of Count
NODCCODE	Text	12	National Oceanographic Data Center Species Code
SPEC_CODE	Text	14	Agency Species Code
SER_NUM	Text	12	Sample Serial Number
R_DATE	Date/Time	8	Data Version Date (YYYYMMDD)

#### >BENTHIC INDEX OF BIOTIC INTEGRITY DATA

SOURCE	Text	6	Data Collection Agency
STATION	Text	15	Sampling Station
SITE_TYPE	Text	10	Sampling Site Type
LATITUDE	Number	4	Latitude (decimal degrees-NAD83)
LONGITUDE	Number	4	Longitude (decimal degrees-NAD83)
SAMPLE_DATE	Date/Time	8	Sampling Date (YYYYMMDD)
SAMPLE_TIME	Date/Time	8	Sample Collection Time (HHMM)
TOTAL_DEPTH	Number	4	Total Station Depth (meters)
PARAMETER	Text	15	IBI Parameter Name
VALUE	Number	4	IBI Parameter Value
SCORE	Number	4	IBI Parameter Score
R_DATE	Date/Time	8	Data Version Date (YYYYMMDD)

> The following fields may also appear in a downloaded data set:

Name	Type	Width	Description
BASIN	Text	20	Chesapeake Bay Program Basin Designation
HUC8	Text	8	USGS 8 Digit Hydrologic Unit Codes
CATALOGING _UNIT_DESCRIPTION	Text	35	USGS Hydrologic Unit Catalog Description
FIPS	Text	5	Federal Information Processing Codes
STATE	Text	2	FIPS-State Designation
NAME	Text	30	FIPS - County Designation
CBSEG_1998	Text	6	1998 Chesapeake Bay Program Segment Designation
CBSEG_1998_DESCRIPTION	Text	50	1998 Chesapeake Bay Program Segment Description

#### VARIABLE NAMES AND DESCRIPTIONS FOR SPECIES KEY

These tables cross references investigator species codes and spellings with current Integrated Taxonomic Information System (ITIS) and National Oceanographic Data Center taxonomic codes and spellings. Web address: <http://www.chesapeakebay.net/>

Name	Type	Width	Description
SOURCE	Text	8	Data Provider Identifier
SPECCODE	Text	14	Data provider Species Code
SPEC_LBL	Text	45	SOURCE Species Latin Name
LBL	Text	45	ITIS Latin Name
NODC_LBL	Text	45	National Oceanographic Data Center Latin Name
NODCCODE	Text	12	National Oceanographic Data Center Species Code
TSN	Text	7	ITIS Taxon Serial Number
R_DATE	Date/Time	8	Version Date of Data (YYYYMMDD)

# REFERENCE CODES IN DATA FILES AND TAXONOMIC KEY

See 2000 Users Guide to Chesapeake Bay Program Biological and Living Resources Data for full listing.

>MISSING VALUES: Missing values have been replaced with -999.99 in numeric fields and N, NA, or NOT AVAIL. in character fields.

>AGENCY: Data Collection Agency  
ODU-Old Dominion University

>A/EAFDW: Actual or Estimated Ash Free Dry Weight  
A - Actual Determination of Ash Free Dry Weight

>COLTYPE: Collection Type  
D - Discrete Sample

>CRUISE: Chesapeake Bay Program Cruise Number  
See Users Guide for complete listing of CBP Cruise numbers.

>GMETHOD- Sampling Gear Codes  
20-Box Corer Grab  
97-Young Modified Box Core  
83- Double Petite Ponar Grab

>INS\_CODE- Sampling Instrument Codes  
YSI58- Yellow Springs Instruments, Model 58 Oxygen Meter  
YSI33- Yellow Springs Instruments, Model 33 CTD

>REP\_TYPE: Replicate Type  
FLD - Field Replicate

>STATION- Station Names-Please See Station Names and  
Positions for details on name designation.

>NODCCODE: National Oceanographic Data Center Species Code  
NOTE: For current listing of Chesapeake Bay species and their codes,  
see 1998 Chesapeake Bay Basin Species List

>SITETYPE- Sampling Station Site Type  
F- Fixed Sampling Site  
R- Randomly Selected Site within a habitat area

>STRATA - Sampling Station Tributary or Mainstem Code  
RAP- Rappahanock River  
JAM- James River  
YRK- York River  
ELZ- Elizabeth River  
BAY- Chesapeake Bay  
VACB-Virginia Coastal Bays

>TSN: Interagency Taxonomic Identification System, Taxon Serial Numbers Note for current listing of Chesapeake Bay Program Species and their codes, see <https://archive.chesapeakebay.net/species/>. Organisms without current serial numbers have ALL been assigned TSN of BAYXXXX.

>FIPS: Federal Information Processing Codes

FIPS	NAME	STATE
51001	ACCOMACK	VA
51036	CHARLES CITY	VA
51057	ESSEX	VA
51073	GLOUCESTER	VA
51087	HENRICO	VA
51093	ISLE OF WIGHT	VA
51095	JAMES CITY	VA
51097	KING AND QUEEN	VA
51099	KING GEORGE	VA
51101	KING WILLIAM	VA
51103	LANCASTER	VA
51115	MATHEWS	VA
51119	MIDDLESEX	VA
51127	NEW KENT	VA
51131	NORTHAMPTON	VA
51133	NORTHUMBERLAND	VA
51149	PRINCE GEORGE	VA
51159	RICHMOND	VA
51181	SURRY	VA
51193	WESTMORELAND	VA
51199	YORK	VA
51550	CHESAPEAKE CITY	VA
51650	HAMPTON CITY	VA
51700	NEWPORT NEWS CITY	VA
51710	NORFOLK CITY	VA
51735	POQUOSON CITY	VA
51800	SUFFOLK CITY	VA
51810	VIRGINIA BEACH CITY	VA

>HUC8: USGS Hydrologic Unit Codes

HUC8	CATALOGING_UNIT_DESCRIPTION
02080101	LOWER CHESAPEAKE BAY
02080102	GREAT WICOMICO-PIANKATANK
02080104	LOWER RAPPAHANNOCK
02080105	MATTAPONI
02080106	PAMUNKEY
02080107	YORK
02080206	LOWER JAMES
02080208	HAMPTON ROADS
02060010	CHINCOTEAQUE
02080110	EASTERN LOWER DELMARVA

>METHOD: Chesapeake Bay Program Lab Method Code Designation  
FO1 Unspecified Field Method



> CBSEG\_1998: Chesapeake Bay Program Monitoring Segment

CBSEG_1998	DESCRIPTION
APPTF	APPOMATTOX RIVER-TIDAL FRESH REGION
CB5MH	CHESAPEAKE BAY-MESOHALINE REGION
CB6PH	CHESAPEAKE BAY-POLYHALINE REGION
CB7PH	CHESAPEAKE BAY-POLYHALINE REGION
CB8PH	CHESAPEAKE BAY-POLYHALINE REGION
CHKOH	CHICKAHOMINY RIVER-OLIGOHALINE REGION
CHNPH	CHINCOTEAU BAY-POLYHALINE REGION
CRRMH	CORROTOMAN RIVER-MESOHALINE REGION
EBEMH	EAST BRANCH ELIZABETH RIVER-MESOHALINE REGION
ELIMH	ELIZABETH RIVER-MESOHALINE REGION
ELIPH	ELIZABETH RIVER-POLYHALINE REGION
JMSMH	JAMES RIVER-MESOHALINE REGION
JMSOH	JAMES RIVER-OLIGOHALINE REGION
JMSPH	JAMES RIVER-POLYHALINE REGION
JMSTF	JAMES RIVER-TIDAL FRESH REGION
LAFMH	LAFAYETTE RIVER-MESOHALINE REGION
LYNPH	LYNNHAVEN RIVER-POLYHALINE REGION
MOBPH	MOBJACK BAY-POLYHALINE REGION
MPNOH	MATTAPONI RIVER-OLIGOHALINE REGION
MPNTF	MATTAPONI RIVER-TIDAL FRESH REGION
PIAMH	PIANKATANK RIVER-MESOHALINE REGION
PMKOH	PAMUNKEY RIVER-OLIGOHALINE REGION
PMKTF	PAMUNKEY RIVER-TIDAL FRESH REGION
POCMH	POCOMOKE RIVER-MESOHALINE REGION
POCOH	POCOMOKE RIVER-OLIGOHALINE REGION
RPPMH	RAPPAHANNOCK RIVER-MESOHALINE REGION
RPPOH	RAPPAHANNOCK RIVER-OLIGOHALINE REGION
RPPTF	RAPPAHANNOCK RIVER-TIDAL FRESH REGION
SBEMH	SOUTH BRANCH ELIZABETH RIVER-MESOHALINE REGION
SVCPH	SOUTHERN VIRGINIA COASTAL BAYS-POLYHALINE REGION
TANMH	TANGIER SOUND-MESOHALINE REGION
WBEMH	WEST BRANCH ELIZABETH RIVER-MESOHALINE REGION
YRKMH	YORK RIVER-MESOHALINE REGION
YRKPH	YORK RIVER-POLYHALINE REGION

>PROGRAM- Chesapeake Bay Program Monitoring Program Designation

PROGRAM	DESCRIPTION
EPA\NCAS	EPA EMAP NATIONAL COASTAL ASSESSMENT PROGRAM
HISTORIC	PRE-CHESAPEAKE BAY MONITORING PROGRAM
WQMP	CHESAPEAKE BAY MAINSTEM AND TIDAL TRIBUTARY WATER QUALITY MONITORING PROGRAM

> PROJECT - Chesapeake Bay Program Monitoring Project Designation

PROJECT	DESCRIPTION
MAIN/TRIB	LONG-TERM BENTHIC MONITORING PROGRAM
VA/CBAY	VIRGINIA COASTAL BAY MONITORING
VA/HIST	VIRGINIA HISTORIC DATA RECOVERY

>PARAMETER and UNIT: Measured Parameter and reporting units.

PARAMETER	UNITS
AFDW_TAX	GRAMS/SAMPLE
CLAY	PERCENT
COUNT	NUMBER/SAMPLE
DO	MG/L
KURTOSIS	FOLK METHOD
MEANDIAM	PHI
MEDDIAM	PHI
SALINITY	PPT
SAND	PERCENT
SILT	PERCENT
SILTCLAY	PERCENT
SKEWNESS	FOLK METHOD
SORT	FOLK METHOD
VOLORG	PERCENT
WTEMP	DEG C

IBI_PARAMETER	DESCRIPTION
GRAND_SCORE	FIXED STATION REPLICATE AVERAGED TOTAL IBI SCORE
PCT_BIO_DP05	PERCENT TOTAL BIOMASS FOUND GREATER THAN 5 CM BELOW SEDIMENT WATER INTERFACE
PCT_CARN_OMN	PERCENT CARNIVORES AND OMNIVORES
PCT_DEPO	PERCENT DEEP DEPOSIT FEEDERS
PCT_PI_ABUND	PERCENT POLLUTION INDICATIVE SPECIES ABUNDANCE
PCT_PI_BIO	PERCENT POLLUTION INDICATIVE SPECIES BIOMASS
PCT_PI_F_ABUND	PERCENT POLLUTION INDICATIVE SPECIES ABUNDANCE-FRESH WATER
PCT_PI_F_BIO	PERCENT POLLUTION INDICATIVE SPECIES BIOMASS-FRESH WATER
PCT_PI_O_ABUND	PERCENT POLLUTION INDICATIVE SPECIES ABUNDANCE-OLIGOHALINE WATER
PCT_PI_O_BIO	PERCENT POLLUTION INDICATIVE SPECIES BIOMASS- OLIGOHALINE WATER
PCT_PS_ABUND	PERCENT POLLUTION SENSITIVE SPECIES ABUNDANCE
PCT_PS_BIO	PERCENT POLLUTION SENSITIVE SPECIES BIOMASS
PCT_PS_O_ABUND	PERCENT POLLUTION SENSITIVE SPECIES ABUNDANCE- OLIGOHALINE WATER
PCT_PS_O_BIO	PERCENT POLLUTION SENSITIVE SPECIES BIOMASS- OLIGOHALINE WATER
PCT_TANYPODINI	PERCENT TANYPODINAE TO CHIRONOMIDAE
SW	SHANNON-WEINER SPECIES DIVERSITY INDEX
TOLARANCE	POLLUTION TOLARANCE INDEX
TOT_ABUND	TOTAL SPECIES ABUNDANCE (NUMBER PER METER SQUARED)
TOT_BIOMASS	TOTAL SPECIES BIOMASS IN (GRAMS PER METER SQUARED)
TOT_TXA_DP05	SPECIES ABUNDANCE FOUND GREATER THAN 5 CM BELOW SEDIMENT WATER INTERFACE
TOTAL_SCORE	TOTAL BENTHIC IBI SCORE FOR SINGLE SAMPLE

# VARIABLE NAMES - WARNING AND ERROR BOUNDS

Variable	Valid Ranges
KURTOSIS	0-5
MEDDIAM	0-99999999
MOIST	0-100
SAND	0-100
SILT	0-1000
SILTCLAY	0-100
SKEW	-1.0 - 1.0

SORT	0- 8
VOLORG	0 -999.9999
DISOXY	0-15.0
SALINITY	0 - 32.0
WTEMP	0-35

#### #IMPORTANT DATA REVISIONS

Station positions differ from those in other Chesapeake Bay Program data sets. Please note differences in station latitudes and longitudes for stations.

Please note that quarterly cruises usually spanned two-three Bay cruise periods and on several occasions the fourth quarter sampling extended into the following calendar year.

10/31/95- GMETHOD For an extensive list of Chesapeake Bay Program assigned codes please see The Guide to Living Resources Data Sets.

10/31/95- LBL all Latin Names and spelling for names have been corrected to the National Oceanographic Data Center accepted spelling.

10/31/93- TSN all Species have been given their assigned National Oceanographic Data Center accepted taxon serial number. The taxon serial number is a permanent number assigned to a species and does not change with changes in taxonomic classification.

07/31/97- NOTE For all random site selection data, a different sample collection gear was used and Sediment Particle size analysis was limited to only determination of SAND AND SILT/CLAY percentages.

06/01/99- 16 new taxa added as part of the expansion or random strata sampling.

SUMMER 2000- All Latitude and Longitude positions converted to NAD83 coordinates.

06/01/2001- One new taxa added.

06/01/2002- Five new taxa added.

06/01/2005- Ten new taxa added.

06/01/2006- Nine new taxa added. EPA National Coastal Assessment Monitoring begins in conjunction with on going monitoring program. This includes sampling sites in the Virginia coastal bay. See station information for details.

06/01/2007- Eight new taxa added. EPA National Coastal Assessment Monitoring continues. See station information for details.

05/15/2008- Three new taxa added. EPA National Coastal Assessment Stations not co-listed stations in 2007 data. See station information for details.

#### #KEY WORDS (EXCLUDING VARIABLE NAMES)

Benthic Taxon Counts  
Benthic Organism Densities  
Benthic Monitoring  
Benthic Biomass  
Benthic Organism Biomass  
Benthic Sediments  
Sediment Characterization

Benthic Water Quality  
Benthic Habitat Characterization  
Benthic Sampling Event  
Benthic Monitoring Surveys

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**THIS IS THE END OF THE VIRGINIA CHESAPEAKE BAY PROGRAM BENTHIC  
DATA DICTIONARY**

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