Central Valley
REGIONAL DATA CENTER

# Central Valley Regional Data Center

Toxicity Template Entry Manual

October 20, 2016

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| | |
|---|---|
| BR | Business Rule |
| BR(CV RDC) | Business Rule: Central Valley Regional Data Center (specific to CV RDC and differs from the SWAMP Business Rule) |
| CEDEN | California Environmental Data Exchange Network |
| CNEG | Laboratory Toxicity Negative Control Sample |
| CV RDC | Central Valley Regional Data Center |
| ILRP | Irrigated Lands Regulatory Program |
| LABQA | Laboratory Quality Assurance |
| MLML RDC | Moss Landing Marine Laboratory Regional Data Center |
| MPSL | Marine Pollution Studies Laboratory |
| QA | Quality Assurance |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| SOPs | Standard Operating Procedures |
| SWAMP | Surface Water Ambient Monitoring Program |
| TIE | Toxicity Identification Evaluation |

# LIST OF TERMS

| | |
|---|---|
| Data Checker | A web-based automated tool provided to assist data submitters in examining their data sets against the required LookUp lists, formats and business rules of the CV RDC. |
| LookUp lists | Tables that contain specific CV RDC codes found in the CV RDC or CEDEN database. Current LookUp lists can be found at: http://ftp.mpsl.mlml.calstate.edu/CVRDC_LookUpLists.php http://ceden.waterboards.ca.gov/Metadata/ControlledVocab.php |
| Negative Control | A sample expected to produce no change from the normal state. The purpose of the negative control is to ensure that an unknown variable is not adversely affecting the organism in the experiment, which might result in a false-positive conclusion. |

# AMENDMENTS

| Date of Amendment | Document Section | Page Number | Amendment to CV RDC Toxicity Documentation |
|---|---|---|---|
| **April 30, 2012** | **Section 1** | 3-7 | Replaced whole section with new CEDEN tables from new CEDEN documentation. Reorganized table to fit CV RDC template format. |
| **April 30, 2012** | **Appendix A: Table 1.2, Template Column Header = EvalThreshold** | 56 | Original Wording: **Evaluation threshold or EvalThreshold is the associated level that is used to identify that an environmental sample is significantly different from its associated control sample and is recorded as a percentage, e.g. 80%. EvalThreshold = Control % - MSD %** |
| | | | Amended To: **The evaluation threshold or EvalThreshold is the associated level that is used to identify that an environmental sample is biologically significantly different from its associated control sample and is recorded in the same unit as the mean; e.g. 80 or in percent when evaluating against the percent control.**<br><br>•In cases where programs use the MSD to evaluate the evaluation threshold, for percentage endpoints (e.g. survival, etc.) EvalThreshold = Mean of Control - MSD and is compared to the Mean of the sample. To calculate the EvalThreshold for non-percentage endpoints (e.g. growth, cell counts, etc.) EvalThreshold = Mean of Control*(100-MSD)/100 and is compared to the Mean of the sample.<br><br>•In cases where programs use the percent control to evaluate the evaluation threshold, EvalThreshold = Control % - MSD% and is compared to the percent control of the sample. |
| **April 27, 2012** | **Appendix A: Table 1.1 Template Column Header = ResultQualCode** | | Original wording: • This field may be left blank for results that are considered detected. The database will be populated with an equal sign, "=", when the data are loaded. When a result is Not Detected a ResultQualCode of "ND" is required. |
| | | | Amended To: • This field may be left blank for results that are considered detected. The database will be populated with an equal sign, "=", when the data are loaded.<br>• When the result is Not Detected a ResultQualCode of = is utilized with a result of 0. |

| Date of Amendment | Document Section | Page Number | Amendment to CV RDC Toxicity Documentation |
|---|---|---|---|
| **March 8, 2013** | **Section 3** | 7 | Updated Data Checker link. |
| **June 23, 2015** | **All Sections** | All Pages | Revised language to reflect new CEDEN template and process. |
| **October 20, 2016** | **Appendix A** | 35, 50 | Updated CollectionTime business rule description for Toxicity Replicate Results and Toxicity Summary |

# INTRODUCTION

This document is designed to provide guidance on the necessary data reporting requirements for electronic data to be submitted to the Central Valley Regional Data Center (CV RDC) that will eventually be loaded into California Environmental Data Exchange Network (CEDEN). For information about the CV RDC see online at http://mlj-llc.com/cv_rdc.html and CEDEN at http://www.ceden.org/ . This document details the content, required format and current business rules specifically for toxicity data.

Before data entry commences, specific programmatic codes may need to be added to the CV RDC LookUp lists. LookUp lists provide all the available codes for inputting data into the CV RDC database. Please contact the CV RDC prior to field entry if any LookUp lists need to be updated. See website for additional information on how to add project specific codes to the CV RDC http://mlj-llc.com/cvrdc_step2.html. Current LookUp lists can be found at: http://ftp.mpsl.mlml.calstate.edu/CVRDC_LookUpLists.php.

This document has been divided into four subsections. A brief description of each is provided below:

Section 1: Water Quality Toxicity Data Template
Section 2: Laboratory QA Entry
Section 3: Data Checker
Section 4: Batch Verification Codes and Compliance Codes

**Section 1,** Water Quality Toxicity Data Template, defines the data elements needed for data entry into the CEDEN toxicity template. This section is designed to provide users with an idea of what type of data are needed for entry into the toxicity templates. Minimum data requirements for CEDEN are noted. Appendix A contains more detailed definitions of the data elements and describes the business rules for each column header within the toxicity template. The tables in Appendix A have been adapted from the Surface Water Ambient Monitoring Program (SWAMP) and Moss Landing Marine Laboratory Regional Data Center (MLML RDC) to include the CV RDC specific business rules.

**Section 2**, Laboratory QA Entry, describes the business rules for entering laboratory QA, such as laboratory control samples into the toxicity template. Business rules are indicated by "BR".

**Section 3**, Data Checker, details a web-based automated tool provided to assist data submitters in examining their data sets against the required LookUp lists, formats and business rules. The data checker is found here: http://ceden.org/CEDEN_checker/Checker/CEDENUpload.php

**Section 4**, Batch Verification Codes and Compliance Codes, describes the batch verification and compliance codes that is applied to the submitted data. This process is completed by the Central Valley Water Board's data management team while transferring a program's submitted data to the CV RDC database.

# 1. WATER QUALITY TOXICITY DATA TEMPLATE

There are three Excel worksheets that must be completed for the toxicity data package to be considered complete: “ToxSummaryResults”, and “ToxReplicateResults”, and “ToxBatch”.

The **ToxSummaryResults** worksheet holds toxicity core summary data including the mean, toxicity significant, and percent effect. Both the environmental sample and negative control should be included in this worksheet. TIEs and reference toxicant tests are not required to be recorded and submitted electronically.

The **ToxReplicateResults** worksheet holds toxicity replicate data including in-test water quality measurements. This worksheet should complement the Tox Summary and provide the data that was used to calculate the results found in the summary. Providing this data will allow for external statistical analysis of the toxicity test replicates as well as provide environmental conditions of the samples to account for variability of the results and quality control review.

The **ToxBatch** worksheet holds summary and validation information of the laboratory batches recorded within the results worksheet.

The below sections briefly describe each of the column headers in the ToxSummaryResults, ToxReplicateResults and Toxbatch tabs. These tables include information about the data type, minimum data requirements for CEDEN, size, and provides the appropriate LookUp list if applicable for each column. This section is designed to provide users with an idea of what types of data are needed for entry into the CEDEN toxicity template. Tables 1, 2 and 3 within Appendix A provide more detailed descriptions and business rules for each column in the template. Valid LookUp lists can be found online at the CV RDC data checker webpage (http://ftp.mpsl.mlml.calstate.edu/CVRDC_LookUpLists.php). For information on how to add new LookUp list values please visit http://mlj-llc.com/cvrdc_step2.html , or download the Lookup Request Forms and submit them to the CV RDC at: Victoria Bowles (vbowles@mlj-llc.com)

## 1.1. Toxicity Summary Worksheet

The following data elements populate the Summary worksheet of the toxicity data package.

**TOXSUMMARYRESULTS TABLE STRUCTURE:**

**Table 1: Toxicity Summary Results Tab header definitions, cell requirements and LookUp list availability.**

* Primary Key, required for record uniqueness.

| ToxSummaryResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| StationCode* | Text | Yes | 25 | Station LookUp | A code representing the StationName and site and should be unique within a study design. |
| SampleDate* | Date/ Time | Yes | | | Refers to the date the sample was collected in the field. Formatted as dd/mmm/yyyy. |
| ProjectCode | Text | Yes | 25 | Project LookUp | References the project that is associated with the sample. |
| EventCode | Text | **Desired** | 20 | Event LookUp | Represents the primary reason, i.e. water quality, tissue or bioassessment sampling, of the sampling event at a particular station and date. |
| ProtocolCode | Text | **Desired** | 50 | Protocol LookUp | Represents the sampling protocol used, which includes the set of methods, methodology and/or specifications, such as MPSL-DFG_Field_v1.0. Established protocols may be used or Regions may document their own sampling protocols. |
| AgencyCode | Text | **Desired** | 20 | Agency LookUp | Refers to the organization or agency that collected the sample. This should be listed on the Chain of Custody (COC) document that accompanies the samples from the field. |

| ToxSummaryResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| SampleComments | Text | No | 255 | | The comments field should be used for any notes or comments specifically related to the sample collection. |
| LocationCode | Text | **Desired** | 50 | Location LookUp | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations. |
| GeometryShape | Text | No | 50 | Variable Code LookUp | Physical shape of the Station. Example values are Line, Point, or Polygon. |
| CollectionTime* | Date/ Time | **Yes** | 20 | | Refers to the time when the first sample of a sampling event at a specific station was collected in the field. |
| CollectionMethod Code | Text | **Yes** | 50 | CollectionMethod LookUp | Refers to the general method of collection such as Sed_Grab, Sed_Core, Water_Grab, Autosampler24h, Autosampler7d. |
| SampleTypeCode* | Text | **Yes** | 20 | Sample Type LookUp | Refers to the type of sample collected or analyzed. |
| Replicate* | Integer | **Yes** | | | Used to distinguish between replicates created at a single collection in the field. Default value is 1. Replicate samples are collected at the same station and date. Therefore, samples collected on different dates from the same station should both have a value of 1 for FieldReplicate. |
| CollectionDeviceName | Text | **Desired** | 50 | CollectionDevice Name | Unique name of the CollectionDevice. Default value for habitat is 'None'. |

| ToxSummaryResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| CollectionDepth | Decimal | **Yes** | | | Records the depth or penetration, from the surface in the water or sediment column, at which the sample was collected. |
| UnitCollectionDepth | Text | **Yes** | 50 | | Refers to the units used in the CollectionDepth including cm (centimeters) and m (meters). |
| PositionWaterColumn | Text | **Desired** | 20 | | Position in water column where sample was taken. |
| LabCollection Comments | Text | No | 255 | | Comments related to the Collection. |
| ToxBatch* | Text | **Yes** | 35 | | The ToxBatch is a unique code, provided by the laboratory, which represents a group of samples processed together. It groups all environmental samples with their supporting QC samples and will be used to verify completeness. This field is the primary key to ensure record uniqueness. To ensure uniqueness in the CEDEN system, the LabAgencyCode may be appended to this value when loaded to CEDEN. Please use a standard format to construct a composite Tox Batch. See the CV RDC File and Batch Naming Convention for guidelines on assigning batch codes |
| MatrixName* | Text | **Yes** | 50 | Matrix LookUp | Refers to the sample matrix, e.g. samplewater. |
| MethodName* | Text | **Yes** | 50 | Method LookUp | Refers to the analysis method used by the laboratory to analyze the sample. |
| TestDuration | Text | **Yes** | 10 | ToxTest Duration LookUp | ToxTestDurCode indicates the duration of the toxicity test as a number and includes the associated units. |

| ToxSummaryResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| OrganismName | Text | Yes | 100 | Organism LookUp | OrganismName refers to the scientific name of the species used in the toxicity test. |
| TestExposureType | Text | **Desired** | | Variable Codes Lookup | Describes the type of exposure. Toxicity test exposure type based on the test method. Populate field with Acute or Chronic values. Default value equals 'Not Recorded' if unknown. |
| QAControlID | Text | No | 35 | | LabSampleID of the control sample used for statistical comparisons. |
| SampleID | Text | No | 35 | | Unique identifier supplied by the organization directing the sampling or sampling agency and is used to track the sample throughout the sampling and analysis processes. This field can be used to tie a result to the sample. |
| LabSampleID | Text | No | 35 | | Recommended field intended to provide lab specific identification for an analyzed sample. |
| ToxTestComments | Text | No | 255 | | Holds any comments related to the toxicity test results. |
| Treatment | Text | Yes | 255 | Analyte Lookup | Treatment refers to any treatment performed on the sample, such as a pH adjustment. Default value is "None". |
| Concentration | Integer | Yes | | | Concentration refers to the adjusted final concentration or value of the analyte applied to the toxicity sample, expressed as a number. Default value is "0". |
| UnitTreatment | Text | Yes | 50 | Unit LookUp | UnitTreatment refers to the units used in the treatment. When the treatment is none, the default for unit is "None". |

| ToxSummaryResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| Dilution | Integer | Yes | | | Dilution is recorded as a proportion of the original sample. If no dilution is performed, the default value of "100" is used. A sample with 80% sample and 20% blank water has a dilution value of “80”. |
| WQSource | Text | Yes | 50 | Matrix LookUp | WQSource differentiates between water quality measurements taken in the overlying water or interstitialwater (pore water). |
| ToxPointMethod | Text | Yes | | Method LookUp | ToxPointMethod refers to the general method used in obtaining or calculating the result. Toxicity replicate and summary data have a default value of "None". |
| AnalyteName* | Text | Yes | 100 | Analyte LookUp | Name of the analyte or parameter for which the analysis is conducted and result is reported. The LookUp list includes the acceptable abbreviation or name of the variable used by the database, enabling consistency across reporting. |
| FractionName* | Text | Yes | 50 | Fraction LookUp | Specific descriptor of the Analyte. For example, Ammonia as NH3 are often expressed as total or unionized and therefore this description should be used within the fraction field. |
| UnitAnalyte* | Text | Yes | 50 | Unit LookUp | UnitAnalyte indicates the units used in the measurement of the AnalyteName. |
| TimePoint* | Text | Yes | 10 | TimePoint LookUp | TimePoint refers to the point in time during the test at which the measurement was recorded for water quality measurements. |
| RepCount | Integer | Yes | | | RepCount is the total number of sample replicates analyzed for the associated toxpoint in the toxicity test i.e. RepCount equals the number of lab replicates used to calculate the mean result. |
| Mean | Decimal | Yes | | | Mean is the average result calculated from all replicates of a single sample. |

| ToxSummaryResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| StdDev | Decimal | **Yes** | | | StdDev or standard deviation is a statistic that indicates how tightly all the replicates are clustered around the mean in a set of data. This calculation includes all the applicable replicates from a single sample. |
| StatisticalMethod | Text | **Yes** | | | StatisticalMethod is the statistical test or method used to calculate the probability of whether a test is significant or not. Used to determine whether the sample replicates are significantly different from the control. |
| AlphaValue | Decimal | **Yes** | | | AlphaValue is the predetermined statistical acceptance level that is not calculated, but is chosen by the laboratory when running the statistical method. |
| bValue | Decimal | **Desired** | | | bValue represents the threshold for unacceptable toxicity or the Regulatory Management Decision (RMD) associated with hypothesis testing between the control and sample. |
| CalcValueType | Text | **Yes** | | Variable Codes LookUp | Calculated statistical type. For example Probability or T value. Lookup list is found at http://checker.cv.mpsl.mlml.calstate.edu/CVRDC/CVRDC_LookUpLists.php |
| CalculatedValue | Decimal | **Yes** | | | Calculated statistic from associated statistical method. Note when utilizing a CalcValueType of Probability, negative control samples (CNEG) are '0.5'. |
| CriticalValue | Decimal | **Yes** | | | The derived critical value based on sample size and alpha value of the statistical test. The CriticalValue is compared to the calculated value in the associated statistical test. |
| PercentEffect | Decimal | **Yes** | | | Percent difference between the mean of the endpoint and the mean of the control's associated endpoint; ((Mean Control Response - Mean Sample Response) / Mean Control Response) * 100. |
| MSD | Integer | No | | | The minimum significant difference (MSD) is a measurement that can be produced for each statistical comparison performed between sample and control, or among multiple concentrations of a sample and control. It represents the smallest significant difference from the control and is unique for each statistical comparison. This number should be reported as a percentage, e.g., "20" = 20%. |

| ToxSummaryResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| EvalThreshold | Decimal | No | | | The evaluation threshold or EvalThreshold is the associated level that is used to identify that an environmental sample is biologically significantly different from its associated control sample and is recorded in the same unit as the mean; e.g. 20. See CEDEN for more info on calculation methods. |
| SigEffect | Text | **Yes** | 10 | | The toxicity significant effect code or SigEffect indicates whether the sample result is significantly different from the control and can include whether or not it is greater or less than the evaluation threshold. |
| TestQACode | Text | **Yes** | 30 | QA LookUp | Applied to the result to describe any special conditions, situations or outliers that occurred during or prior to the analysis to achieve the result. The default code, indicating no special conditions, is "None". If more than one code needs to be applied to a record, the convention is to list them in alphabetical order separated by commas and no spaces. |
| ComplianceCode | Text | **Desired** | | DataCompliance LokUp | Unique code referencing the Compliance with the associated QAPP. |
| ToxPoint SummaryComments | Text | No | 130 | | The ToxPointSummaryComments field includes any comments necessary to describe special circumstances for the toxicity summary data for the specific record. |
| TIENarrative | Text | No | 64000 | | Short narrative on the results of the toxicity identification evaluation (TIE). |

* Primary Key, required for record uniqueness.

## 1.2. Toxicity Replicate Results Worksheet

The following data elements populate the **ToxReplicateResults** worksheet of the toxicity data package.

**TOX REPLICATE RESULTS TABLE STRUCTURE:**

**Table 2: Toxicity Replicate Results header definitions, cell requirements and LookUp list availability.**
* Primary Key, required for record uniqueness.

| ToxReplicateResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| StationCode* | Text | Yes | 25 | Station LookUp | A code representing the StationName and site and should be unique within a study design. |
| SampleDate* | Date/ Time | Yes | | | Refers to the date the sample was collected in the field. Excel formatted as dd/mmm/yyyy. |
| ProjectCode | Text | Yes | 25 | Project LookUp | References the project that is associated with the sample. |
| EventCode | Text | **Desired** | 20 | Event LookUp | Represents the primary reason, i.e. water quality, tissue or bioassessment sampling, of the sampling event at a particular station and date. |
| ProtocolCode | Text | **Desired** | 50 | Protocol LookUp | Represents the sampling protocol used, which includes the set of methods, methodology and/or specifications, such as MPSL-DFG_Field_v1.0. Established protocols may be used or Regions may document their own sampling protocols. |
| AgencyCode | Text | **Desired** | 20 | Agency LookUp | Refers to the organization or agency that collected the sample. This should be listed on the Chain of Custody (COC) document that accompanies the samples from the field. |
| SampleComments | Text | No | 255 | | The comments field should be used for any notes or comments specifically related to the sample collection. |

| ToxReplicateResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| LocationCode | Text | **Desired** | 50 | Location LookUp | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations. |
| GeometryShape | Text | No | 50 | | Physical shape of the location. Example values are Line, Point, or Polygon. |
| CollectionTime* | Date/ Time | **Yes** | 20 | | Refers to the time when the first sample of a sampling event at a specific station was collected in the field. |
| CollectionMethod Code | Text | **Yes** | 50 | Collection Method LookUp | Refers to the general method of collection such as Sed_Grab, Sed_Core, Water_Grab, Autosampler24h, Autosampler7d. |
| SampleTypeCode* | Text | **Yes** | 20 | Sample Type LookUp | Refers to the type of sample collected or analyzed. |
| Replicate* | Integer | **Yes** | | | Used to distinguish between replicates created at a single collection in the field. Default value is 1. Replicate samples are collected at the same station and date. Therefore, samples collected on different dates from the same station should both have a value of 1 for FieldReplicate. |
| CollectionDeviceName | Text | **Desired** | 50 | Collection Device Lookup | Unique name of the collection device. |
| CollectionDepth | Decimal | **Yes** | | | Records the depth or penetration, from the surface in the water or sediment column, at which the sample was collected. |
| UnitCollectionDepth | Text | **Yes** | 50 | | Refers to the units used in the CollectionDepth including cm (centimeters) and m (meters). |

| ToxReplicateResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| PositionWaterColumn | Text | **Desired** | 20 | Variable Codes Lookup | Position in water column where sample was taken. |
| LabCollection Comments | Text | No | 255 | | Comments related to the collection. |
| ToxBatch* | Text | **Yes** | 35 | | The ToxBatch is a unique code, provided by the laboratory, which represents a group of samples processed together. It groups all environmental samples with their supporting QC samples and will be used to verify completeness. This field is the primary key to ensure record uniqueness. To ensure uniqueness in the CEDEN system, the LabAgencyCode may be appended to this value when loaded to CEDEN. Please use a standard format to construct a composite Tox Batch. See the CV RDC File and Batch Naming Convention for guidelines on assigning laboratory batch codes. |
| MatrixName* | Text | **Yes** | 50 | Matrix LookUp | Refers to the sample matrix, e.g. samplewater. |
| MethodName* | Text | **Yes** | 50 | Method LookUp | Refers to the analysis method used by the laboratory to analyze the sample. |
| TestDuration | Text | **Yes** | 10 | ToxTestDurationLookUp | ToxTestDurCode indicates the duration of the toxicity test as a number and includes the associated units. |
| OrganismName | Text | **Yes** | 100 | Organism LookUp | OrganismName refers to the scientific name of the species used in the toxicity test. |
| TestExposureType | Text | **Desired** | | Variable Codes Lookup | Describes the type of exposure. Toxicity test exposure type based on the test method. Populate field with Acute or Chronic values. Default values equals 'Not Recorded' if unknown. |

| ToxReplicateResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| QAControlID | Text | No | | | LabSampleID of the control sample used for statistical comparisons. |
| SampleID | Text | No | 35 | | Unique identifier supplied by the organization directing the sampling or sampling agency and is used to track the sample throughout the sampling and analysis processes. This field can be used to tie a result to the sample. |
| LabSampleID | Text | No | 35 | | Recommended field intended to provide lab specific identification for an analyzed sample. |
| ToxTestComments | Text | No | 255 | | Holds any comments related to the toxicity test results. |
| Treatment | Text | **Yes** | 255 | Analyte Lookup | Treatment refers to any treatment performed on the sample, such as a pH adjustment. Default value is "None". |
| Concentration | Integer | **Yes** | | | Concentration refers to the adjusted final concentration or value of the analyte applied to the toxicity sample, expressed as a number. Default value is "0". |
| UnitTreatment | Text | **Yes** | 50 | Unit LookUp | UnitTreatment refers to the units used in the treatment. When the treatment is none, the default for unit is "None". |
| Dilution | Integer | **Yes** | | | Dilution is recorded as a proportion of the original sample. If no dilution is performed, the default value of "100" is used. A sample with 80% sample and 20% blank water has a dilution value of “80”. |
| WQSource | Text | **Yes** | 50 | Matrix LookUp | WQSource differentiates between water quality measurements taken in the overlying water as well as in the sediment or interstitial water. |

| ToxReplicateResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| ToxPointMethod | Text | **Yes** | 50 | Method LookUp | ToxPointMethod refers to the general method used in obtaining or calculating the result. Toxicity replicate and summary data have a default value of "None". |
| AnalyteName* | Text | **Yes** | 100 | Analyte LookUp | Name of the analyte or parameter for which the analysis is conducted and result is reported. The LookUp list includes the acceptable abbreviation or name of the variable used by the database, enabling consistency across reporting. |
| FractionName* | Text | **Yes** | 50 | Fraction LookUp | Specific descriptor of the Analyte. For example, metals are often expressed as total or dissolved and therefore this description should be used within the fraction field. |
| UnitAnalyte* | Text | **Yes** | 50 | Unit LookUp | UnitAnalyte indicates the units used in the measurement of the AnalyteName. |
| TimePoint* | Text | **Yes** | 10 | TimePoint LookUp | TimePoint refers to the point in time during the test at which the measurement was recorded for water quality measurements. |
| LabReplicate* | Integer | **Yes** | | | The LabReplicate identifies the individual splits of the toxicity sample and is used to identify from which replicate a result originated. |
| OrganismPerRep | Integer | **Desired** | | | Number of organisms in each replicate. Default values equals '-88' when unknown. Default value for ToxWQMeasurements equals '0'. |
| Result | Text | **Yes** | 10 | | Numeric result of test, stored as text to retain trailing zeros. |
| ResQualCode | Text | **Yes** | 10 | ResQual LookUp | The Result Qualifier Code or ResultQualCode qualifies the analytical result of the sample. |
| ToxResultQACode | Text | **Desired** | 30 | ToxResultQALookUp | A ToxResultQACode is used to further qualify the analytical result of the sample. |
| ComplianceCode | Text | **Desired** | | DataCompliance Lookup | Unique code referencing the compliance with the associated QAPP. |

| ToxReplicateResults HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| ToxResultComments | Text | No | 255 | | In the ToxResultsComments field note any comments necessary to describe special circumstances for the toxicity results data for the specific record. These could be comments needed to clarify any portion of the analysis which is not described in any other field. |

* Primary Key, required for record uniqueness.

### 1.3. ToxBatch Worksheet

The following data elements populate the ToxBatch worksheet of the toxicity data package.

**TOXBATCH TABLE STRUCTURE:**

**Table 3: ToxBatch template header definitions, cell requirements and LookUp list availability.**

* Primary Key, required for record uniqueness.

| TOXICITY TEMPLATE HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| ToxBatch* | Text | **Yes** | 50 | | The ToxBatch is a unique code, provided by the laboratory, which represents a group of samples processed together. It groups all environmental samples with their supporting QC samples and will be used to verify completeness. This field is the primary key to ensure record uniqueness. To ensure uniqueness in the CEDEN system, the LabAgencyCode may be appended to this value when loaded to CEDEN. Please use a standard format to construct a composite ToxBatch. See the CV RDC File and Batch Naming Convention for guidelines on assigning laboratory batch codes. |
| StartDate | Date/Time | **Yes** | | | StartDate refers to the date the toxicity test began. |
| LabAgencyCode* | Text | **Desired** | 20 | Agency LookUp | LabAgencyCode refers to the organization, agency or laboratory that performed the analysis on the sample. |

| TOXICITY TEMPLATE HEADER | DATA TYPE | REQUIRED | SIZE | LOOKUP LIST | DEFINITION |
|---|---|---|---|---|---|
| LabSubmissionCode | Text | **Desired** | 10 | Lab Submission Lookup | The LabSubmissionCode is a unique batch qualifier code assigned to the LabBatch as a whole by the analyzing laboratory which references the quality of the data in the LabBatch. The LabSubmissionCode should be reviewed by the Project Manager or other appropriate person to ensure that the code has been applied based on project specific data quality objectives and criteria. |
| BatchVerificationCode | Text | **Desired** | 10 | BatchVerificationCode | Unique code referencing the verification of a Batch. If the Batch verification used is not found in the lookup list please contact your Regional Data Center for assistance or download the CEDEN Vocabulary Request Template. |
| RefToxBatch | Text | **Desired** | 25 | | RefToxBatch lists the Reference Tox Batch ID run with this batch of samples. |
| OrganismAgeAt TestStart | Text | No | 10 | | OrganismAgeAtTestStart indicates the age or age range (e.g. 7 days or 7-10 days) of the test organisms at the beginning of the test. The age or range is usually recommended by the method. |
| SubmittingAgencyCode | Text | No | 20 | Agency LookUp | Organization or agency that is responsible for submission of the data to the database. This agency may be different from LabAgencyCode if the toxicity tests were subcontracted to another agency. |
| OrganismSupplier | Text | No | 75 | | OrganismSupplier refers to the agency that supplied the test organisms. |
| ToxBatchComments | Text | No | 255 | | ToxBatchComments records any comments relating to the ToxBatch as a whole. Comments should explain any irregularities in sample processing and/or execution of the testing procedures. |

* Primary Key, required for record uniqueness.

# 2. LABORATORY QA ENTRY

The section below provides examples for entering negative controls, i.e., laboratory control samples.

## 2.1. LABORATORY-GENERATED QA SAMPLES (LABQA)

All samples generated from within the laboratory, such as CNEG, should be entered into the Toxicity Template according to specific business rules. Below is an example of the data that should be entered for laboratory-generated QA samples for the specific Toxicity Template columns. Business rules are indicated by a "BR" in the Description & Business Rules header.

**Table 4: Example Laboratory-Generated QA Sample (LABQA)**

| Toxicity Template Column Names | Value | Description & Business Rules |
|---|---|---|
| *StationCode:* | **LABQA** | |
| *SampleDate:* | | Date test started, Excel formatted as dd/mmm/yyyy |
| *ProjectCode:* | **Not Applicable** | |
| *EventCode:* | **WQ** | "WQ" for water and sediment chemistry and toxicity results |
| *ProtocolCode:* | **Not Applicable** | |
| *AgencyCode:* | | Organization or agency that analyzed the sample |
| *LocationCode:* | **Not Applicable** | |
| *CollectionTime:* | **0:00** | BR: There are situations within a batch when two identical sample types are used for QA reasons and the only way to differentiate between them is to give them each a different CollectionTime. For example, when more than one LabBlank is analyzed in the same batch on the same day but are not replicates of each other, one CollectionTime should be "0:00" and the other "0:15", increasing the time by 15 minutes for each additional sample. |
| *CollectionMethodCode:* | **Not Applicable** | |
| *SampleTypeCode:* | | Select from SampleTypeLookUp List |

| Toxicity Template Column Names | Value | Description & Business Rules |
|---|---|---|
| *Replicate:* | **1** | |
| *CollectionDepth:* | **-88** | |
| *UnitCollectionDepth:* | | "m" for water, "cm" for sediment |
| *MatrixName:* | | Water samples – "labwater" (laboratory tap water) or "blankwater" (laboratory Type II water)<br><br>Sediment samples – "blankmatrix" (commercially generated product) or "sediment" (if laboratory is using solvent, water or nothing) |
| *LabSampleID:* | | Recommended - provide lab specific identification for an analyzed sample |
| *LabReplicate* | **1** | LabReplicate '1' is associated with the original LABQA sample. |
| | **2** | LabReplicate '2' is associated with a duplicate LABQA sample. |

# 3. DATA CHECKER

When the toxicity data template is complete, please utilize the online data checker to verify entry against current LookUp lists, business rules and formatting. The data checker can be found at: http://ceden.org/CEDEN_checker/Checker/CEDENUpload.php. Directions on how to use this tool are described below:

1. Choose “toxicity” for the data category.
2. Enter your Name, Email Address and select your Agency.
3. Browse for your file.
4. Uncheck "Check for existing samples" if your programs field measurement data is not already within the database.
5. Click "Check Excel File".

**NOTE:** Do not insert Microsoft Excel comments into the data set (comments in headers are allowed).

Please be patient while the Data Checker processes your data. The Data Checker will then provide a report through the website and to the given email address with the errors found within the data template. Files may be checked more than once to ensure errors have been corrected successfully.

Once the toxicity template has been verified through the data checker and all applicable errors have been addressed projects can submit the data to the Central Valley Water Board ILRP data management team liaison. (Please note that the data checker is used as a tool to help catch errors and some errors might not be applicable to your program/project. If this happens please note that you can still submit your data and the errors can be addressed if needed.)

For more information on the data checker and submitting data to the CV RDC see online at http://ceden.org/CEDEN_checker/Checker/index.htm .

# 4. Batch Verification Codes and Compliance Codes

The following codes are applied while transferring the data into the CV RDC database and subsequently to the CEDEN database.

## 4.1. Batch Verification Codes

The BatchVerificationCode indicates the level of verification/validation performed on the data within the batch. This code should be consistent within a project. Before transferring a project's data, the Central Valley Water Board and CV RDC will verify which batch verification code the program wants to apply. See current CV RDC LookUp lists for current batch verification codes.
http://checker.cv.mpsl.mlml.calstate.edu/CVRDC/CVRDC_LookUpLists.php

## 4.2. Compliance Codes

The data provider will use "Not Recorded" for all laboratory results compliance codes. Habitat and field results will have a compliance code of "Not Applicable".

# 5. REFERENCES

Surface Water Ambient Monitoring Program, 2009. SWAMP Data Management Plan: Toxicity Template. April 15, 2009 < http://swamp.mpsl.mlml.calstate.edu/wp-content/uploads/2009/04/swamp_data_management-plan_toxicity_template_041509.pdf >

# APPENDIX A: WATER QUALITY TOXICITY DATA DESCRIPTIONS & BUSINESS RULES

# APPENDIX A TABLES



## 1.1. TOX REPLICATE RESULTS WORKSHEET

Valid LookUp lists can be found online at the CV RDC data checker webpage (http://ftp.mpsl.mlml.calstate.edu/CVRDC_LookUpLists.php).

Business rules are indicated by a bullet point **(•)**.

(*Note that the fields through Dilution are identical to those in the ToxSummaryResults worksheet*)

**Table 1. Toxicity Replicate Results Worksheet**

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **StationCode (Required)** | StationLookUp | **StationCode represents a unique sampling site in a sampling design. A single waterbody may have multiple stations.**<br><br>• Format for the unique alphanumeric station description is ###ABC123, where ### is the Hydrologic Unit number and ABC123 is an alphanumeric Station description. For example, 111EELBRN which is an abbreviated Hydrologic Unit 111 code to indicate "Eel River - South Fork near Branscomb".<br><br>• Use "LABQA" for samples created in the lab for QA/QC (e.g., LC, CRM, LabBlank). See Laboratory QA section for details.<br><br>• Use "FIELDQA" for non-station specific field generated QA such as travel blanks. See Field Generated QA samples section. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **SampleDate (Required)** | | **SampleDate refers to the date the sample was collected in the field.**<br><br>• The date format in the templates is dd/mmm/yyyy, such as 10/Nov/2007. For samples with collection times that last longer than one day (for instance, when using an autosampler), the sample date is the date the last sample was collected.<br><br>• For transplanted bivalves, the SampleDate is the date when the bivalves were deployed in the field. |
| **ProjectCode (Required)** | ProjectLookUp | **ProjectCode references the project that is associated with the sample.** |
| **EventCode (Not Required)** | EventLookUp | **EventCode represents the initial intent of the sampling event at a particular station.**<br><br>• The EventCode will be in a hierarchical order as follows:<br><br>Use "BA" – If the initial sampling intent is for Bioassessment (Tissue and/or WaterQuality samples may or may not be collected)<br><br>Use "TI" – If the sampling initial intent is for Tissue (WaterQuality samples may or may not be collected; no associated Bioassessment samples collected)<br><br>Use "WQ" – If the sampling initial intent is for WaterQuality (no associated Bioassessment or Tissue samples collected) |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | For example, if the initial sampling intent on Day 1 was for Tissue and WaterQuality, then the EventCode would be "TI". If for some reason the WaterQuality had to be re-sampled the next day, on Day 2, the event for the re-sampling would still be "TI" because Tissue was the initial sampling intent on Day 1 even though the WaterQuality was sampled on Day 2. |
| **ProtocolCode (Not Required)** | ProtocolLookUp | **ProtocolCode represents the sampling protocol used, which includes the set of methods, methodology and/or specifications, such as "MPSL-DFG_Field_v1.0." Established protocols may be used or Regions may document their own sampling protocols.**<br><br>• It is preferable to combine protocols per StationCode and date so that all WaterQuality, Bioassessment and Tissue data are combined under the same EventCode. For example, if Tissue and WaterQuality are sampled at a station, the EventCode would be "TI". If the protocols are different for Tissue and WaterQuality, the Tissue protocol would be used and the WaterQuality protocol would be listed in the SampleComments. If that is not preferable, separate EventCodes may be used with each individual protocol.<br><br>• Use "Not Recorded" for samples with unknown sampling protocols. |
| **AgencyCode (Not Required)** | AgencyLookUp | **AgencyCode refers to the organization or agency that collected the sample.** |
| **SampleComments (Not Required)** | | **SampleComments field should be used for any notes or comments specifically related to the sample collection.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **LocationCode**<br>**(Not Required)** | LocationLookUp | **LocationCode describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations.**<br><br>• For a single point of sampling, the physical location in the waterbody can be used such as, “Bank”, “Thalweg”, “Midchannel”, “OpenWater” , etc.<br><br>• The LocationCode for field results should be the same as the location for the WaterQuality collection method.<br><br>• For TI EventType sampling, the physical location plus the CollectionMethod is used such as, “BankNet1”, “BankShock1”, “OpenWaterTrawl1”, “OpenWaterNet1”, etc. For resident mussel or clam collections, the LocationCode would be the physical location in the water body plus the generic CollectionMethod, e.g., “BankTissue_Grab”.<br><br>• OpenWater sampling with multiple sub-locations within a single water body or station could have locations of “OpenWaterTrawl1”, “OpenWaterTrawl2” describing one large location with two smaller areas of sampling within the OpenWater Location.<br>• Multiple physical locations within a single station could consist of a LocationCode such as “BankShock1”, “BankNet1”, “OpenWaterHook1”, etc. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • If recording specific locations within a station is necessary for the project, a LocationCode such as “Location1Net1”, “Location1Net2”, or “Location2Shock1” may be used. |
| **GeometryShape (Not Required)** | VariableCodesLookUp | **GeometryShape is the physical shape of the location.**<br><br>• Example values are Line, Point, or Polygon. |
| **CollectionTime (Required)** | | **CollectionTime refers to the time when the first field sample of a sampling event at a specific station was collected in the field.**<br><br>• If the sampling crew collects multiple bottles at a single station, the CollectionTime for each bottle will equal the first bottle collection time. By doing so, the samples can easily be linked and any holding time issues will be consistent, and conservative.<br><br>• The CollectionTime format should be expressed as hh:mm in Excel 24 hour time, such as “13:30” for 1:30 pm. |
| **CollectionMethodCode (Required)** | CollectionMethodLookUp | **CollectionMethodCode refers to the general method of collection such as “Sed_Grab”, “Sed_Core”, “Water_Grab”, “Autosampler24h”, “Autosampler7d”, etc.**<br><br>• The water default is “Water_Grab” and sediment default is “Sed_Grab”. |
| **SampleTypeCode (Required)** | SampleTypeLookUp | **SampleTypeCode refers to the type of sample collected or analyzed.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | Example - Some commonly used SampleTypeCode choices include "Grab", "Integrated", "CRM", "LabBlank", and "CNEG". |
| **Replicate (Required)** | | **The Replicate number is used to distinguish between replicates created at a single collection in the field.**<br>• The default is "1". Field Duplicates will be identified by a Replicate of "2". Field Blind Duplicates will be identified with a different SampleTypeCode of FieldBLDup, not a collection Replicate, because they are collected blind. Laboratory replicates will be identified by a replicate of "2" in the LabReplicate field, not a collection Replicate. |
| **CollectionDeviceName (Not Required)** | CollectionDeviceLookUp | **CollectionDeviceName refers to the device used to collect the sample.**<br><br>• The default is 'Not Recorded'. |
| **CollectionDepth (Required)** | | **CollectionDepth records the level, from the surface in the water or sediment column, at which the sample was collected.**<br><br>• CollectionDepth for water samples would be measured from the water surface and recorded in meters, "m", while depth collected for sediment would be measured from the sediment surface and recorded in centimeters, "cm".<br><br>• Since depths for ambient monitoring Grab samples are generally "subsurface", defaults have been established to indicate this. The default value for a water sample is 0.1 m and 2 cm for sediment sample. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • For Integrated samples collected from the same depth at different points across a waterbody or for samples collected at multiple times, i.e. an autosampler, the actual sample depth should be recorded. This applies to both water and sediment samples. Integrated samples collected at multiple depths, i.e. samples integrated from the water column or sediment cores, should receive a depth of "-88" and the actual depths of collection should be recorded in the LabCollectionComments field. |
| **UnitCollectionDepth (Required)** | VariableCodesLookUp | **UnitCollectionDepth refers to the units used in the CollectionDepth including cm (centimeters) and m (meters).** |
| **PositionWaterColumn (Not Required)** | VariableCodesLookUp | **Position in water column where sample was taken.**<br><br>• Default value equals 'Not Recorded' if unknown. |
| **LabCollectionComments (Not Required)** | | **LabCollectionComments records any comments relating to the collection of the field sample for laboratory analysis.** |
| **ToxBatch (Required)** | | **The ToxBatch is assigned by the laboratory grouping all environmental samples and supporting QA samples within a unique analysis batch. It is used to compare field samples with their associated NegativeControls for statistical analysis and will be used to verify completeness based on the projects QAPP.**<br><br>• The ToxBatch should be listed only once in the ToxBatch worksheet for each unique ToxBatch found in the Results and Summary worksheets. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • Follow the File and Batch Name Convention to correctly identify the batch. It is recommended to include the start date and an abbreviation of the OrganismName in the lab-specific portion of the ToxBatch. |
| **MatrixName (Required)** | MatrixLookUp | **MatrixName refers to the sample matrix.**<br><br>• Water - For field-generated water samples, the MatrixName is samplewater. For lab-generated QC samples, the matrix should be the water type that was used for the sample analysis, either labwater or blankwater. Labwater is water coming either directly from the laboratories tap or purchased spring water.<br><br>• Sediment - For field-generated sediment samples, the MatrixName is sediment. For lab-generated QC samples, blankmatrix could be used as the MatrixName which is a matrix used to identify a commercial- or lab-produced medium in tissue or sediment QC samples. If this is not the case then the MatrixName for lab-generated QC samples would be sediment which would include samples where water, solvent or nothing was used as a matrix. |
| **MethodName (Required)** | MethodLookUp | **MethodName refers to the analysis method used by the laboratory to analyze the sample.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • Methods are expressed with a MethodName such as EPA 600/R-99-064 and must be fully described in the Method Lookup list and in the laboratory records. If a laboratory has modified an EPA or Standard Method, the laboratory agency needs to add "M" to end of the MethodName. The modification should be documented and communicated to the CV RDC for notation in the database.<br><br>Example - a lab would report a modified EPA 600/R-99-064 as EPA 600/R-99-064M accompanied by a description of the modification made.<br><br>• Any method not in the current CV RDC database lookup list must be approved by the CV RDC prior to being added to the database. |
| **TestDuration (Required)** | ToxTestDurLookUp | **ToxTestDurCode indicates the toxicity test duration as a number and its associated units.**<br>• Some methods allow for a test to be completed early if all the necessary data has been obtained. If this is the case, the ToxTestDurCode is recorded as the duration of the test initially indicated by the method. For example, when a method indicates a 7 day test is to be performed, but the laboratory ends the test one day early. The ToxTestDurCode would be "7 days", not 6 days. |
| **OrganismName (Required)** | OrganismLookup | **OrganismName refers to the scientific name of the species used in the toxicity test.** |
| **TestExposureType (Not Required)** | VariableCodesLookUp | **TestExposureType describes the type of exposure. Toxicity test exposure type based on the test method.**<br>• Field filled with 'Acute' or 'Chronic', the default value should be 'Not Recorded' if unknown. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **QAControlID (Not Required)** | | **QAControlID is the control sample LabSampleID used for statistical comparisons.** |
| **SampleID (Not Required)** | | **SampleID is a unique identifier supplied by the organization directing the sampling or sampling agency and is used to track the sample throughout the sampling and analysis processes. This field can be used to tie a result to the sample.**<br><br>• This ID, which is different from the StationCode, will likely be on the sample container the lab receives from the field crew or on the Chain-of-Custody. If there's no number, leave this field blank. |
| **LabSampleID (Not Required)** | | **The LabSampleID is recommended and intended to provide lab specific identification for an analyzed sample.**<br><br>• The lab determines the format and content. It is preferable to add -Dup, -MS, -MSD to the end of the ID to help confirm the native SampleType and the native LabSampleID. |
| **ToxTestComments (Not Required)** | | **Use the ToxTestComments field to note any comments necessary to describe special toxicity test circumstances for the specific record.** |
| **Treatment (Required)** | AnalyteLookUp | **Treatment refers to any treatment performed on the sample, such as a pH adjustment.**<br>• The default value is "None". |
| **Concentration (Required)** | | **Concentration refers to the adjusted final concentration or analyte value applied to the toxicity sample, expressed as a number.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • The default value is "0". Or the adjusted concentration level of the analyte e.g., pH or temp adjustment to 7 or 15 degrees |
| **UnitTreatment (Required)** | UnitLookUp | **UnitTreatment refers to the units used in the treatment.**<br>• If a Treatment did not occur, the default value is "none". |
| **Dilution (Required)** | | **Dilution is recorded as a proportion of the original sample.**<br><br>Example - A sample with 80% sample and 20% blankwater has a Dilution Value of "80".<br><br>• If no dilution is performed, the default value of "100" is used. |
| **WQSource (Required)** | MatrixLookUp | **WQSource differentiates between water quality measurements taken in the overlying water as well as in the sediment or interstitial water.**<br>• "Overlyingwater" is used for the overlying water measurement which is the default for all water quality measurements. |
| **ToxPointMethod (Required)** | MethodLookUp | **ToxPointMethod refers to the general method used in obtaining or calculating the result.**<br>• Toxicity replicate and summary data have a default value of "None" unless a method other than the test MethodName is used for the calculations.<br><br>• Water quality measurement results have a default value of "ToxWQMeasurement". |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **AnalyteName (Required)** | AnalyteLookUp | **AnalyteName refers to the parameter being measured.**<br><br>• It is recommended that we do not go back and recalculate results in the database where growth was calculated instead of biomass. All previous measurements would be listed as growth or biomass according to analysis performed by the analyzing laboratory.<br><br>• The recommendation is that "Biomass" should be calculated for all fish species (total weight of surviving individuals divided by the original number of organisms at the start of the test) and "Growth" be calculated for *Hyalella* growth weight (total weight of surviving individuals divided by the number of survivors at the end of the test). Toxicity endpoints in the database will change to represent this correction; the endpoints for all fish species will be expressed as biomass instead of growth weight.<br><br>Example - Toxicity examples include "Survival", "Young/female", "Biomass" (weight/orig indiv). Water quality measurement examples include "pH", "Ammonia as NH3", "Salinity". |
| **FractionName (Required)** | FractionLookUp | **FractionName is a specific descriptor of the Analyte.**<br><br>• Ammonia as NH3 is expressed as "Total" or "Unionized", each of which would be expressed as the Fraction, distinguishing the appropriate Analyte. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **UnitAnalyte (Required)** | UnitLookUp | **UnitAnalyte indicates the units used in the measurement of the AnalyteName.** |
| **TimePoint (Required)** | TimePointLookUp | **TimePoint refers to the point in time during the test at which the measurement was recorded for water quality measurements.**<br><br>• If complete mortality occurs, causing the test to end earlier than the TestDuration, record the TimePoint as the same length as the TestDuration and include a ToxResultsComment.<br><br>Example - If complete mortality occurs on day 2 of a 4 day TestDuration, then record the TimePoint as "Day 4" and add ToxResultsComment of, "Complete mortality occurred on day 2." |
| **LabReplicate (Required)** | | **The LabReplicate identifies the individual splits of the toxicity sample and is used to identify from which replicate a result originated.**<br><br>• For toxicity replicates, the default is "1" and increases by one for each successive replicate.<br><br>• If a water quality measurement record is associated with a single replicate, it should have the same value as the replicate it measured.<br><br>• If the water quality measurements are taken at the sample level, the LabReplicate should be recorded as replicate "0". |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **OrganismPerRep (Not Required)** | | **OrganishmPerRep is the number of organisms in each replicate.**<br>• Default value equals '-88' when unknown.<br><br>• Default value equals '0' for ToxWQMeasurements. |
| **Result (Required)** | | **Numeric test result is stored as text to retain trailing zeros.**<br>• The toxicity Result is expressed as a real number rather than a calculation. The result should be reported with the appropriate number of significant figures.<br>Example - A result of 3.7266945 with 3 significant figures should be reported as "3.73".<br><br>Example - A result of 1.350 with 4 significant figures must display "1.350" in the Excel file. If you only see 1.35, that is the result that will be loaded to the database and the 4th significant figure will be dropped. |
| **ResQualCode (Required)** | ResQualLookUp | **The Result Qualifier Code or ResultQualCode qualifies the analytical result of the sample.**<br><br>• This field may be left blank for results that are considered detected. The database will be populated with an equal sign "=" when the data are loaded.<br><br>• When the result is Not Detected a ResultQualCode of = is utilized with a result of 0. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • When the result is "-88" (null value), a ResultQualCode is required. If the ResultQualCode value is "NR" for Not Recorded or "NS" for No Survival, then a reason for this code must be written into the ToxResultComments field. |
| **ToxResultQACode (Not Required)** | ToxResultQALookUp | **A ToxResultQACode is used to further qualify the analytical result of the sample.**<br><br>• When a test has a secondary toxpoint where young are measured and the first toxpoint is a male instead of a female, the ToxResultQACode for the second toxpoint is "MAL" for male. |
| **ComplianceCode (Not Required)** | DataComplianceLookUp | **ComplianceCode is the unique code referencing the compliance with the associated QAPP.**<br><br>• Default value equals 'NR' if unknown. |
| **ToxResultComments (Not Required)** | | **In the ToxResultsComments field, note any comments necessary to describe special circumstances for the toxicity results data for the specific record. These could be comments needed to clarify any portion of the analysis which is not described in any other field.**<br><br>• When the ResultQualCode value is "NR" for Not Recorded or "NS" for No Survival, then a reason for this code must be written into the ToxResultsComments field. |

## 1.2. TOXICITY SUMMARY WORKSHEET

The Toxicity Summary Results worksheet holds information specific to toxicity summary data. This worksheet should be named **ToxSummaryResults** in its worksheet tab. The fields in this sheet should be completed as follows. Examples of special types of samples are listed in the Special Circumstances section.

(*Note that the fields through Dilution are identical to those in the Results Worksheet*)

**Table 2. ToxSummaryResults Worksheet**

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **StationCode (Required)** | StationLookUp | **StationCode represents a unique sampling site in a sampling design. A single waterbody may have multiple stations.**<br><br>• The format for the unique alphanumeric description of the station is ###ABC123, where ### is the Hydrologic Unit number and ABC123 is an alphanumeric description of the Station. An example is 111EELBRN which is Hydrologic Unit 111 and an abbreviated code to indicate "Eel River - South Fork near Branscomb".<br><br>• Use "LABQA" for samples created in the lab for QA/QC (e.g., LC, CRM, LabBlank). See Laboratory QA section for details.<br><br>• Use "FIELDQA" for non-station specific field generated QA such as travel blanks. See Field Generated QA samples section. |
| **SampleDate (Required)** | | **SampleDate refers to the date the sample was collected in the field.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • The format for date in the templates is dd/mmm/yyyy, such as 10/Nov/2007. For samples with collection times that last longer than one day, (for instance, when using an autosampler), the sample date is the date the last sample was collected.<br><br>• For transplanted bivalves, the SampleDate is the date when the bivalves were deployed in the field. |
| **ProjectCode (Required)** | ProjectLookUp | **ProjectCode references the project that is associated with the sample.** |
| **EventCode (Not Required)** | EventLookUp | **EventCode represents the initial intent of the sampling event at a particular station.**<br><br>• The EventCode will be in a hierarchical order as follows:<br><br>Use "BA" – If the initial intent of sampling is for Bioassessment (Tissue and/or WaterQuality samples may or may not also be collected)<br><br>Use "TI" – If the initial intent of sampling is for Tissue (WaterQuality samples may or may not also be collected; no associated Bioassessment samples collected)<br><br>Use "WQ" – If the initial intent of sampling is for WaterQuality (no associated Bioassessment or Tissue samples collected) For example, if the initial intent of sampling on Day 1 was for Tissue and WaterQuality, the EventCode would be "TI". If for some reason the WaterQuality had to be re-sampled the next day, on Day 2, the event for the re-sampling would still be "TI" because Tissue was the initial intent of sampling on Day 1 even though the |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | WaterQuality was sampled on Day 2. |
| **ProtocolCode (Not Required)** | ProtocolLookUp | **ProtocolCode represents the sampling protocol used, which includes the set of methods, methodology and/or specifications, such as "MPSL-DFG_Field_v1.0." Established protocols may be used or Regions may document their own sampling protocols.**<br><br>• It is preferable to combine protocols per StationCode and date so that all WaterQuality, Bioassessment and Tissue data are combined under the same EventCode. For example, if Tissue and WaterQuality are sampled at a station, the EventCode would be "TI". If the protocols are different for Tissue and WaterQuality, the Tissue protocol would be used and the WaterQuality protocol would be listed in the SampleComments. If that is not preferable, separate EventCodes may be used with each individual protocol.<br><br>• Use "Not Recorded" for samples with unknown sampling protocols. |
| **AgencyCode (Not Required)** | AgencyLookUp | **AgencyCode refers to the organization or agency that collected the sample.** |
| **SampleComments (Not Required)** | | **SampleComments field should be used for any notes or comments specifically related to the sample collection.** |
| **LocationCode (Not Required)** | LocationLookUp | **LocationCode describes the physical location in the waterbody where the sample was collected. One sampling event** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | **may have a single or multiple locations.**<br><br>• For a single point of sampling, the physical location in the waterbody can be used such as, “Bank”, “Thalweg”, “Midchannel”, “OpenWater” , etc.<br><br>• The LocationCode for field results should be the same as the location for the WaterQuality collection method.<br><br>• For TI EventType sampling, the physical location plus the CollectionMethod is used such as, “BankNet1”, “BankShock1”, “OpenWaterTrawl1”, “OpenWaterNet1”, etc. For resident mussel or clam collections, the LocationCode would be the physical location in the water body plus the generic CollectionMethod, e.g., “BankTissue_Grab”.<br><br>• OpenWater sampling with multiple sub-locations within a single water body or station could have locations of “OpenWaterTrawl1”, “OpenWaterTrawl2” describing one large location with two smaller areas of sampling within the OpenWater Location.<br>• Multiple physical locations within a single station could consist of a LocationCode such as “BankShock1”, “BankNet1”, “OpenWaterHook1”, etc.<br><br>• If recording specific locations within a station is necessary for the project, a LocationCode such as “Location1Net1”, “Location1Net2”, or “Location2Shock1” may be used. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **GeometryShape (Not Required)** | VariableCodesLookUp | **GeometryShape is the physical shape of the location.**<br><br>• Example values are Line, Point, or Polygon. |
| **CollectionTime (Required)** | | **CollectionTime refers to the time when the first field sample of a sampling event at a specific station was collected in the field.**<br><br>• If the sampling crew collects multiple bottles at a single station, the CollectionTime for each bottle will equal the first bottle collection time. By doing so, the samples can easily be linked and any holding time issues will be consistent, and conservative.<br><br>• The CollectionTime format should be expressed as hh:mm in Excel 24 hour time, such as "13:30" for 1:30 pm. |
| **CollectionMethodCode (Required)** | CollectionMethodLookUp | **CollectionMethodCode refers to the general method of collection such as "Sed_Grab", "Sed_Core", "Water_Grab", "Autosampler24h", "Autosampler7d", etc.**<br>• The water default is "Water_Grab" and the sediment default is "Sed_Grab". |
| **SampleTypeCode (Required)** | SampleTypeLookUp | **SampleTypeCode refers to the type of sample collected or analyzed.**<br><br>Example - Some commonly used SampleTypeCode choices include "Grab", "Integrated", "CRM", "LabBlank", or "CNEG". |
| **Replicate (Required)** | | **The Replicate number is used to distinguish between replicates created at a single collection in the field** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • The default is "1". Field Duplicates will be identified by a Replicate of "2". Field Blind Duplicates will be identified with a different SampleTypeCode of FieldBLDup, not a collection Replicate, because they are collected blind. Laboratory replicates will be identified by a replicate of "2" in the LabReplicate field, not a collection Replicate. |
| **CollectionDeviceName (Not Required)** | CollectionDeviceLookUp | **CollectionDeviceName refers to the device used to collect the sample.**<br><br>• The default is 'Not Recorded'. |
| **CollectionDepth (Required)** | | **CollectionDepth records the level, from the surface in the water or sediment column, at which the sample was collected.**<br><br>• CollectionDepth for water samples would be measured from the water surface and recorded in meters, "m", while depth collected for sediment would be measured from the sediment surface and recorded in centimeters, "cm".<br><br>• Since depths for ambient monitoring Grab samples are generally "subsurface", defaults have been established to indicate this. For water samples the default value is 0.1 m and for sediment samples the default value is 2 cm. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • For Integrated samples collected from the same depth at different points across a waterbody or for samples collected at multiple times, i.e. an autosampler, the actual sample depth should be recorded. This applies to both water and sediment samples. Integrated samples collected at multiple depths, i.e. samples integrated from the water column or sediment cores, should receive a depth of "-88" and the actual depths of collection should be recorded in the CollectionComments field. |
| **UnitCollectionDepth (Required)** | VariableCodesLookUp | **UnitCollectionDepth refers to the units used in the CollectionDepth including cm (centimeters) and m (meters).** |
| **PositionWaterColumn (Not Required)** | VariableCodesLookUp | **Position in water column where sample was taken.**<br><br>• Default value equals 'Not Recorded' if unknown. |
| **LabCollectionComments (Not Required)** | | **LabCollectionComments records any comments relating to the collection of the field sample for laboratory analysis.** |
| **ToxBatch (Required)** | | **The ToxBatch is assigned by the laboratory and groups all environmental samples and supporting QA samples within a unique analysis batch. It is used to compare field samples with their associated NegativeControls for statistical analysis and will be used to verify completeness based on the projects QAPP.**<br><br>• The ToxBatch should be listed only one time in the ToxBatch worksheet for each unique ToxBatch found in the Results and Summary worksheets.<br><br>• Follow the File and Batch Name Convention to correctly identify the batch. It is recommended to include the start date and an abbreviation of the OrganismName in the lab-specific portion of the ToxBatch. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **MatrixName (Required)** | MatrixLookUp | **MatrixName refers to the sample matrix.**<br><br>• Water - For field-generated water samples, the MatrixName is “samplewater”. For lab-generated QC samples, the matrix should be the type of water that was used for the analysis of the sample, either “labwater” or “blankwater”. Labwater is water coming either directly from the tap in the laboratory or purchased spring water.<br><br>• Sediment - For field-generated sediment samples, the MatrixName is “sediment”. For lab-generated QC samples, “blankmatrix” could be used as the MatrixName which is a matrix used to identify a commercial- or lab-produced medium in tissue or sediment QC samples. If this is not the case then the MatrixName for lab-generated QC samples would be sediment which would include samples where water, solvent or nothing was used as a matrix. |
| **MethodName (Required)** | MethodLookUp | **MethodName refers to the analysis method used by the laboratory to analyze the sample.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • Methods are expressed with a MethodName such as "EPA 600/R-99-064" and must be fully described in the Method Lookup list and in the laboratory records. If a laboratory has modified an EPA or Standard Method, the laboratory agency needs to add "M" to end of the MethodName. In such situations, the modification should be documented and communicated to the CV RDC for notation in the database.<br><br>Example - a lab would report a modified EPA 600/R-99-064 as EPA 600/R-99-064M accompanied by a description of the modification made.<br><br>• Any method not in the current CV RDC database lookup list must be approved by the CV RDC prior to being added to the database. |
| **TestDuration (Required)** | ToxTestDurationLookUp | **ToxTestDurCode indicates the toxicity test duration as a number and its associated units.**<br>• Some methods allow for a test to be completed early if all the necessary data has been obtained. If this is the case, the ToxTestDurCode is recorded as the duration of the test initially indicated by the method. For example, when a method indicates a 7 day test is to be performed but the laboratory ends the test one day early. The ToxTestDurCode would be "7 days", not 6 days. |
| **OrganismName (Required)** | OrganismLookup | **OrganismName refers to the scientific name of the species used in the toxicity test.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **TestExposureType (Not Required)** | VariableCodesLookUp | **TestExposureType describes the type of exposure. Toxicity test exposure type is based on the test method.**<br><br>• Field filled with 'Acute' or 'Chronic', with default value being 'Not Recorded' if unknown. |
| **QAControlID (Not Required)** | | **QAControlID is the LabSampleID of the control sample used for statistical comparisons.** |
| **SampleID (Not Required)** | | **SampleID is a unique identifier supplied by the organization directing the sampling or sampling agency and is used to track the sample throughout the sampling and analysis processes. This field can be used to tie a result to the sample.**<br><br>• This ID, which is different from the StationCode, will likely be on the sample container the laboratory receives from the field crew or on the Chain-of-Custody. If there is no number, leave this field blank. |
| **LabSampleID (Not Required)** | | **The LabSampleID is a recommended field intended to provide lab specific identification for an analyzed sample.**<br><br>• The format and content is determined by the lab. It is preferable to add -Dup, -MS, -MSD to the end of the ID to help confirm the SampleType and the LabSampleID of the native sample. |
| **ToxTestComments (Not Required)** | | **Use the ToxTestComments field to note any comments necessary to describe special circumstances for the toxicity test for the specific record.** |
| **Treatment (Required)** | AnalyteLookUp | **Treatment refers to any treatment performed on the sample, such as a pH adjustment.**<br>• The default value is "None". |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **Concentration (Required)** | | **Concentration refers to the adjusted final concentration or value of the analyte applied to the toxicity sample, expressed as a number.**<br><br>• The default value is "0". Or the adjusted concentration level of the analyte e.g., pH or temp adjustment to 7 or 15 degrees |
| **UnitTreatment (Required)** | UnitLookUp | **UnitTreatment refers to the units used in the treatment.**<br>• If a Treatment did not occur, the default value is "none". |
| **Dilution (Required)** | | **Dilution is recorded as a proportion of the original sample.**<br><br>Example - A sample with 80% sample and 20% blankwater has a Dilution Value of "80".<br><br>• If no dilution is performed, the default value of "100" is used. |
| **WQSource (Required)** | MatrixLookUp | **WQSource differentiates between water quality measurements taken in the overlying water as well as in the sediment or interstitial water.**<br>• "Overlyingwater" is used for the overlying water measurement which is the default for all water quality measurements. |
| **ToxPointMethod (Required)** | MethodLookUp | **ToxPointMethod refers to the general method used in obtaining or calculating the result.**<br><br>• Toxicity replicate and summary data have a default value of "None" unless a method other than the test MethodName is used for the calculations.<br><br>• Water quality measurement results have a default value of "ToxWQMeasurement". |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | |
| **AnalyteName (Required)** | AnalyteLookUp | **AnalyteName refers to the parameter being measured.**<br><br>• The recommendation is "Biomass" be calculated for all fish species (total weight of surviving individuals divided by the original number of organisms at the start of the test) and "Growth" be calculated for *Hyalella* growth weight (total weight of surviving individuals divided by the number of survivors at the end of the test). Toxicity endpoints in the database will change to represent this correction; the endpoints for all fish species will be expressed as biomass instead of growth weight.<br><br>• It is the recommendation of the panel that we do not go back and recalculate results in the database where growth was calculated instead of biomass. All previous measurements would be listed as growth or biomass according to analysis performed by the analyzing laboratory.<br><br>Example - Toxicity examples include "Survival", "Young/female", "Biomass" (weight/orig indiv). Water quality measurement examples include "pH", "Ammonia as NH3", "Salinity". |
| **FractionName (Required)** | FractionLookUp | **FractionName is a specific descriptor of the Analyte.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • Ammonia as NH3 is expressed as "Total" or "Unionized", each of which would be expressed as the Fraction, distinguishing the appropriate Analyte. |
| **UnitAnalyte (Required)** | UnitLookUp | **UnitAnalyte indicates the units used in the measurement of the AnalyteName.** |
| **TimePoint (Required)** | TimePointLookUp | **TimePoint refers to the point in time during the test at which the measurement was recorded for water quality measurements.**<br><br>• If complete mortality occurs, causing the test to end earlier than the TestDuration, record the TimePoint as the same length as the TestDuration and include a ToxResultsComment.<br><br>Example - If complete mortality occurs on day 2 of a 4 day TestDuration, then record the TimePoint as "Day 4" and add ToxResultsComment of, "Complete mortality in less than 2 days." |
| **RepCount (Required)** | | **RepCount is the total number of sample replicates analyzed for the associated toxpoint in the toxicity test.**<br><br>• There are a few circumstances where a replicate should not be counted or used in the calculations. For all tests, if a replicate was spilled before a result could be recorded, then the RepCount would decrease by one replicate. For all tests, but primarily *Ceriodaphnia dubia*, if the first toxpoint had a single individual and it was a male, the second toxpoint of Young/female would not be possible so the RepCount for the second toxpoint would decrease by one. For *Hyalella* only, if the first toxpoint had a Survival of 0, the second toxpoint of Growth (weight/surv indiv) would not be included in the calculations so the RepCount would decrease by one. |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **Mean (Required)** | | **Mean is the average result calculated from all replicates of a single sample.** |
| **StdDev (Required)** | | **StdDev or standard deviation is a statistic that indicates how tightly all the replicates are clustered around the mean in a set of data. This calculation includes all the applicable replicates from a single sample.** |
| **StatisticalMethod (Required)** | VariableCodesLookUp | **StatisticalMethod is the statistical test or method used to calculate the probability of whether a test is significant or not. Essentially, whether the sample replicates are significantly different from the control.** |
| **AlphaValue (Required)** | | **AlphaValue is the predetermined statistical acceptance level that is not calculated, but is chosen by the laboratory.**<br><br>• The default value for CV RDC is "0.05". |
| **bValue (Not Required)** | | **bValue represents the threshold for unacceptable toxicity or the Regulatory Management Decision (RMD) associated with hypothesis testing between the control and sample.** |
| **CalcValueType (Required)** | VariableCodesLookUp | **CalcValueType is the calculated statistical type. For example Probability or T value.** |
| **CalculatedValue (Required)** | | **CalculatedValue is the calculated statistic from associated statistical method. Note when utilizing a CalcValueType of Probability, negative control samples (CNEG) are '0.5'.** |
| **CriticalValue (Required)** | | **CriticalValue is the derived critical value based on sample size and alpha value of the statistical test. The CriticalValue is compared to the calculated value in the associated statistical test.** |
| **PercentEffect (Required)** | | **PercentEffect is the percent difference between the mean of the endpoint and the mean of the control's associated endpoint; ((Mean Control Response - Mean Sample Response) / Mean Control Response) * 100.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **MSD**<br>**(Not Required)** | | **The minimum significant difference (MSD) is a measurement that can be produced for each statistical comparison performed between sample and control, or among multiple concentrations of a sample and control. It represents the smallest significant difference from the control and is unique for each statistical comparison. This number should be reported as a percentage, e.g., "20" = 20%.**<br><br>• A threshold is generated for each batch of samples associated with a single control. The sample response will be evaluated by a statistical comparison to the control response, and then comparing it to the generated threshold. This provides a two-tier system for designating a sample as toxic. |
| **EvalThreshold**<br>**(Not Required)** | | **The evaluation threshold or EvalThreshold is the associated level that is used to identify that an environmental sample is biologically significantly different from its associated control sample and is recorded in the same unit as the mean; e.g. 20. See CEDEN for more info on calculation methods.** |
| **SigEffect**<br>**(Required)** | SigEffectLookUp | **The toxicity significant effect code or SigEffect indicates whether the sample result is significantly different from the control.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • The code is based on two criteria used to determine significance. The first or first two letters of the code refers to the significance compared to the negative control, which is determined whether it is above or below the alpha value of 0.05. The last letter of the code refers to the whether the %control is above or below the evaluation threshold.<br><br>For example, "NSG", is not significant compared to negative control based on statistical test, it was below the alpha of 5%, and above the evaluation threshold.<br><br>• For labs submitting only one criterion to determine significance, the data management team will apply the last letter of the code based on an EvalThreshold of 80 unless the lab provides an alternate EvalThreshold value. The SigEffectCode will receive an "NA" code in this instance.<br><br>• Sediment and water samples must be compared to the negative control sample. Reference sediment or salinity controls may be reported in the database for informational purposes.<br><br>• While the ToxSigEffectCode will always reflect a combination of the probability and evaluation threshold, best professional judgment of the lab can be reflected in the sample comment. |
| **TestQACode (Required)** | QALookUp | **TestQACode is applied to each sample's toxpoint and water quality measurements to describe any special conditions, situations or outliers that occurred during or prior to the analysis to achieve the result.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • The default code, indicating no special conditions, is “None”. If more than one code should be applied to a record, then the convention is to list them in alphabetical order separated by commas and no spaces; e.g., “BY,TW”. |
| **ComplianceCode (Not Required)** | DataComplianceLookUp | **ComplianceCode is the unique code referencing the compliance with the associated QAPP.**<br><br>• Default value equals ‘NR’ if unknown. |
| **ToxPointSummaryComments (Not Required)** | | **In the SummaryComments field note any comments necessary to describe special circumstances for the toxicity summary data for the specific record.** |
| **TIENarrative (Not Required)** | | **The TIENarrative is the short narrative on the results of the toxicity identification evaluation (TIE).** |

### 1.3. TOXBATCH WORKSHEET

The ToxBatch worksheet holds information specific to the laboratory batch in which data is analyzed. This worksheet tab should be named **ToxBatch** (with no spaces). The fields in this sheet should be completed as follows:

**Table 3. ToxBatch Worksheet**

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| **ToxBatch (Required)** | | **The ToxBatch is assigned by the laboratory and groups all environmental samples and supporting QA samples within a unique analysis batch. It is used to compare field samples with their associated NegativeControls for statistical analysis and will be used to verify completeness based on the projects QAPP.**<br><br>• The ToxBatch should be listed only one time in the ToxBatch worksheet for each unique ToxBatch found in the Results and Summary worksheets.<br><br>• Follow the File and Batch Name Convention to correctly identify the batch. It is recommended to include the start date and an abbreviation of the OrganismName in the lab-specific portion of the ToxBatch. |
| **StartDate (Required)** | | **StartDate refers to the date the test began.** |
| **LabAgencyCode (Required)** | AgencyLookUp | **AgencyCode refers to the organization, agency or laboratory that performed the analysis of the sample.** |
| **LabSubmissionCode (Not Required)** | LabSubmissionLookUp | **The LabSubmissionCode is a unique batch qualifier code assigned to the ToxBatch as a whole by the analyzing laboratory which references the quality of the data in the ToxBatch.** |

| Template Field Name | LookUp List | Description & Business Rules<br><br>Description in bold, business rules are noted with (•) |
|---|---|---|
| | | • If the LabSubmissionCode of "A" is used, meaning Acceptable, then the laboratory is ensuring that all protocols were met for the toxicity batch. If anything other than A is used, then a ToxBatchComment is required. |
| **BatchVerificationCode (Not Required)** | BatchVerificationCode | **BatchVerificationCode is the unique code referencing the verification of the batch.** |
| **RefToxBatch (Not Required)** | | **RefToxBatch lists the Reference Tox Batch ID run with this batch of samples.** |
| **OrganismAgeAtTestStart (Not Required)** | | **OrganismAgeAtTestStart indicates the age or age range (e.g. 7 days or 7-10 days) of the test organisms at the beginning of the test. The age or range is usually recommended by the method.** |
| **SubmittingAgencyCode (Not Required)** | AgencyLookUp | **SubmittingAgencyCode is the organization or agency that is responsible for submission of the data to the database. This agency may be different from LabAgencyCode if the analytical data were subcontracted to another agency.** |
| **OrganismSupplier (Not Required)** | | **OrganismSupplier refers to the agency that supplied the test organisms.** |
| **ToxBatchComments (Not Required)** | | **The ToxBatchComments field is intended to record any comments relating to the ToxBatch as a whole.**<br><br>• If the LabSubmissionCode is anything other than "A", then a ToxBatchComment is required |