# FLUORESCENCE MONITORING DATABASE
# Version 2.0

## DATABASE DESIGN DOCUMENTATION AND DATA DICTIONARY

Chesapeake Bay Program

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# Table of Contents

# BACKGROUND

In 1996, the Chesapeake Executive Counsel adopted the Strategy for Increasing Basin-wide Public Access to Chesapeake Bay Information. This strategy calls for the Chesapeake Bay Program partners to develop the Chesapeake Bay Information Management System (CIMS). CIMS will electronically link a variety of information about the Bay and rivers and make this information available to anyone—from students, to scientists, to citizens groups—electronically through the Internet and World Wide Web. The information targeted by CIMS includes technical and public information, educational material, environmental indicators, policy documents and scientific data.

As a result of the CIMS initiative, the Bay Program is working to establish a system of distributed databases. In the ideal system, a CBP database would be created and managed by the data originator, reside with the data originator, and made directly available from the data originator's institution on an Internet server. This system has several advantages over the traditional single data repository. Primary, the people with the most expertise and knowledge about the data, the originators, will manage the data. Additional advantages include reduced cost due to elimination of intermediate data handling at a central repository, and decreased time between collection and release of the data.

The key to the success of a distributed, data management system lies in the willingness of the data generators to take ownership of and responsibility for their data and in their adherence to the established data standards for public access to the data. As part of the implementation of CIMS, the Living Resources Biological Data Management program has chosen to design a series of relational database structure for managing various types of Chesapeake Bay related Monitoring data. Once developed, these database designs are populated with the existing data and then will be turned over to the data generators for long term maintenance. The advantage of this implementation scheme is that the data generators of like data types will be running databases of identical structure. The use of these identical database structures will greatly facilitate the implementation of search engines and the combining of data from multiple sources. The designed of these databases has been done as a joint effort between the data generators and the CBP technical staff. The participation of the data generators in the design and implementation process of the databases has provided critical expertise about the data and its usage as to design a better database.

The original Fluorescence Monitoring Database was designed in 1997 using Microsoft Access. The data base was migrated in to Microsoft SQL server in January 2009. During this migration, major modifications were made to tables and fields to accommodate SQL Server and maintain continuity where possible with the Chesapeake Bay program Tidal Water Quality and Plankton Monitoring Databases. This updated document is not intended to provide a complete discussion of the concepts of a relational database. Instead, this document describes in detail the Fluorescence Monitoring Database's revised structural design.

# INTRODUCTION

## FLUORESCENCE MONITORING DATA

The state of Maryland and Virginia, in cooperation with the US EPA Chesapeake Bay Program, has used in vivo fluorescence to measure horizontal and vertical profiles of chlorophyll a between fixed monitoring stations in the Chesapeake Bay mainstem. A program measuring fluorescence in the Maryland mainstem and tidal tributaries has been in place since August 1984. A horizontal transect program in the Potomac estuary from the months of April-September was conducted from August 1990 to September 2002.
The state of Virginia, began a similar fluorescence monitoring program in the Virginia Chesapeake Bay mainstem in January 1991. The program is designed to give comprehensive spatial and temporal information on phytoplankton. Sampling is performed in conjunction with the Maryland and Virginia phytoplankton, zooplankton and water quality monitoring programs.

## RELATIONAL DATA BASE STRUCTURE

In a relational database, data is stored in tables, which are linked to one another by common fields. Most tables are related to one another in a series of one to many relationships. In this type of arrangement, the one record in the "Parent" or one table is related to many records in the "child" or many tables. The common fields are set as primary and/or foreign keys. The creation of relationships between tables using key fields allows for the enforcement of referential integrity. Referential integrity prohibits the data manager from entering records into a child table containing a foreign key for which there is not an associated primary key in the parent table. This database also employs the use of auto-generated key field. An auto generated key field cannot be edited; it is a unique, sequential or random number automatically assigned to each new record added to the table. In the case of this database, auto-generated keys are assigned to unique records based on a combination of fields in the parent table. The auto-generated key is then added to a child table as part of its primary key. The principle advantage of an auto-generated key is that once assigned a table can be indexed and linked on one field instead of the combination of fields used to determine a unique record. This serves to increase the efficiency of the database and decrease data recovery time.

The following relational data structure for the Living Resource Monitoring data contains description of the primary data tables as well as the numerous lookup tables required to define in detail the codes contained in the primary tables. The primary tables contain the bulk of the data in the database and are generally related to one another by multiple key fields. The primary table in the Fluorescence database is TAB_FIELD_DATA. Information contained in the associated look-up tables supports the referential integrity of the database. The table columns in this document used to describe the fields in the database tables are described below.

**FIELD -** This column contains the field name in the database table as well as the designation of the field as either a primary key (PK), a foreign key (FK), a not null (NN) field, or a unique field (U). Primary, and foreign, by definition, are not null fields. However primary and foreign keys may contain zero length value fields. Fields which are neither primary nor foreign key fields, but which have been designated as not null or unique are those fields deemed essential to certain applications of the database.

**DESCRIPTION -** This column contains a description of the database table field.

This column specifies the field type as character, number, or date/time; it also includes the format of the field and the precision of the text value where appropriate. Currently accepted data types in Microsoft SQL server used in the plankton database include the following.

Exact numerics

| Type | From | To |
|---|---|---|
| BIGINT | -9,223,372,036,854,775,808 | 9,223,372,036,854,775,807 |
| INT | -2,147,483,648 | 2,147,483,647 |
| SMALLINT | -32,768 | 32,767 |
| TINYINT | 0 | 255 |
| BIT | 0 | 1 |
| DECIMAL | -10^38 +1 | 10^38 –1 |
| NUMERIC | -10^38 +1 | 10^38 –1 |

Numeric and decimal are fixed precision and scale data types and are functionally equivalent.

**datetime and smalldatetime**

| Type | From | To |
|---|---|---|
| DATETIME (3.33 milliseconds accuracy) | Jan 1, 1753 | Dec 31, 9999 |
| SMALLDATETIME (1 minute accuracy) | Jan 1, 1900 | Jun 6, 2079 |

Character Strings

| Type | Description |
|---|---|
| CHAR | Fixed-length non-Unicode character data with a maximum length of 8,000 characters. |
| VARCHAR | Variable-length non-Unicode data with a maximum of 8,000 characters. |
| TEXT | Variable-length non-Unicode data with a maximum length of 2,147,483,647 characters. |

**LENGTH (BYTES) -** This column specifies the maximum character or numeric length of a field as well as the internal database storage requirement.

# FLUORESCENCE DATABASE STRUCTURE

## PRIMARY DATA TABLES

Within the current design, the primary table is the TAB_FIELD_DATA table. This table contains all the sample event, location and fluorescence measurement. This table has been highly optimized for efficient data storage by utilizing a large number of auto generated foreign keys due to the large number of sampling events generated by this monitoring project.

## TAB_FIELD_DATA

| Name | Description | Data Type | Length |
|---|---|---|---|
| FIELD_DATA_INDEX | PRIMARY_ID KEY- An auto-generated field (sample_date_time+ latitude + longitude + sample_type_id + sample_depth) | INTEGER | 4 |
| SOURCE_ID (FK) | DATA SOURCE ID KEY- Source ID Primary key Code identifying data generator | INTEGER | 4 |
| SAMPLE_DATE_TIME (PK) | SAMPLING DATE_TIME- Date and time of sample collection | DATE/TIME | 8 |
| LATITUDE (PK) | STATION LATITUDE-Station Latitude in decimal degrees | FLOAT | 8 |
| LONGITUDE (PK) | STATION LONGITUDE-Station Longitude in negative decimal degrees | FLOAT | 8 |
| STATION | SAMPLING STATION-Sampling station identifier (IF AVAILABLE) | VARCHAR | 15 |
| SAMPLE_TYPE_ID (PK,FK) | SAMPLE COLLECTION TYPE CODE ID KEY- Sampling Collection Type ID Primary key identifying sample type | INTEGER | 4 |
| SAMPLE_DEPTH (PK) | SAMPLE COLLECTION DEPTH -Depths in (METERS) | REAL | 4 |
| PARAMETER_ID (PK, FK) | SAMPLING PARAMETER ID KEY- Sampling Parameter ID Primary key identifying sample parameter | INTEGER | 4 |
| REPORTING_VALUE (NN) | REPORTED PARAMETER VALUE | REAL | 4 |
| REPORTING_VOLTS | REPORTED PARAMETER VOLTAGE VALUE | REAL | 4 |
| UNITS_ID (FK) | REPORTING UNITS ID KEY- Sampling Parameter Units ID Primary key identifying sample parameter reporting units | INTEGER | 4 |
| QUALIFIER_ID (FK) | PARAMETER QUALIFIER ID CODE - Parameter Qualifier ID Primary key identifying sample qualifiers | INTEGER | 4 |
| METHOD_ID (FK) | METHOD CODE ID Code- Method code ID Primary key identifying field/laboratory analysis procedure | INTEGER | 4 |
| PROJECT_ID (FK) | STATE MONITORING PROJECT ID CODE- Project Code ID Primary key identifying State Monitoring Project | INTEGER | 4 |
| RDATE (NN) | DATA VERSION DATE- Date denoting when data records were entered in to database | DATE/TIME | 8 |
| HUC8_ID (FK) | USGS HYDROLOGIC UNIT CODE ID- HUC8 ID Primary key identifying the location of USGS 8 digit HUC | INTEGER | 4 |
| FIPS_ID (FK) | FIPS CODE ID- FIPS Code ID primary key identifying Federal Information Processing System codes. | INTEGER | 4 |
| SER_NUM | SOURCE SAMPLE SERIAL NUMBER | VARCHAR | 24 |
| LL_DATUM (FK) | LAT_LONG DATUM CODE ID- Datum ID primary key Code specifying datum of the latitude and longitude values | INTEGER | 4 |
| CB_SEG_2003_ID (FK) | CBP SEGEMENT 2003 ID- CB SEG 2003 Code ID primary key identifying 2003 Bay segment designation | INTEGER | 4 |
| SAMPLE_DATE | SAMPLING DATE- Date of sample collection-Date Part Only | DATE/TIME | 8 |
| SAMPLE_TIME | SAMPLING TIME- Time of sample collection-Time Part Only | DATE/TIME | 8 |
| Upsize_ts | Internal Database time stamp of migration date and time. | TIMESTAMP | 8 |

## PRINCIPAL LOOK-UP TABLES

The primary tables also contain many fields containing codes that are described or defined in detail in related lookup tables. By creating one-to-many relationships between lookup tables and the primary data tables and enforcing referential integrity, data managers are restricted to entering only valid lookup table values into the primary data tables. Again, this provides an automatic layer of quality assurance that will improve the utility of the database for all users.

## TAB_FIPS

| Field Name | Description | Data Type | Length |
|---|---|---|---|
| FIPS_ID (PK) | FIPS_ID- Primary_id key an auto-generated field | INTEGER | 4 |
| FIPS (U) | FIPS CODE-Federal Information Processing System code | VARCHAR | 10 |
| STATE_INITIALS (NN) | STATE INITIAL DESIGNATION- Federal Information Processing System codeTwo-letter state postal abbreviation | VARCHAR | 4 |
| COUNTY_NAME (NN) | COUNTY- State County name | VARCHAR | 60 |

**GENERAL:** This table contains (FIPS) Federal Information Processing System codes identifying state and county type of field samples taken at given site. This code is used in the TAB_FIELD_DATA tables. Additional codes may be added as needed. Currently accepted FIPS CODES, STATE AND COUNTY designations are as follows:

| | | | | | |
|---|---|---|---|---|---|
| 11001 | DC | WASHINGTON | 36015 | NY | CHEMUNG |
| 10001 | DE | KENT | 36017 | NY | CHENANGO |
| 10003 | DE | NEW CASTLE | 36023 | NY | CORTLAND |
| 10005 | DE | SUSSEX | 36025 | NY | DELAWARE |
| 24001 | MD | ALLEGANY | 36043 | NY | HERKIMER |
| 24003 | MD | ANNE ARUNDEL | 36051 | NY | LIVINGSTON |
| 24005 | MD | BALTIMORE | 36053 | NY | MADISON |
| 24510 | MD | BALTIMORE CITY | 36065 | NY | ONEIDA |
| 24009 | MD | CALVERT | 36067 | NY | ONONDAGA |
| 24011 | MD | CAROLINE | 36069 | NY | ONTARIO |
| 24013 | MD | CARROLL | 36077 | NY | OTSEGO |
| 24015 | MD | CECIL | 36095 | NY | SCHOHARIE |
| 24017 | MD | CHARLES | 36097 | NY | SCHUYLER |
| 24019 | MD | DORCHESTER | 36101 | NY | STEUBEN |
| 24021 | MD | FREDERICK | 36107 | NY | TIOGA |
| 24023 | MD | GARRETT | 36109 | NY | TOMPKINS |
| 24025 | MD | HARFORD | 36123 | NY | YATES |
| 24027 | MD | HOWARD | 42001 | PA | ADAMS |
| 24029 | MD | KENT | 42009 | PA | BEDFORD |
| 24031 | MD | MONTGOMERY | 42011 | PA | BERKS |
| 24033 | MD | PRINCE GEORGES | 42013 | PA | BLAIR |
| 24035 | MD | QUEEN ANNES | 42015 | PA | BRADFORD |
| 24039 | MD | SOMERSET | 42021 | PA | CAMBRIA |
| 24037 | MD | ST MARYS | 42023 | PA | CAMERON |
| 24041 | MD | TALBOT | 42027 | PA | CENTRE |
| 24043 | MD | WASHINGTON | 42029 | PA | CHESTER |
| 24045 | MD | WICOMICO | 42033 | PA | CLEARFIELD |
| 24047 | MD | WORCESTER | 42035 | PA | CLINTON |
| 36003 | NY | ALLEGANY | 42037 | PA | COLUMBIA |
| 36007 | NY | BROOME | 42041 | PA | CUMBERLAND |

| | | |
|---|---|---|
| 42043 | PA | DAUPHIN |
| 42047 | PA | ELK |
| 42055 | PA | FRANKLIN |
| 42057 | PA | FULTON |
| 42061 | PA | HUNTINGDON |
| 42063 | PA | INDIANA |
| 42067 | PA | JUNIATA |
| 42069 | PA | LACKAWANNA |
| 42071 | PA | LANCASTER |
| 42075 | PA | LEBANON |
| 42079 | PA | LUZERNE |
| 42081 | PA | LYCOMING |
| 42083 | PA | MCKEAN |
| 42087 | PA | MIFFLIN |
| 42093 | PA | MONTOUR |
| 42097 | PA | NORTHUMBERLAND |
| 42099 | PA | PERRY |
| 42105 | PA | POTTER |
| 42107 | PA | SCHUYLKILL |
| 42109 | PA | SNYDER |
| 42111 | PA | SOMERSET |
| 42113 | PA | SULLIVAN |
| 42115 | PA | SUSQUEHANNA |
| 42117 | PA | TIOGA |
| 42119 | PA | UNION |
| 42127 | PA | WAYNE |
| 42131 | PA | WYOMING |
| 42133 | PA | YORK |
| 51001 | VA | ACCOMACK |
| 51003 | VA | ALBEMARLE |
| 51510 | VA | ALEXANDRIA |
| 51005 | VA | ALLEGHANY |
| 51007 | VA | AMELIA |
| 51009 | VA | AMHERST |
| 51011 | VA | APPOMATTOX |
| 51013 | VA | ARLINGTON |
| 51015 | VA | AUGUSTA |
| 51017 | VA | BATH |
| 51019 | VA | BEDFORD |
| 51023 | VA | BOTETOURT |
| 51029 | VA | BUCKINGHAM |
| 51031 | VA | CAMPBELL |
| 51033 | VA | CAROLINE |
| 51036 | VA | CHARLES CITY |
| 51550 | VA | CHESAPEAKE CITY |
| 51041 | VA | CHESTERFIELD |
| 51043 | VA | CLARKE |
| 51570 | VA | COLONIAL HEIGHTS |
| 51045 | VA | CRAIG |
| 51047 | VA | CULPEPER |
| 51049 | VA | CUMBERLAND |
| 51053 | VA | DINWIDDIE |
| 51057 | VA | ESSEX |
| 51059 | VA | FAIRFAX |
| 51610 | VA | FALLS CHURCH |
| 51061 | VA | FAUQUIER |
| 51065 | VA | FLUVANNA |
| 51069 | VA | FREDERICK |
| 51630 | VA | FREDERICKSBURG |
| 51071 | VA | GILES |
| 51073 | VA | GLOUCESTER |
| 51075 | VA | GOOCHLAND |
| 51079 | VA | GREENE |
| 51650 | VA | HAMPTON |
| 51085 | VA | HANOVER |
| 51087 | VA | HENRICO |
| 51091 | VA | HIGHLAND |
| 51093 | VA | ISLE OF WIGHT |
| 51095 | VA | JAMES CITY |
| 51097 | VA | KING AND QUEEN |
| 51099 | VA | KING GEORGE |
| 51101 | VA | KING WILLIAM |
| 51103 | VA | LANCASTER |
| 51107 | VA | LOUDOUN |
| 51109 | VA | LOUISA |
| 51680 | VA | LYNCHBURG |
| 51113 | VA | MADISON |
| 51115 | VA | MATHEWS |
| 51119 | VA | MIDDLESEX |
| 51121 | VA | MONTGOMERY |
| 51125 | VA | NELSON |
| 51127 | VA | NEW KENT |
| 51700 | VA | NEWPORT NEWS |
| 51710 | VA | NORFOLK |
| 51131 | VA | NORTHAMPTON |
| 51133 | VA | NORTHUMBERLAND |
| 51135 | VA | NOTTOWAY |
| 51137 | VA | ORANGE |
| 51139 | VA | PAGE |
| 51730 | VA | PETERSBURG |
| 51740 | VA | PORTSMOUTH |
| 51145 | VA | POWHATAN |
| 51147 | VA | PRINCE EDWARD |
| 51149 | VA | PRINCE GEORGE |
| 51153 | VA | PRINCE WILLIAM |
| 51157 | VA | RAPPAHANNOCK |
| 51159 | VA | RICHMOND |
| 51760 | VA | RICHMOND CITY |
| 51161 | VA | ROANOKE |
| 51163 | VA | ROCKBRIDGE |
| 51165 | VA | ROCKINGHAM |
| 51171 | VA | SHENANDOAH |
| 51177 | VA | SPOTSYLVANIA |
| 51179 | VA | STAFFORD |
| 51800 | VA | SUFFOLK |
| 51181 | VA | SURRY |
| 51810 | VA | VIRGINIA BEACH |
| 51187 | VA | WARREN |
| 51193 | VA | WESTMORELAND |
| 51830 | VA | WILLIAMSBURG |
| 51199 | VA | YORK |
| 54003 | WV | BERKELEY |
| 54023 | WV | GRANT |
| 54027 | WV | HAMPSHIRE |
| 54031 | WV | HARDY |
| 54037 | WV | JEFFERSON |
| 54057 | WV | MINERAL |
| 54063 | WV | MONROE |
| 54065 | WV | MORGAN |
| 54071 | WV | PENDLETON |

## TAB_HUCS8

| Field Name | Description | Data Type | Length |
|---|---|---|---|
| HUC_ID (PK) | HUC8- Primary_id key an auto-generated field | INTGER | 4 |
| HUC8 (U) | HUC8 CODE-8-digit USGS hydrologic unit code | VARCHAR | 16 |
| REGION (NN) | REGION- 2 DIGIT HUC CODE- Region associated with the first two digits of HUC8 | VARCHAR | 4 |
| SUBREGION (NN) | SUBREGION-4 DIGIT HUC CODE- Sub-region associated with the first four digits of HUC8 | VARCHAR | 8 |
| ACCOUNTING_UNIT (NN) | ACCOUNTING_UNIT- 6 DIGIT HUC CODE- Accounting unit associated with the first six digits of HUC8 | VARCHAR | 12 |
| REGION_ DESCRIPTION (NN) | REGION DESIGNATION- Detailed Description of Region described by first two digits of HUC code | VARCHAR | 30 |
| SUBREGION_ DESCRIPTION (NN) | SUBREGION DESIGNATION- Detailed Description of Region described by first four digits of HUC code | VARCHAR | 40 |
| ACCOUNTING_UNIT_ DESCRIPTION (NN) | ACCOUNTING DESIGNATION- Detailed Description of Region described by first six digits of HUC code | VARCHAR | 60 |
| CATALOGING_UNIT_ DESCRIPTION (NN) | CATALOGING DESIGNATION-Detailed Description of Region described by first eight digits of HUC code | VARCHAR | 70 |

**GENERAL:** The TAB_HUCS8 TABLE contains 8-digit USGS hydrologic unit codes and descriptions The HUC8 code is the 8-digit USGS hydrologic unit code in which the station is located. The list that follows contains only the HUC and the associated cataloging unit description. Additional lookup tables related to this table may or may not be included in the final database design. These tables contain specific information related to the REGION, SUBREGION, ACCOUNTING_UNIT, and CATALOGING_UNIT fields (i.e. detailed description, states covered, and area in square miles). The currently accepted 8 digit HUC and CATALOGING_UNIT_DESCRIPTIONS are as follows:

| | |
|---|---|
| 02050101 | UPPER SUSQUEHANNA |
| 02050102 | CHENANGO |
| 02050103 | OWEGO-WAPPASENING |
| 02050104 | TIOGA |
| 02050105 | CHEMUNG |
| 02050106 | UPPER SUSQUEHANNA-TUNKHANNOCK |
| 02050107 | UPPER SUSQUEHANNA-LACKAWANNA |
| 02050201 | UPPER WEST BRANCH SUSQUEHANNA |
| 02050202 | SINNEMAHONING |
| 02050203 | MIDDLE WEST BRANCH SUSQUEHANNA |
| 02050204 | BALD EAGLE |
| 02050205 | PINE |
| 02050206 | LOWER WEST BRANCH SUSQUEHANNA |
| 02050301 | LOWER SUSQUEHANNA-PENNS |
| 02050302 | UPPER JUNIATA |
| 02050303 | RAYSTOWN |
| 02050304 | LOWER JUNIATA |
| 02050305 | LOWER SUSQUEHANNA-SWATARA |
| 02050306 | LOWER SUSQUEHANNA |
| 02060001 | UPPER CHESAPEAKE BAY |
| 02060002 | CHESTER-SASSAFRAS |
| 02060003 | GUNPOWDER-PATAPSCO |
| 02060004 | SEVERN |
| 02060005 | CHOPTANK |
| 02060006 | PATUXENT |
| 02060007 | BLACKWATER-WICOMICO |
| 02060008 | NANTICOKE |
| 02060009 | POCOMOKE |
| 02060010 | CHINCOTEAGUE |
| 02070001 | SOUTH BRANCH- POTOMAC |
| 02070002 | NORTH BRANCH- POTOMAC |
| 02070003 | CACAPON-TOWN |
| 02070004 | CONOCOCHEAGUE-OPEQUON |
| 02070005 | SOUTH FORK SHENANDOAH |
| 02070006 | NORTH FORK SHENANDOAH |
| 02070007 | SHENANDOAH |
| 02070008 | MIDDLE POTOMAC-CATOCTIN |
| 02070009 | MONOCACY |
| 02070010 | MIDDLE POTOMAC-ANACOSTIA- OCCOQUAN |
| 02070011 | LOWER POTOMAC |
| 02080101 | LOWER CHESAPEAKE BAY |
| 02080102 | GREAT WICOMICO-PIANKATANK |
| 02080103 | RAPIDAN-UPPER RAPPAHANNOCK |
| 02080104 | LOWER RAPPAHANNOCK |
| 02080105 | MATTAPONI |
| 02080106 | PAMUNKEY |

| | | | |
|---|---|---|---|
| 02080107 | YORK | 02080203 | MIDDLE JAMES-BUFFALO |
| 02080108 | LYNNHAVEN-POQUOSON | 02080204 | RIVANNA |
| 02080109 | WESTERN LOWER DELMARVA | 02080205 | MIDDLE JAMES-WILLIS |
| 02080110 | EASTERN LOWER DELMARVA | 02080206 | LOWER JAMES |
| 02080201 | UPPER JAMES | 02080207 | APPOMATTOX |
| 02080202 | MAURY | 02080208 | HAMPTON ROADS |

## TAB_LL_DATUMS

| Field | Description | Type | Length |
|---|---|---|---|
| LL_DATUM_ID (PK) | LL_DATUM_ID- Primary_id key an auto-generated field | INTEGER | 4 |
| LL_DATUM (U) | LL_DATUM- geographic datum code for Latitude/longitude measurements | VARCHAR | 10 |
| LL_DATUM_ DESCRIPTION (NN) | LL_DATUM_DESCRIPTION-Description/definition of ll_datum code | VARCHAR | 100 |

GENERAL- The TAB_LL_DATUM TABLE contains latitude/longitude datum and descriptions The LL_DATUM code defines the datum under which the latitude and longitude measurements for a particular station were calculated. All data collected in NAD27 prior to 1999 was converted to NAD83, the current program standard in 2002. The currently accepted LL_DATUM and DESCRIPTIONS are as follows:

| | |
|---|---|
| NAD27 | 1927 NORTH AMERICAN DATUM |
| NAD83 | 1983 NORTH AMERICAN DATUM |
| UNID | UNKNOWN DATUM |

## TAB_METHODS

| Name | Description | Data Type | Length |
|---|---|---|---|
| METHOD_ID (PK) | METHOD_ID-primary_id key an auto-generated field (method +parameter_id) | INTEGER | 4 |
| METHOD (U,NN) | ANALYTICAL METHOD CODE- Analytical Method Description code for given reporting parameter. | VARCHAR | 10 |
| PARAMETER_ID (FK) | PARAMETER_ID- Reporting parameter_ ID of parameter method describes | INTEGER | 4 |
| METHOD_DESCRIPTION (NN) | METHOD_DESCRIPTION-Description of laboratory or field method | VARCHAR | - |

**General:** This table stores information related exclusively to PARAMETER METHOD codes in the TAB_FIELD_DATA table. This table contains information to analytical methods for parameter determination. The METHOD code is used to define the field instruments and geographic positioning method used to obtain the parameter value. The currently accepted METHOD CODES and METHOD_DESCRIPTIONS are as follows:

| | |
|---|---|
| 101 | FLUORESCENCE IS MEASURED WITH A TURNER MODEL 10000 FLUOROMETER, POSITION BY INTERPOLATION FROM FIXED START AND END POINTS OF TRANSECT |
| 102 | FLUORESCENCE IS MEASURED WITH A TURNER MODEL 10000 FLUOROMETER, POSITION BY INTERPOLATION FROM LORAN-C FITX TAKEN EVERY 5 MINUTES. |
| 103 | FLUORESCENCE IS MEASURED WITH A TURNER MODEL10000 FLUOROMETER, POSITION BY LORAN-C AT SAMPLING TIME |
| 104 | FLUORESCENCE IS MEASURED WITH A TURNER MODEL 10000 FLUOROMETER, POSITION BY GPS |
| 105 | FLUORESCENCE IS MEASURED WITH A TURNER MODEL 10-005R FLUOROMETER, POSITION BY GPS |
| 106 | FLUORESCENCE IS MEASURED WITH A TURNER MODEL 10-005R FLUOROMETER, POSITION BY INTERPOLATION FROM GPS FIX TAKEN EVERY 5 MINUTES. |
| 107 | FLUORESCENCE IS MEASURED WITH A SEABIRD- WET STAR FLUOROMETER, POSITION BY GPS |
| 108 | FLUORESCENCE IS MEASURED WITH A SEABIRD- WET STAR FLUOROMETER, POSITION BY INTERPOLATION FROM GPS FIX TAKEN EVERY 5 MINUTES. |
| 109 | FLUORESCENCE IS MEASURED WITH A TURNER MODEL 10-AU-005 FLUOROMETER, POSITION BY POSITION BY INTERPOLATION FROM FIXED START AND END POINTS OF TRANSECT |
| 110 | FLUORESCENCE IS MEASURED WITH A TURNER MODEL 10 FLUOROMETER, POSTION ESTIMATED FROM NAVIGATION CHARTS |

## TAB_PARAMETERS

| Name | Description | Data Type | Length |
|---|---|---|---|
| PARAMETER_ID (PK) | PARAMETER_ID-Reporting parameters primary_id key an auto-generated field (reporting_parameter) | INTEGER | 4 |
| REPORTING_ PARAMETER (U,NN) | REPORTING PARAMETER CODE-Name identifying parameter | VARCHAR | 16 |
| PARAMETER_ DESCRIPTION (NN) | PARAMETER DESCRIPTION-Parameter description/definition | VARCHAR | 200 |

**General:** This table stores information related exclusively to PARAMETER codes in the FIELD_DATA table. This table contains information to parameter names and standard detection limits. The following list of parameters represents those parameters that are either directly measured in the field or analyzed in the laboratory. Additional codes may be added if additional transect parameters are collected. Currently accepted PARAMETER and DESCRIPTION designations are as follows:

CHL_F CHLOROPHYLL a FLUORESENCE

## TAB_PROGRAMS

| Name | Description | Data Type | Length |
|---|---|---|---|
| PROGRAM_ID (PK) | PROGRAM_ID- program primary_id key an auto-generated field (program) | INTEGER | 4 |
| PROGRAM (U,NN) | REPORTING PROGRAM CODE-Name identifying Monitoring Program | VARCHAR | 30 |
| PROGRAM_ DESCRIPTION (NN) | PROGRAM DESCRIPTION- Program description/definition | VARCHAR | 200 |

**General:** This table stores information related exclusively to PROGRAM codes in the FIELD_DATA table. These codes, taken directly from the currently in the water quality, and living resources databases. The PROGRAM code is used to separate Chesapeake Bay Monitoring Program types. Currently accepted PROGRAM designations are as follows:

ERMP ELIZABETH RIVER MONITORING PROGRAM
WQMP CHESAPEAKE BAY WATER QUALITY MONITORING PROGRAM

## TAB_PROJECT

| Name | Description | Data Type | Length |
|---|---|---|---|
| PROJECT_ID (PK) | PROJECT_ID- Primary_id key an auto-generated field (state monitoring project) | INTEGER | 4 |
| PROJECT (U,NN) | STATE MONITORING PROJECT- Code identifying State Monitoring Project | VARCHAR | 20 |
| PROJECT_ DESCRIPTION (NN) | PROJECT_DESCRIPTION-Description/definition of PROJECT | VARCHAR | 200 |

**General-** This table stores information related exclusively to PROJECT codes in the FIELD_DATA table. These PROJECT codes, taken directly from the currently in the water quality database. The PROJECT code is used to separate Chesapeake Bay Monitoring Project types. Currently accepted PROJECTS designations are as follows:

| | |
|---|---|
| MAINSTEM | CHESAPEAKE BAY MAINSTEM |
| POTOMAC | POTOMAC RIVER SPECIAL SURVEY |

## TAB_QUALIFIERS

| Name | Description | Data Type | Length |
|---|---|---|---|
| QUALIFIER_ID (PK) | QUALIFIER_ID- Primary_id key an auto-generated field (qualifiers) | INTEGER | 4 |
| QUALIFIERS (U,NN) | QUALIFIERS-Parameter value qualifier code | VARCHAR | 4 |
| QUALIFIER_ DESCRIPTION (NN) | QUALIFIER_DESCRIPTION-Description/definition of QUALIFIER code. | VARCHAR | 220 |

**General:** This table stores information related exclusively to QUALIFIER codes in the TAB_FIELD_DATA table. The QUALIFIER code is used to describe the parameter value as less than or greater than the method detection limits or as a calculated value which has been calculated using a method detection limit.

| | |
|---|---|
| >0 | Greater than zero |
| # | Trace (less than an unknown detectable value) |
| <0 | Less than the detection limit of the method |
| J | Estimated value |
| N | Not detected |
| NA | Not recorded/not applicable/parameter value acceptable |
| C | Data suspect use caution |

## TAB_SAMPLE_TYPES

| Name | Description | Data Type | Length |
|---|---|---|---|
| SAMPLE_TYPE_ID (PK) | SAMPLE_TYPE_ ID-Primary_id key an auto-generated field (sample_type) | INTEGER | 4 |
| SAMPLE_TYPE (U,NN) | SAMPLE _TYPE-Collection type code for sample | VARCHAR | 10 |
| SAMPLE_TYPE_ DESCRIPTION (NN) | SAMPLE_TYPE_DESCRIPTION- Detailed description of sample type code | VARCHAR | 260 |

**General:** This table stores information relating to the type of field samples taken at given site. This code is used in all the primary data tables. Additional codes may be added as needed. Currently accepted SAMPLE_TYPE designations are as follows:

C = Composite Sample (May be composite of multiple samples from a site or multiple depths)
D = Discrete (GRAB) Sample (Single sample from site or depth)
ISM_H = In-Situ Measurement, Collected as part of a Horizontal Transect
ISM_V = In-Situ Measurement, Collected as part of a Vertical Profile

## TAB_SEGS_2003

| Name | Description | Data Type | Length |
|---|---|---|---|
| CBSEG_2003_ID (PK) | CBSEG_2003_ID-Primary_id key an auto-generated field (CBSEG_2003) | INTEGER | 4 |
| CBSEGS_2003 (U,NN) | CBSEGS_2003-2003 Chesapeake Bay Program monitoring segment code | VARCHAR | 12 |
| CBSEG _DESCRIPTION (NN) | CBSEG_DESCRIPTION- Detailed description of monitoring segment code | VARCHAR | 100 |
| REPORTING_REGION | REPORTING_REGION-Reporting For Bay Health and Restoration Report | VARCHAR | 30 |
| ADDED | FLAG FIELD | VARCHAR | 2 |

**General-** The CBSEGS_2003 TABLE provides the monitoring segment codes describing in which segment a station is located. It is based upon the new segmentation scheme developed in 1997, revised in 2000 and 2003. These codes are used in the TAB_FIELD_DATA table. The currently accepted CBSEGS_2003 values and DESCRIPTIONS are as follows:

| | |
|---|---|
| ANATF | ANACOSTIA RIVER-TIDAL FRESH REGION |
| APPTF | APPOMATTOX RIVER-TIDAL FRESH REGION |
| ATLEH | ATLANTIC OCEAN-EURYHALINE REGION |
| BACOH | BACK RIVER-OLIGOHALINE REGION |
| BIGMH | BIG ANNEMESSEX RIVER-MESOHALINE REGION |
| BOHOH | BOHEMIA RIVER-OLIGOHALINE REGION |
| BSHOH | BUSH RIVER-OLIGOHALINE REGION |
| C&DOH | C&D CANAL-OLIGOHALINE REGION |
| CB1TF | CHESAPEAKE BAY-TIDAL FRESH REGION |
| CB2OH | CHESAPEAKE BAY-OLIGOHALINE REGION |
| CB3MH | CHESAPEAKE BAY-MESOHALINE REGION |
| CB4MH | CHESAPEAKE BAY-MESOHALINE 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 |
| CHOMH1 | CHOPTANK RIVER-MESOHALINE REGION 1 |
| CHOMH2 | CHOPTANK RIVER-MESOHALINE REGION 2 |
| CHOOH | CHOPTANK RIVER-OLIGOHALINE REGION |
| CHOTF | CHOPTANK RIVER-TIDAL FRESH REGION |
| CHSMH | CHESTER RIVER-MESOHALINE REGION |
| CHSOH | CHESTER RIVER-OLIGOHALINE REGION |
| CHSTF | CHESTER RIVER-TIDAL FRESH REGION |
| CRRMH | CORROTOMAN RIVER-MESOHALINE REGION |
| EASMH | EASTERN BAY-MESOHALINE REGION |
| EBEMH | EAST BRANCH ELIZABETH RIVER-MESOHALINE REGION |
| ELIMH | ELIZABETH RIVER-MESOHALINE REGION |
| ELIPH | ELIZABETH RIVER-POLYHALINE REGION |
| ELKOH | ELK RIVER-OLIGOHALINE REGION |
| FSBMH | FISHING BAY-MESOHALINE REGION |
| GUNOH | GUNPOWDER RIVER-OLIGOHALINE REGION |
| GUNTF | GUNPOWDER RIVER-TIDAL FRESH REGION |
| HNGMH | HONGA RIVER-MESOHALINE 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 |
| LCHMH | LITTLE CHOPTANK RIVER-MESOHALINE REGION |
| LYNPH | LYNNHAVEN RIVER-POLYHALINE REGION |
| MAGMH | MAGOTHY RIVER-MESOHALINE REGION |
| MANMH | MANOKIN RIVER-MESOHALINE REGION |
| MATTF | MATTAWOMAN CREEK-TIDAL FRESH REGION |
| MIDOH | MIDDLE RIVER-OLIGOHALINE REGION |
| MOBPH | MOBJACK BAY-POLYHALINE REGION |
| MPNOH | MATTAPONI RIVER-OLIGOHALINE REGION |
| MPNTF | MATTAPONI RIVER-TIDAL FRESH REGION |
| NANMH | NANTICOKE RIVER-MESOHALINE REGION |
| NANOH | NANTICOKE RIVER-OLIGOHALINE REGION |
| NANTF | NANTICOKE RIVER-TIDAL FRESH REGION |
| NORTF | NORTHEAST RIVER-TIDAL FRESH REGION |
| PATMH | PATAPSCO RIVER-MESOHALINE REGION |
| PATTF | PATAPSCO RIVER-TIDAL FRESH REGION |
| PAXMH | PATUXENT RIVER-MESOHALINE REGION |
| PAXOH | PATUXENT RIVER-OLIGOHALINE REGION |
| PAXTF | PATUXENT RIVER-TIDAL FRESH REGION |
| PIAMH | PIANKATANK RIVER-MESOHALINE REGION |
| PISTF | PISCATAWAY CREEK-TIDAL FRESH REGION |
| PMKOH | PAMUNKEY RIVER-OLIGOHALINE REGION |
| PMKTF | PAMUNKEY RIVER-TIDAL FRESH REGION |
| POCMH | POCOMOKE RIVER-MESOHALINE REGION |
| POCOH | POCOMOKE RIVER-OLIGOHALINE REGION |
| POCTF | POCOMOKE RIVER-TIDAL FRESH REGION |
| POTMH | POTOMAC RIVER-MESOHALINE REGION |
| POTOH | POTOMAC RIVER-OLIGOHALINE REGION |
| POTTF | POTOMAC RIVER-TIDAL FRESH REGION |
| RHDMH | RHODE RIVER-MESOHALINE REGION |
| RPPMH | RAPPAHANNOCK RIVER-MESOHALINE REGION |
| RPPOH | RAPPAHANNOCK RIVER-OLIGOHALINE REGION |
| RPPTF | RAPPAHANNOCK RIVER-TIDAL FRESH REGION |
| SASOH | SASSAFRAS RIVER-OLIGOHALINE REGION |
| SBEMH | SOUTH BRANCH ELIZABETH RIVER-MESOHALINE REGION |
| SEVMH | SEVERN RIVER-MESOHALINE REGION |
| SOUMH | SOUTH RIVER-MESOHALINE REGION |
| SUSTF | SUSQUEHANNA RIVER-TIDAL FRESH REGION |
| TANMH | TANGIER SOUND-MESOHALINE REGION |
| WBEMH | WEST BRANCH ELIZABETH RIVER-MESOHALINE REGION |
| WBRTF | WESTERN BRANCH-TIDAL FRESH REGION |
| WICMH | WICOMICO RIVER-MESOHALINE REGION |
| WSTMH | WEST RIVER-MESOHALINE REGION |
| YRKMH | YORK RIVER-MESOHALINE REGION |
| YRKPH | YORK RIVER-POLYHALINE REGION |

## TAB_SOURCES

| Name | Description | Data Type | Length |
|---|---|---|---|
| SOURCE_ID | SOURCE_ ID PRIMARY_ID KEY AN AUTO-GENERATED FIELD (SOURCE) | INTEGER | 4 |
| SOURCE (U,NN) | Data source code | VARCHAR | 30 |
| SOURCE_DESCRIPTION (NN) | Description/definition of SOURCE code | VARCHAR | 200 |

**General:** These codes are also currently in use in the water quality, and living resources databases. As data from other sources (e.g. DCRA, PADEP, SRBC) is added, their SOURCE codes must first be added to this table. Currently accepted SOURCE designations are as follows:

| | |
|---|---|
| ANS | ACADEMY OF NATURAL SCIENCES BENEDICT ESTUARINE LABORATORY |
| MDE | MARYLAND DEPARTMENT OF THE ENVIRONMENT |
| ODU | OLD DOMINION UNIVERSITY CONTRACTED BY THE STATE OF VIRGINIA |
| OEP | MARYLAND OFFICE OF ENVIRONMENTAL PROGRAMS |
| VIMS | VIRGINIA INSTITUTE OF MARINE SCIENCE |
| VSWCB | VIRGINIA STATE WATER CONTROL BOARD |
| MSU | MORGAN STATE UNIVERSITY |

## TAB_UNITS

| Name | Description | Data Type | Length |
|---|---|---|---|
| UNITS_ID | UNITS_ ID- Primary_id key an auto-generated field (reporting_units) | INTEGER | 4 |
| REPORTING_UNITS (U,NN) | REPORTING_UNITS-Reporting Units code | VARCHAR | 20 |
| UNIT_DESCRIPTION (NN) | UNIT_DESCRIPTION-Description/definition of Reporting Units code | VARCHAR | 200 |

**General:** This table stores information related the REPORTING_UNITS codes in the TAB_FIELD_DATA table. The REPORTING_UNITS refer to the units of the REPORTING_PARAMETER value. Currently accepted RREPORTING_UNITS designations are as follows:

| | |
|---|---|
| UG/L | MICROGRAMS PER LITER |

## SECONDARY LOOK-UP TABLES

The following lookup tables are present in the database but are not linked to the main or lookup tables of the database. They can be used in queries to add additional fields exclusively to the FIELD_DATA table.

## BAY_CRUISE_ TABLE

| Name | Description | Data Type | Length |
|---|---|---|---|
| CRUISE (PK,NN) | CRUISE-old bay cruise number (BAY001, ETC.) | VARCHAR | 12 |
| START_DATE (U,NN) | START_DATE-Starting date of cruise period | Date/Time | 8 |
| END_DATE (U,NN) | END_DATE- Ending date of cruise period | Date/Time | 8 |
| NEWCRUISE | NEWCRUISE-new bay cruise number- (JAN1997A, etc.) | Text | 14 |

**General:** This table stores information relating to the time periods of synchronous fluorescence surveys, water quality, zooplankton and phytoplankton Monitoring Cruises. Cruise periods are a tool used as a data grouping mechanism for analysis. Additional fields will be added to this table, after the Monitoring Subcommittee finishes its review of cruise naming protocol. Note the benthic monitoring programs are on a sampling schedule independent of the other Bay monitoring programs.

| | | |
|---|---|---|
| BAY001 | 6/15/1984 | 6/30/1984 198406A |
| BAY002 | 7/1/1984 | 7/15/1984 198407A |
| BAY003 | 7/16/1984 | 7/31/1984 198407B |
| BAY004 | 8/1/1984 | 8/15/1984 198408A |
| BAY005 | 8/16/1984 | 8/31/1984 198408B |
| BAY006 | 9/1/1984 | 9/15/1984 198409A |
| BAY007 | 9/16/1984 | 9/30/1984 198409B |
| BAY008 | 10/1/1984 | 10/15/1984 198410A |
| BAY009 | 10/16/1984 | 10/31/1984 198410B |
| BAY010 | 11/1/1984 | 11/30/1984 198411A |
| BAY011 | 12/1/1984 | 12/31/1984 198412A |
| BAY012 | 1/1/1985 | 1/31/1985 198501A |
| BAY013 | 2/1/1985 | 2/28/1985 198502A |
| BAY014 | 3/1/1985 | 3/15/1985 198503A |
| BAY015 | 3/16/1985 | 3/31/1985 198503B |
| BAY016 | 4/1/1985 | 4/15/1985 198504A |
| BAY017 | 4/16/1985 | 4/30/1985 198504B |
| BAY018 | 5/1/1985 | 5/15/1985 198505A |
| BAY019 | 5/16/1985 | 5/31/1985 198505B |
| BAY020 | 6/1/1985 | 6/15/1985 198506A |
| BAY021 | 6/16/1985 | 6/30/1985 198506B |
| BAY022 | 7/1/1985 | 7/15/1985 198507A |
| BAY023 | 7/16/1985 | 7/31/1985 198507B |
| BAY024 | 8/1/1985 | 8/15/1985 198508A |
| BAY025 | 8/16/1985 | 8/31/1985 198508B |
| BAY026 | 9/1/1985 | 9/15/1985 198509A |
| BAY027 | 9/16/1985 | 10/2/1985 198509B |
| BAY028 | 10/3/1985 | 10/14/1985 198510A |
| BAY029 | 10/15/1985 | 11/6/1985 198510B |
| BAY030 | 11/7/1985 | 11/30/1985 198511A |
| BAY031 | 12/1/1985 | 12/31/1985 198512A |
| BAY032 | 1/1/1986 | 1/31/1986 198601A |
| BAY033 | 2/1/1986 | 2/28/1986 198602A |
| BAY034 | 3/1/1986 | 3/15/1986 198603A |
| BAY035 | 3/16/1986 | 3/31/1986 198603B |
| BAY036 | 4/1/1986 | 4/15/1986 198604A |
| BAY037 | 4/16/1986 | 4/30/1986 198604B |
| BAY038 | 5/1/1986 | 5/15/1986 198605A |
| BAY039 | 5/16/1986 | 5/31/1986 198605B |
| BAY040 | 6/1/1986 | 6/15/1986 198606A |
| BAY041 | 6/16/1986 | 6/30/1986 198606B |
| BAY042 | 7/1/1986 | 7/15/1986 198607A |
| BAY043 | 7/16/1986 | 7/31/1986 198607B |
| BAY044 | 8/1/1986 | 8/15/1986 198608A |
| BAY045 | 8/16/1986 | 8/31/1986 198608B |
| BAY046 | 9/1/1986 | 9/15/1986 198609A |
| BAY047 | 9/16/1986 | 9/30/1986 198609B |
| BAY048 | 10/1/1986 | 10/15/1986 198610A |
| BAY049 | 10/16/1986 | 10/31/1986 198610B |
| BAY050 | 11/1/1986 | 11/30/1986 198611A |
| BAY051 | 12/1/1986 | 12/31/1986 198612A |
| BAY052 | 1/1/1987 | 1/31/1987 198701A |
| BAY053 | 2/1/1987 | 2/28/1987 198702A |
| BAY054 | 3/1/1987 | 3/15/1987 198703A |
| BAY055 | 3/16/1987 | 3/31/1987 198703B |
| BAY056 | 4/1/1987 | 4/15/1987 198704A |
| BAY057 | 4/16/1987 | 4/30/1987 198704B |
| BAY058 | 5/1/1987 | 5/15/1987 198705A |
| BAY059 | 5/16/1987 | 5/31/1987 198705B |
| BAY060 | 6/1/1987 | 6/15/1987 198706A |

| | | | |
|---|---|---|---|
| BAY061 | 6/16/1987 | 6/30/1987 | 198706B |
| BAY062 | 7/1/1987 | 7/17/1987 | 198707A |
| BAY063 | 7/18/1987 | 7/31/1987 | 198707B |
| BAY064 | 8/1/1987 | 8/15/1987 | 198708A |
| BAY065 | 8/16/1987 | 8/31/1987 | 198708B |
| BAY066 | 9/1/1987 | 9/15/1987 | 198709A |
| BAY067 | 9/16/1987 | 9/30/1987 | 198709B |
| BAY068 | 10/1/1987 | 10/15/1987 | 198710A |
| BAY069 | 10/16/1987 | 10/31/1987 | 198710B |
| BAY070 | 11/1/1987 | 11/30/1987 | 198711A |
| BAY071 | 12/1/1987 | 12/31/1987 | 198712A |
| BAY072 | 1/1/1988 | 1/31/1988 | 198801A |
| BAY073 | 2/1/1988 | 2/28/1988 | 198802A |
| BAY074 | 3/1/1988 | 3/15/1988 | 198803A |
| BAY075 | 3/16/1988 | 3/31/1988 | 198803B |
| BAY076 | 4/1/1988 | 4/15/1988 | 198804A |
| BAY077 | 4/16/1988 | 4/30/1988 | 198804B |
| BAY078 | 5/1/1988 | 5/15/1988 | 198805A |
| BAY079 | 5/16/1988 | 5/31/1988 | 198805B |
| BAY080 | 6/1/1988 | 6/14/1988 | 198806A |
| BAY081 | 6/15/1988 | 6/30/1988 | 198806B |
| BAY082 | 7/1/1988 | 7/15/1988 | 198807A |
| BAY083 | 7/16/1988 | 7/31/1988 | 198807B |
| BAY084 | 8/1/1988 | 8/15/1988 | 198808A |
| BAY085 | 8/16/1988 | 8/31/1988 | 198808B |
| BAY086 | 9/1/1988 | 9/13/1988 | 198809A |
| BAY087 | 9/14/1988 | 9/30/1988 | 198809B |
| BAY088 | 10/1/1988 | 10/15/1988 | 198810A |
| BAY089 | 10/16/1988 | 10/31/1988 | 198810B |
| BAY090 | 11/1/1988 | 11/30/1988 | 198811A |
| BAY091 | 12/1/1988 | 12/31/1988 | 198812A |
| BAY092 | 1/1/1989 | 1/31/1989 | 198901A |
| BAY093 | 2/1/1989 | 2/28/1989 | 198902A |
| BAY094 | 3/1/1989 | 3/15/1989 | 198903A |
| BAY095 | 3/16/1989 | 3/31/1989 | 198903B |
| BAY096 | 4/1/1989 | 4/15/1989 | 198904A |
| BAY097 | 4/16/1989 | 4/30/1989 | 198904B |
| BAY098 | 5/1/1989 | 5/15/1989 | 198905A |
| BAY099 | 5/16/1989 | 5/31/1989 | 198905B |
| BAY100 | 6/1/1989 | 6/15/1989 | 198906A |
| BAY101 | 6/16/1989 | 6/30/1989 | 198906B |
| BAY102 | 7/1/1989 | 7/15/1989 | 198907A |
| BAY103 | 7/16/1989 | 7/31/1989 | 198907B |
| BAY104 | 8/1/1989 | 8/15/1989 | 198908A |
| BAY105 | 8/16/1989 | 8/31/1989 | 198908B |
| BAY106 | 9/1/1989 | 9/15/1989 | 198909A |
| BAY107 | 9/16/1989 | 9/30/1989 | 198909B |
| BAY108 | 10/1/1989 | 10/15/1989 | 198910A |
| BAY109 | 10/16/1989 | 10/31/1989 | 198910B |
| BAY110 | 11/1/1989 | 11/30/1989 | 198911A |
| BAY111 | 12/1/1989 | 12/31/1989 | 198912A |
| BAY112 | 1/1/1990 | 1/31/1990 | 199001A |
| BAY113 | 2/1/1990 | 2/28/1990 | 199002A |
| BAY114 | 3/1/1990 | 3/15/1990 | 199003A |
| BAY115 | 3/16/1990 | 3/31/1990 | 199003B |
| BAY116 | 4/1/1990 | 4/15/1990 | 199004A |
| BAY117 | 4/16/1990 | 4/30/1990 | 199004B |
| BAY118 | 5/1/1990 | 5/15/1990 | 199005A |
| BAY119 | 5/16/1990 | 5/31/1990 | 199005B |
| BAY120 | 6/1/1990 | 6/15/1990 | 199006A |
| BAY121 | 6/16/1990 | 6/30/1990 | 199006B |
| BAY122 | 7/1/1990 | 7/15/1990 | 199007A |
| BAY123 | 7/16/1990 | 7/31/1990 | 199007B |
| BAY124 | 8/1/1990 | 8/15/1990 | 199008A |
| BAY125 | 8/16/1990 | 8/31/1990 | 199008B |
| BAY126 | 9/1/1990 | 9/15/1990 | 199009A |
| BAY127 | 9/16/1990 | 9/30/1990 | 199009B |
| BAY128 | 10/1/1990 | 10/15/1990 | 199010A |
| BAY129 | 10/16/1990 | 10/31/1990 | 199010B |
| BAY130 | 11/1/1990 | 11/30/1990 | 199011A |
| BAY131 | 12/1/1990 | 12/31/1990 | 199012A |
| BAY132 | 1/1/1991 | 1/31/1991 | 199101A |
| BAY133 | 2/1/1991 | 2/28/1991 | 199102A |
| BAY134 | 3/1/1991 | 3/15/1991 | 199103A |
| BAY135 | 3/16/1991 | 3/31/1991 | 199103B |
| BAY136 | 4/1/1991 | 4/15/1991 | 199104A |
| BAY137 | 4/16/1991 | 4/30/1991 | 199104B |
| BAY138 | 5/1/1991 | 5/15/1991 | 199105A |
| BAY139 | 5/16/1991 | 5/31/1991 | 199105B |
| BAY140 | 6/1/1991 | 6/15/1991 | 199106A |
| BAY141 | 6/16/1991 | 6/30/1991 | 199106B |
| BAY142 | 7/1/1991 | 7/15/1991 | 199107A |
| BAY143 | 7/16/1991 | 7/31/1991 | 199107B |
| BAY144 | 8/1/1991 | 8/15/1991 | 199108A |
| BAY145 | 8/16/1991 | 8/31/1991 | 199108B |
| BAY146 | 9/1/1991 | 9/15/1991 | 199109A |
| BAY147 | 9/16/1991 | 9/30/1991 | 199109B |
| BAY148 | 10/1/1991 | 10/15/1991 | 199110A |
| BAY149 | 10/16/1991 | 10/31/1991 | 199110B |
| BAY150 | 11/1/1991 | 11/30/1991 | 199111A |
| BAY151 | 12/1/1991 | 12/31/1991 | 199112A |
| BAY152 | 1/1/1992 | 1/31/1992 | 199201A |
| BAY153 | 2/1/1992 | 2/28/1992 | 199202A |
| BAY154 | 3/1/1992 | 3/15/1992 | 199203A |
| BAY155 | 3/16/1992 | 3/31/1992 | 199203B |
| BAY156 | 4/1/1992 | 4/15/1992 | 199204A |
| BAY157 | 4/16/1992 | 4/30/1992 | 199204B |
| BAY158 | 5/1/1992 | 5/15/1992 | 199205A |
| BAY159 | 5/16/1992 | 5/31/1992 | 199205B |
| BAY160 | 6/1/1992 | 6/15/1992 | 199206A |
| BAY161 | 6/16/1992 | 6/30/1992 | 199206B |
| BAY162 | 7/1/1992 | 7/15/1992 | 199207A |
| BAY163 | 7/16/1992 | 7/31/1992 | 199207B |
| BAY164 | 8/1/1992 | 8/15/1992 | 199208A |
| BAY165 | 8/16/1992 | 8/31/1992 | 199208B |
| BAY166 | 9/1/1992 | 9/15/1992 | 199209A |
| BAY167 | 9/16/1992 | 9/30/1992 | 199209B |
| BAY168 | 10/1/1992 | 10/15/1992 | 199210A |
| BAY169 | 10/16/1992 | 10/31/1992 | 199210B |
| BAY170 | 11/1/1992 | 11/30/1992 | 199211A |
| BAY171 | 12/1/1992 | 12/31/1992 | 199212A |
| BAY172 | 1/1/1993 | 1/31/1993 | 199301A |
| BAY173 | 2/1/1993 | 2/28/1993 | 199302A |
| BAY174 | 3/1/1993 | 3/15/1993 | 199303A |
| BAY175 | 3/16/1993 | 3/31/1993 | 199303B |
| BAY176 | 4/1/1993 | 4/15/1993 | 199304A |
| BAY177 | 4/16/1993 | 4/30/1993 | 199304B |
| BAY178 | 5/1/1993 | 5/15/1993 | 199305A |
| BAY179 | 5/16/1993 | 5/31/1993 | 199305B |
| BAY180 | 6/1/1993 | 6/15/1993 | 199306A |
| BAY181 | 6/16/1993 | 6/30/1993 | 199306B |
| BAY182 | 7/1/1993 | 7/15/1993 | 199307A |
| BAY183 | 7/16/1993 | 7/31/1993 | 199307B |
| BAY184 | 8/1/1993 | 8/15/1993 | 199308A |

| | | | |
|---|---|---|---|
| BAY185 | 8/16/1993 | 8/31/1993 | 199308B |
| BAY186 | 9/1/1993 | 9/15/1993 | 199309A |
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| BAY190 | 11/1/1993 | 11/30/1993 | 199311A |
| BAY191 | 12/1/1993 | 12/31/1993 | 199312A |
| BAY192 | 1/1/1994 | 1/31/1994 | 199401A |
| BAY193 | 2/1/1994 | 2/28/1994 | 199402A |
| BAY194 | 3/1/1994 | 3/15/1994 | 199403A |
| BAY195 | 3/16/1994 | 3/31/1994 | 199403B |
| BAY196 | 4/1/1994 | 4/15/1994 | 199404A |
| BAY197 | 4/16/1994 | 4/30/1994 | 199404B |
| BAY198 | 5/1/1994 | 5/15/1994 | 199405A |
| BAY199 | 5/16/1994 | 5/31/1994 | 199405B |
| BAY200 | 6/1/1994 | 6/15/1994 | 199406A |
| BAY201 | 6/16/1994 | 6/30/1994 | 199406B |
| BAY202 | 7/1/1994 | 7/15/1994 | 199407A |
| BAY203 | 7/16/1994 | 7/31/1994 | 199407B |
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| BAY205 | 8/16/1994 | 8/31/1994 | 199408B |
| BAY206 | 9/1/1994 | 9/15/1994 | 199409A |
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| BAY210 | 11/1/1994 | 11/30/1994 | 199411A |
| BAY211 | 12/1/1994 | 12/31/1994 | 199412A |
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| BAY213 | 2/1/1995 | 2/28/1995 | 199502A |
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| BAY244 | 8/1/1996 | 8/15/1996 | 199608A |
| BAY245 | 8/16/1996 | 8/31/1996 | 199608B |
| BAY246 | 9/1/1996 | 9/15/1996 | 199609A |
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| BAY250 | 11/1/1996 | 11/30/1996 | 199611A |
| BAY251 | 12/1/1996 | 12/31/1996 | 199612A |
| BAY252 | 1/1/1997 | 1/31/1997 | 199701A |
| BAY253 | 2/1/1997 | 2/28/1997 | 199702A |
| BAY254 | 3/1/1997 | 3/15/1997 | 199703A |
| BAY255 | 3/16/1997 | 3/31/1997 | 199703B |
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| BAY257 | 4/14/1997 | 4/30/1997 | 199704B |
| BAY258 | 5/1/1997 | 5/15/1997 | 199705A |
| BAY259 | 5/16/1997 | 5/31/1997 | 199705B |
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| BAY262 | 7/1/1997 | 7/17/1997 | 199707A |
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| BAY265 | 8/16/1997 | 8/31/1997 | 199708B |
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| BAY269 | 10/18/1997 | 10/31/1997 | 199710B |
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| BAY272 | 1/1/1998 | 1/31/1998 | 199801A |
| BAY273 | 2/1/1998 | 2/28/1998 | 199802A |
| BAY274 | 3/1/1998 | 3/15/1998 | 199803A |
| BAY275 | 3/16/1998 | 3/31/1998 | 199803B |
| BAY276 | 4/1/1998 | 4/15/1998 | 199804A |
| BAY277 | 4/16/1998 | 4/30/1998 | 199804B |
| BAY278 | 5/1/1998 | 5/15/1998 | 199805A |
| BAY279 | 5/16/1998 | 5/31/1998 | 199805B |
| BAY280 | 6/1/1998 | 6/14/1998 | 199806A |
| BAY281 | 6/15/1998 | 6/30/1998 | 199806B |
| BAY282 | 7/1/1998 | 7/15/1998 | 199807A |
| BAY283 | 7/16/1998 | 7/31/1998 | 199807B |
| BAY284 | 8/1/1998 | 8/15/1998 | 199808A |
| BAY285 | 8/16/1998 | 8/31/1998 | 199808B |
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| BAY287 | 9/14/1998 | 9/30/1998 | 199809B |
| BAY288 | 10/1/1998 | 10/15/1998 | 199810A |
| BAY289 | 10/16/1998 | 10/31/1998 | 199810B |
| BAY290 | 11/1/1998 | 11/30/1998 | 199811A |
| BAY291 | 12/1/1998 | 12/31/1998 | 199812A |
| BAY292 | 1/1/1999 | 1/31/1999 | 199901A |
| BAY293 | 2/1/1999 | 2/28/1999 | 199902A |
| BAY294 | 3/1/1999 | 3/14/1999 | 199903A |
| BAY295 | 3/15/1999 | 3/31/1999 | 199903B |
| BAY296 | 4/1/1999 | 4/15/1999 | 199904A |
| BAY297 | 4/16/1999 | 4/30/1999 | 199904B |
| BAY298 | 5/1/1999 | 5/15/1999 | 199905A |
| BAY299 | 5/16/1999 | 5/31/1999 | 199905B |
| BAY300 | 6/1/1999 | 6/13/1999 | 199906A |
| BAY301 | 6/14/1999 | 6/30/1999 | 199906B |
| BAY302 | 7/1/1999 | 7/16/1999 | 199907A |
| BAY303 | 7/17/1999 | 7/31/1999 | 199907B |
| BAY304 | 8/1/1999 | 8/15/1999 | 199908A |
| BAY305 | 8/16/1999 | 8/30/1999 | 199908B |
| BAY306 | 9/1/1999 | 9/15/1999 | 199909A |
| BAY307 | 9/15/1999 | 9/30/1999 | 199909B |
| BAY308 | 10/1/1999 | 10/15/1999 | 199910A |

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|---|---|---|---|
| BAY309 | 10/16/1999 | 10/31/1999 | 199910B |
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| BAY311 | 12/1/1999 | 12/31/1999 | 199912A |
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| BAY313 | 2/1/2000 | 2/29/2000 | 200002A |
| BAY314 | 3/1/2000 | 3/15/2000 | 200003A |
| BAY315 | 3/16/2000 | 3/31/2000 | 200003B |
| BAY316 | 4/1/2000 | 4/15/2000 | 200004A |
| BAY317 | 4/16/2000 | 4/30/2000 | 200004B |
| BAY318 | 5/1/2000 | 5/15/2000 | 200005A |
| BAY319 | 5/16/2000 | 5/31/2000 | 200005B |
| BAY320 | 6/1/2000 | 6/15/2000 | 200006A |
| BAY321 | 6/16/2000 | 6/30/2000 | 200006B |
| BAY322 | 7/1/2000 | 7/15/2000 | 200007A |
| BAY323 | 7/16/2000 | 7/31/2000 | 200007B |
| BAY324 | 8/1/2000 | 8/15/2000 | 200008A |
| BAY325 | 8/16/2000 | 8/30/2000 | 200008B |
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| BAY327 | 9/16/2000 | 9/30/2000 | 200009B |
| BAY328 | 10/1/2000 | 10/15/2000 | 200010A |
| BAY329 | 10/16/2000 | 10/31/2000 | 200010B |
| BAY330 | 11/1/2000 | 11/30/2000 | 200011A |
| BAY331 | 12/1/2000 | 12/31/2000 | 200012A |
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| BAY333 | 2/1/2001 | 2/28/2001 | 200102A |
| BAY334 | 3/1/2001 | 3/15/2001 | 200103A |
| BAY335 | 3/16/2001 | 3/31/2001 | 200103B |
| BAY336 | 4/1/2001 | 4/15/2001 | 200104A |
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| BAY339 | 5/16/2001 | 5/31/2001 | 200105B |
| BAY340 | 6/1/2001 | 6/15/2001 | 200106A |
| BAY341 | 6/16/2001 | 6/30/2001 | 200106B |
| BAY342 | 7/1/2001 | 7/15/2001 | 200107A |
| BAY343 | 7/16/2001 | 7/31/2001 | 200107B |
| BAY344 | 8/1/2001 | 8/16/2001 | 200108A |
| BAY345 | 8/17/2001 | 8/31/2001 | 200108B |
| BAY346 | 9/1/2001 | 9/15/2001 | 200109A |
| BAY347 | 9/16/2001 | 9/30/2001 | 200109B |
| BAY348 | 10/1/2001 | 10/18/2001 | 200110A |
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| BAY351 | 12/1/2001 | 12/31/2001 | 200112A |
| BAY352 | 1/1/2002 | 1/31/2002 | 200201A |
| BAY353 | 2/1/2002 | 2/28/2002 | 200202A |
| BAY354 | 3/1/2002 | 3/15/2002 | 200203A |
| BAY355 | 3/16/2002 | 3/31/2002 | 200203B |
| BAY356 | 4/1/2002 | 4/15/2002 | 200204A |
| BAY357 | 4/16/2002 | 4/30/2002 | 200204B |
| BAY358 | 5/1/2002 | 5/13/2002 | 200205A |
| BAY359 | 5/14/2002 | 5/30/2002 | 200205B |
| BAY360 | 6/1/2002 | 6/15/2002 | 200206A |
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| BAY363 | 7/17/2002 | 7/31/2002 | 200207B |
| BAY364 | 8/1/2002 | 8/15/2002 | 200208A |
| BAY365 | 8/16/2002 | 8/31/2002 | 200208B |
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| BAY367 | 9/16/2002 | 9/30/2002 | 200209B |
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| BAY369 | 10/16/2002 | 10/31/2002 | 200210B |
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| BAY371 | 12/1/2002 | 12/31/2002 | 200212A |
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| BAY389 | 10/16/2003 | 10/31/2003 | 200310B |
| BAY390 | 11/1/2003 | 11/30/2003 | 200311A |
| BAY391 | 12/1/2003 | 12/31/2003 | 200312A |
| BAY392 | 1/1/2004 | 1/31/2004 | 200401A |
| BAY393 | 2/1/2004 | 2/28/2004 | 200402A |
| BAY394 | 3/1/2004 | 3/15/2004 | 200403A |
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| BAY399 | 5/16/2004 | 5/31/2004 | 200405B |
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| BAY415 | 3/18/2005 | 3/31/2005 | 200503B |
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| BAY419 | 5/16/2005 | 5/31/2005 | 200505B |
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| BAY421 | 6/16/2005 | 6/30/2005 | 200506B |
| BAY422 | 7/1/2005 | 7/15/2005 | 200507A |
| BAY423 | 7/16/2005 | 7/31/2005 | 200507B |
| BAY424 | 8/1/2005 | 8/15/2005 | 200508A |
| BAY425 | 8/16/2005 | 8/31/2005 | 200508B |
| BAY426 | 9/1/2005 | 9/15/2005 | 200509A |
| BAY427 | 9/16/2005 | 9/30/2005 | 200509B |
| BAY428 | 10/1/2005 | 10/15/2005 | 200510A |
| BAY429 | 10/16/2005 | 10/31/2005 | 200510B |
| BAY430 | 11/1/2005 | 11/30/2005 | 200511A |
| BAY431 | 12/1/2005 | 12/31/2005 | 200512A |
| BAY432 | 1/1/2006 | 1/31/2006 | 200601A |

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| BAY434 | 3/1/2006 | 3/15/2006 | 200603A |
| BAY435 | 3/16/2006 | 3/31/2006 | 200603B |
| BAY436 | 4/1/2006 | 4/15/2006 | 200604A |
| BAY437 | 4/16/2006 | 4/30/2006 | 200604B |
| BAY438 | 5/1/2006 | 5/15/2006 | 200605A |
| BAY439 | 5/16/2006 | 5/31/2006 | 200605B |
| BAY440 | 6/1/2006 | 6/15/2006 | 200606A |
| BAY441 | 6/16/2006 | 6/30/2006 | 200606B |
| BAY442 | 7/1/2006 | 7/15/2006 | 200607A |
| BAY443 | 7/16/2006 | 7/31/2006 | 200607B |
| BAY444 | 8/1/2006 | 8/17/2006 | 200608A |
| BAY445 | 8/18/2006 | 8/31/2006 | 200608B |
| BAY446 | 9/1/2006 | 9/15/2006 | 200609A |
| BAY447 | 9/16/2006 | 9/30/2006 | 200609B |
| BAY448 | 10/1/2006 | 10/15/2006 | 200610A |
| BAY449 | 10/16/2006 | 10/31/2008 | 200610B |
| BAY450 | 11/1/2006 | 11/30/2006 | 200611A |
| BAY451 | 12/1/2006 | 12/31/2006 | 200612A |
| BAY452 | 1/3/2007 | 1/31/2007 | 200701A |
| BAY453 | 2/1/2007 | 2/28/2007 | 200702A |
| BAY454 | 3/1/2007 | 3/15/2007 | 200703A |
| BAY455 | 3/16/2007 | 3/30/2007 | 200703B |
| BAY456 | 4/1/2007 | 4/15/2007 | 200704A |
| BAY457 | 4/16/2007 | 4/30/2007 | 200704B |
| BAY458 | 5/1/2007 | 5/15/2007 | 200705A |
| BAY459 | 5/16/2007 | 5/31/2007 | 200705B |
| BAY460 | 6/1/2007 | 6/15/2007 | 200706A |
| BAY461 | 6/16/2007 | 6/30/2007 | 200706B |
| BAY462 | 7/1/2007 | 7/15/2007 | 200707A |
| BAY463 | 7/16/2007 | 7/31/2007 | 200707B |
| BAY464 | 8/1/2007 | 8/15/2007 | 200708A |
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| BAY466 | 9/1/2007 | 9/15/2007 | 200709A |
| BAY467 | 9/16/2007 | 9/30/2007 | 200709B |
| BAY468 | 10/1/2007 | 10/15/2007 | 200710A |
| BAY469 | 10/16/2007 | 10/31/2007 | 200710B |
| BAY470 | 11/1/2007 | 11/30/2007 | 200711A |
| BAY471 | 12/1/2007 | 12/31/2007 | 200712A |
| BAY472 | 1/1/2008 | 1/15/2008 | 200801A |
| BAY473 | 1/16/2008 | 1/31/2008 | 200801B |
| BAY474 | 2/1/2008 | 2/15/2008 | 200802A |
| BAY475 | 2/16/2008 | 2/29/2008 | 200802B |
| BAY476 | 3/1/2008 | 3/15/2008 | 200803A |
| BAY477 | 3/16/2008 | 3/31/2008 | 200803B |
| BAY478 | 4/1/2008 | 4/16/2008 | 200804A |
| BAY479 | 4/17/2008 | 4/30/2008 | 200804B |
| BAY480 | 5/1/2008 | 5/15/2008 | 200805A |
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| BAY482 | 6/1/2008 | 6/15/2008 | 200806A |
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| BAY484 | 7/1/2008 | 7/15/2008 | 200807A |
| BAY485 | 7/16/2008 | 7/31/2008 | 200807B |
| BAY486 | 8/1/2008 | 8/15/2008 | 200808A |
| BAY487 | 8/16/2008 | 8/31/2008 | 200808B |
| BAY488 | 9/1/2008 | 9/14/2008 | 200809A |
| BAY489 | 9/15/2008 | 9/30/2008 | 200809B |
| BAY490 | 10/1/2008 | 10/15/2008 | 200810A |
| BAY491 | 10/16/2008 | 10/31/2008 | 200810B |
| BAY492 | 11/1/2008 | 11/15/2008 | 200811A |
| BAY493 | 11/16/2008 | 11/30/2008 | 200811B |
| BAY494 | 12/1/2008 | 12/15/2008 | 200812A |
| BAY495 | 12/16/2008 | 12/31/2008 | 200812B |
| BAY496 | 1/1/2009 | 1/15/2009 | 200901A |
| BAY497 | 1/16/2009 | 1/31/2009 | 200901B |
| BAY498 | 2/1/2009 | 2/15/2009 | 200902A |
| BAY499 | 2/16/2009 | 2/28/2009 | 200902B |
| BAY500 | 3/1/2009 | 3/15/2009 | 200903A |
| BAY501 | 3/16/2009 | 3/31/2009 | 200903B |
| BAY502 | 4/1/2009 | 4/15/2009 | 200904A |
| BAY503 | 4/16/2009 | 4/30/2009 | 200904B |
| BAY504 | 5/1/2009 | 5/15/2009 | 200905A |
| BAY505 | 5/16/2009 | 5/31/2009 | 200905B |
| BAY506 | 6/1/2009 | 6/15/2009 | 200906A |
| BAY507 | 6/16/2009 | 6/30/2009 | 200906B |
| BAY508 | 7/1/2009 | 1/15/2009 | 200907A |
| BAY509 | 7/16/2009 | 7/30/2009 | 200907B |
| BAY510 | 8/1/2009 | 8/15/2009 | 200908A |
| BAY511 | 8/16/2009 | 8/30/2009 | 200908B |
| BAY512 | 9/1/2009 | 9/15/2009 | 200909A |
| BAY513 | 9/16/2009 | 9/30/2009 | 200909B |
| BAY514 | 10/1/2009 | 10/15/2009 | 200910A |
| BAY515 | 10/16/2009 | 10/31/2009 | 200910B |
| BAY516 | 11/1/2009 | 11/15/2009 | 200911A |
| BAY517 | 11/16/2009 | 11/30/2009 | 200911B |
| BAY518 | 12/1/2009 | 12/15/2009 | 200912A |
| BAY519 | 12/16/2009 | 12/31/2009 | 200912B |

## TAB_QA_REGRESSIONS

| Name | Description | Data Type | Length |
|---|---|---|---|
| QA_ID (PK) | QA_ID-Regression primary_id key an auto-generated field (source, date, sample_type, sometimes start time) | INTEGER | 4 |
| SOURCE (NN) | SOURCE- Data source code from TAB_SOURCE | VARCHAR | 20 |
| SAMPLE_DATE (NN) | SAMPLE_DATE- Sample Date Regression applied | DATETIME | 8 |
| STATION | STATION -Sample Station if applicable (vertical profiles only) | VARCHAR | 30 |
| SAMPLE_TIME_ START | SAMPLE_TIME_START- Sample Start time Regression applied | DATETIME | 8 |
| SAMPLE_TIME_ END | SAMPLE_TIME_END-Sample End time Regression applied | DATETIME | 8 |
| SAMPLE_TYPE (NN) | SAMPLE_TYPE-Type of Sample regression applied to, data codes from TAB_SAMPLE_TYPE | VARCHAR | 14 |
| SER_NUM | SER_NUM -Source Serial Number if applicable | VARCHAR | 510 |
| Y-INTERCEPT (NN) | Y-INTERCEPT- Regression Y Intercept | FLOAT | 8 |
| SLOPE (NN) | SLOPE-Regression Slope | FLOAT | 8 |

**General:** This table stores information relating to laboratory regressions used to convert fluorescence instrument voltage into chlorophyll values. As of 1997 all data providers are required to provide both the original fluorometer voltage and regressions used to convert voltage to fluorescence values.

# FLUORESCENCE DATABASE ENTITY RELATIONSHIP DIAGRAM