Central Valley
REGIONAL DATA CENTER

Central Valley Regional Data Center

Field Form and Template Entry Manual

March 11, 2013

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LIST OF APPENDICES

LIST OF ACRONYMS

CEDEN	California Environmental Data Exchange Network
CV RDC	Central Valley Regional Data Center
ILRP	Irrigated Lands Regulatory Program
MLML RDC	Moss Landing Marine Laboratory Regional Data Center
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
SWAMP	Surface Water Ambient Monitoring Program

LIST OF TERMS

LookUp lists	Tables that contain specific CV RDC codes that can be housed in the CV RDC database. Current LookUp lists can be found at: http://ftp.mpsl.mlml.calstate.edu/CVRDC_LookUpLists.php
Constituent Code	A group of codes comprising of MatrixName, MethodName, AnalyteName, FractionName and UnitName.

AMMENDMENTS

Date of Amendment	Document Section	Page Number	Amendment to CV RDC Chemistry Documentation
April 27, 2012	**Appendix B**		Updated Appendix B to include CEDEN tables to help describe/define the CV RDC Excel field template structure.
March 8, 2013	**Appendix B-3**	51	Updated Data Checker link.
March 11, 2013	**Table B3**	38	Updated fractions from None to Total.

i. INTRODUCTION

This document is designed to provide guidance for field data entry into the Central Valley Regional Data Center (CV RDC).

Before data entry can begin 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 in to two subsections with three main appendices. A brief description of each is provided below:

Section 1.	Field Sheet Entry Data Elements Summary
Section 2.	Specific Field Business Rules
Appendix A.	Entering Field Data Directly into the CV RDC Access Database Forms
Appendix B.	Entering Field Data into the CV RDC Field Templates
Appendix C.	CV RDC Descriptions and Business Rules

Section 1, Field Sheet Entry Data Elements Summary, briefly describes data elements that a project would need to enter field/sample information into the CV RDC database. This section details the information recorded by the CV RDC database. Please note that all fields are strongly encouraged to be populated with information but the minimum data requirements for the California Environmental Data Exchange Network (CEDEN) are noted. Appendix C describes each data element in further detail while also addressing specific business rules when applicable.

Section 2, Specific Field Business Rules, describes specific business rules for unique situations/events.

Field data can be submitted to the CV RDC two ways. One is through entering field information directly into a supplied CV RDC access database through forms and another is by entering the information into an excel template to be later loaded by the CV RDC into the database. These two forms of entry are described in Appendix A and B respectively and are described below.

Appendix A, Entering Field Data into CV RDC Access Database through Forms, provides step by step instructions to enter field data through the access database forms. Appendix A-2 also describes form data entry tools that can be used by programs to customize data entry documents to fit their programs needs. These checklists/tools are recommended to ease data entry.

Appendix B, Entering Field Data through Excel Templates, describes the business rules for entering field information into the excel templates. Excel templates for field entry can be found at: http://mlj-llc.com/cvrdc_templates.html. Appendix B-2 also describes template data entry tools that can be used by programs to customize data entry documents to fit their programs needs. These checklists/tools are recommended to ease data entry. Appendix B-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 of the CV RDC. The data checker also serves as a point for projects to submit data directly to the CV RDC once the toxicity template has been verified and all errors have been addressed.

Appendix C, CV RDC Descriptions and Business Rules, gives the appropriate LookUp list, descriptions, business rules and examples for each element/code.

1. Field Sheet Entry Data Elements Summary

The following are brief descriptions of the sample and field data elements that the CV RDC database is capable of recording. Please note that all fields are strongly encouraged to be populated with information but the minimum data requirements for the California Environmental Data Exchange Network (CEDEN) are noted. Column names that include an asterisk indicate that the code needs to be within valid LookUp lists. For information on how to add new LookUp list values please visit http://mlj-llc.com/cvrdc_step2.html. Appendix C describes each data element in further detail while also addressing specific business rules when applicable. Note that there are two methods for entering field data into the CV RDC database; via forms within a supplied CV RDC database or via an Excel field data template, described in Appendix A and B respectively.

1.1 Sample Information

A. **EventCode*:** EventCode represents the primary reason for the sampling event at a particular station and date, e.g., water quality, tissue or bioassessment.

B. **ProtocolCode*:** ProtocolCode represents the sampling protocol i.e. methods used during the sampling event.

C. **StationCode* (Required):** The station code is a 9-digit assigned code that uniquely identifies the monitoring location within the CV RDC database. Note for new station codes that need to be added Latitude and Longitude are CEDEN required data elements as well.

D. **SampleDate (Required):** SampleDate refers to the date the sample was collected in the field, expressed as dd/mmm/yyyy.

E. **AgencyCode***: Agency Code is the acronym for the agency that collected/created the sample.

F. **ProjectCode* (Required):** The ProjectCode references the project that originated the sample.

G. **SampleComments:** The comments field should be used for any notes or comments specifically related to the sample collection.

1.2 Associated Sample Information

A. **FundingCode***: Represents the funding for the project or sampling event/analysis.

B. **GroupSample***: Allows programs to group samples together to meet individual program needs. Examples are by Season, Sampling events, etc.

C. **SamplePurposeCode***: This code represents what a project went to a specific station on a specific date to collect i.e. habitat, water chemistry etc.

D. **PurposeFailureName***: This code is used to identify if there were any issues with collecting any of the intended samples/information at a site, for example dry sites.

E. **PersonnelCode***: The PersonnelCode references the personnel collecting the sample.

1.3 LOCATION INFORMATION

A. **LocationCode*:** LocationCode describes the physical location in the waterbody where the sample was collected, for example, "Bank", "Thalweg", "Midchannel", or "OpenWater".

B. **Shape***: Is the physical shape of the sampling location. For example, a point would represent an individual sample collected by hand; where as a line would represent a net trawl.

1.4 GEOMETRY DATA

A. CoordinateSource*: CoordinateSource describes the way a coordinate was measured e.g. "Map", or "GPS".

B. CoordinateNumber (Required): CoordinateNumber refers to the number of coordinates recorded at an individual Location; e.g. 1 for Points (target and actual coordinates); 1 and 2 for Lines

C. **ActualLatitude (Required):** Coordinate Latitude records both the actual and target Latitudes in decimal degrees with 5 decimal places.

D. **ActualLongitude (Required):** Coordinate Longitude records both the actual and target Longitudes in decimal degrees with 5 decimal places as a negative number.

E. **Fix*:** GPSFix is the fix provided by the GPS device; e.g. 2D, 3D, NR

F. **GPSDevice***: GPSDeviceCode refers to the GPS device used to record the GPS measurements.

G. **Accuracy**: GPSAccuracy records the accuracy of the GPS from the GPSDevice.

H. Within 10 Seconds: Used to assess if site is within 10 seconds of map coordinates.

I. **Datum (Required):** The Datum field records the datum that was used on the GPSDevice to record the GPS measurements.

J. Elevation: Elevation of where the sample is being collected

1.5 LOCATION INFORMATION DETAILS

A. **OccupationMethod***: Method of station occupation e.g. "Walk In", "From Bridge", or report research vessel name.

B. **Starting Bank*:** Bank where distances are measured from; left or right bank (when looking downstream).

C. **Distance From Bank:** Recommended if multiple samples are taken along a transect; the horizontal distance from bank where sample was taken; units in meters

D. **Stream Width:** Stream Width at the station where sample was taken.

E. **Water Depth:** Water depth at location of sample

F. **Hydromodification*:** Describe any hydromodification at sample site e.g. Bridge, ConcreteChannel, Pipes etc

G. **Hydromodification Location*:** Location of hydromodification relative to sample, e.g. upstream, downstream, not applicable, or not recorded ("US", "DS", "NA", "NR").

H. **LocationDetailWQComments:** The comments field should be used for any notes or comments specifically related to location details. Put additional hydromodifications here.

1.6 HABITAT DATA

CEDEN minimum required data elements within the habitat data section are only required if the project intends to take habitat data, otherwise leave cells blank.

A. **CollectionMethodCode* (Required):** Refers to the general method of collection. Default for habitat is "Not Applicable".

B. **CollectionTime (Required):** CollectionTime refers to the time when the **first sample** was collected at that site in the field, expressed as hh:mm. (24 hour clock).

C. **Replicate (Required):** The replicate number identifies replicates created in the field.

D. **HabitatCollectionComments:** The comments field should be used for any notes or comments specifically related to location details. Put additional hydromodifications here.

E. **AnalyteName* (Required):** The Analyte is the parameter for which the analysis is conducted and result is reported.

F. **MatrixName* (Required):** This field describes the sample matrix, for example samplewater.

G. **MethodName* (Required):** MethodName is the analysis method that is used by the laboratory to analyze the sample. If a laboratory has modified a standard method, the laboratory agency needs to add "M" to the Method Name.

H. **FractionName* (Required):** This field allows for a further description of the analyte when needed. For example, metals are often expressed as Total or Dissolved and therefore this description should be used within the fraction field.

I. **Unit* (Required):** This field contains the units associated with the above AnalyteName. The default values should be "None" for habitat observations.

J. **Variable Result* (Required):** Categorial Result of FieldObservation

K. **Result* (Required):** The result of the ObservedFieldMeasure. Be sure to key any trailing zeros that were entered on the field sheet.

L. **ResQualCode* (Required):** The ResultQualifierCode qualifies the result for the sample, if necessary. The Default value is "=" for Habitat.

M. **QACode* (Required):** QACode is applied to the result to describe any special conditions, situations or outliers that occurred during or prior to the observation to achieve the result. Default value for habitat is "None".

N. **CollectionDeviceName*:** CollectionDeviceCode refers to the specific device used in the collection of the sample. Default value for habitat is "None".

O. **HabitatResultComments:** The comments field should be used for any notes or comments specifically related to the habitat result. Put additional variable results here if needed.

1.7 FIELD RESULTS

CEDEN minimum required data elements within the field results section are only required if the project intends to take field measurement data, otherwise leave cells blank.

A. **CollectionMethodCode* (Required):** Refers to the general method of collection. Default value is "Field".

B. **CollectionTime (Required):** CollectionTime refers to the time when the **first sample** was collected at that site in the field, expressed as hh:mm. (24 hour clock).

C. **CollectionDepth (Required):** CollectionDepth measures the depth the sample was collected.

D. **UnitCollectionDepth (Required):** This field contains the units associated with the above "CollectionDepth" value. The default values should be "m" (meters) for water samples or "cm" (centimeters) for sediment samples.

E. **Replicate (Required):** The replicate number identifies replicates created in the field.

F. **PositionWaterColumn*:** PositionWaterColumn is the position in the water column where the sample was taken.

G. **FieldCollectionComments:** The comments field should be used for any notes or comments specifically related to field collection.

H. **AnalyteName* (Required):** The Analyte is the parameter for which the analysis is conducted and result is reported.

I. **MatrixName* (Required):** This field describes the sample matrix, for example samplewater.

J. **MethodName* (Required):** MethodName is the analysis method that is used by the laboratory to analyze the sample. Default is FieldMeasure for field results.

K. **FractionName* (Required):** This field allows for a further description of the analyte when needed.

L. **Unit* (Required):** This field contains the units associated with the above AnalyteName.

M. **Result (Required):** The result of the field measurement. Be sure to key any trailing zeros that were entered on the field sheet.

N. **ResQualCode* (Required):** The ResultQualifierCode qualifies the result for the sample, if necessary. The Default value is "=".

O. **QACode* (Required):** QACode is applied to the result to describe any special conditions, situations or outliers that occurred during or prior to the observation to achieve the result.

P. **CollectionDeviceName*:** CollectionDeviceCode refers to the specific device used in the collection of the sample.

Q. FieldResultComments: The comments field should be used for any notes or comments specifically related to the field result. If any failures or issues occurred put explanation here.

1.8 LAB COLLECTION INFORMATION

CEDEN minimum required data elements within the lab collection section are only required if the project intends to take chemistry data, otherwise leave cells blank.

A. **CollectionTime (Required):** CollectionTime refers to the time when the **first sample** was collected at that site in the field, expressed as hh:mm. (24 hour clock).

B. **CollectionMethodCode* (Required):** CollectionMethodCode refers to the general method of collection for example "Water_Grab", "Sed_Grab", "Autosampler24h", etc.

C. **SampleTypeCode* (Required):** SampleTypeCode is the type of sample collected or analyzed, for example "Grab", "Fieldblank", "LCS", etc.

D. **Replicate (Required):** The replicate number identifies replicates created in the field.

E. **CollectionDepth (Required):** CollectionDepth measures the depth the sample was collected.

F. **UnitCollectionDepth* (Required):** This field contains the units associated with the above "CollectionDepth" value. The default values should be "m" (meters) for water samples or "cm" (centimeters) for sediment samples.

G. **CollectionComments:** The comments field should be used for any notes or comments specifically related to the sample collection.

2. Specific Field Business Rules

Listed below are business rules for specific situations found in the field. Listed under each situation are how specific data elements should be completed and any data elements not listed should be completed under the normal business rules. Data elements are named in the form entry format (For the associated column name see Appendix C, e.g. QA = QACode within the excel templates).

2.1 Non Contiguous Water Body/ Isolated Pool

- **Sample Comments** = Non contiguous water body
- **GroupSample** = Non Contiguous
- **For Habitat Analyte = Observed Flow**
  - **Variable Result** = "isolated pool"
  - **QA** = "FLV"
- **For Fieldmeasure Analyte = Discharge**
  - **Result** = "0"
  - **QA** = "FLV"
  - **Comments** = "Discharge recorded as zero due to non contiguous water body."

2.2 Dry Site

- **Sample Comments** = Dry site, no samples collected
- **Purpose Failure** = Dry (no water)

If habitat data was collected, enter the following and leave all additional tabs blank:

- **Location** = Not Applicable
- **Shape** = Leave blank
- **For Habitat Analyte = Observed Flow**
  - **Variable Result** = "dry waterbody bed"
  - **Time** = arrival time (ex: "13:21")
  - **QA** = "FD"

2.3 Water present, but flow is moving in opposite direction than usually observed

- **For Fieldmeasure Analyte = Discharge**
  - **Result** = "0"
  - **QA** = "FLV"
  - **Comments** = "Discharge recorded as zero due to flow moving in upstream direction, from west to east.*" (*or the appropriate directions)

2.4 WATER PRESENT, BUT NO MEASURABLE FLOW AND NO OBSERVED FLOW

- **For Fieldmeasure Analyte = Discharge**
  - **Result** = "0"
  - **QA** = "FLV"
  - **ResQualCode = "="**
  - **Comments** = "Discharge recorded as zero due to no measurable flow."

2.5 WATER PRESENT, BUT TOO DEEP TO WADE

- **For Fieldmeasure Analyte = Discharge**
  - **Result** = leave blank
  - **Res Qual** = NR
  - **QA** = "FUD"
  - **Comments** = "Too deep to take discharge."

2.6 WATER PRESENT, BUT TOO SHALLOW TO TAKE DISCHARGE

- **For Fieldmeasure Analyte = Discharge**
  - **Result** = leave blank
  - **Res Qual** = NR
  - **QA** = "FS"
  - **Comments** = "Too shallow to take discharge."

2.7 WATER PRESENT, BUT NO OBSERVED FLOW BECAUSE PUMP STATION IS NOT ON

- **For Fieldmeasure Analyte = Discharge**
  - **Result** = 0
  - **QA** = "FLV"
  - **Comments** = "Pump station not running; discharge recorded as zero."

2.8 WATER PRESENT, BUT NO MEASURABLE FLOW YET FLOW IS OBSERVED.

- **For Fieldmeasure Analyte = Discharge**
  - **Result** = leave blank
  - **Res Qual** = NR
  - **QA** = "FLV"
  - **Comments** = Example: "No measurable flow but flow estimated to be ~ XX ft/s based on debris on surface."

2.9 WATER PRESENT, BUT UNABLE TO DEPLOY INSTRUMENT YET FLOW IS OBSERVED.

- **For Fieldmeasure Analyte = Discharge**
  - **Result** = leave blank
  - **Res Qual** = NR
  - **QA** = "FUD"
  - **Comments** = Example: "Unable to deploy instrument but flow estimated to be ~ XX ft/s based on debris on surface."

2.10 WATER PRESENT, BUT UNABLE TO DEPLOY INSTRUMENT AND NO FLOW IS OBSERVED.

- **For Fieldmeasure Analyte = Discharge**
  - **Result** = leave blank
  - **Res Qual** = NR
  - **QA** = "FUD"
  - **Comments** = Example: "Unable to deploy instrument but flow estimated to be 0 ft/s based on debris on surface."

2.11 INSTRUMENT FAILURE

- **For Fieldmeasure**
  - **Result** = leave blank
  - **Res Qual** = NR
  - **QA** = "FIF"
  - **Comments** = "Instrument failure"

3. REFERENCES

Surface Water Ambient Monitoring Program, 2008. SWAMP Data Management Plan: Field Data Entry. June 17, 2008

Appendix A: Entering Field Data Directly into the CV RDC Access Database Forms

Appendix A Sections

A-1: Entering Field Data into CV RDC Access Database through Forms

Section 1, Database Program Setup, provides the minimal system requirements to operate the CV RDC access database, instructions on how to connect to CV RDC permissions file to obtain access to the database and how to reconnect to Access's original permissions File.

Section 2, Field Data Entry, provides step by step instructions for entering data through the access database forms. All code descriptions and business rules are described in Appendix C.

1) Database Program Setup

a) Minimum System Requirements

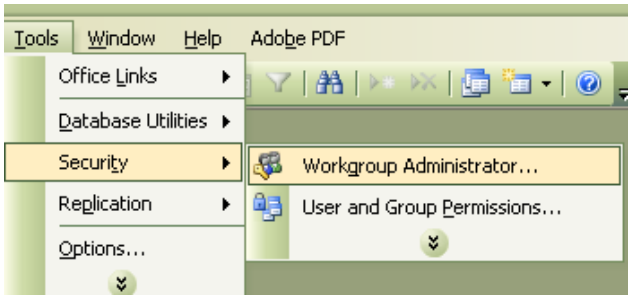
The system on which the Database Program resides must have some minimum system requirements, as follows:

- Microsoft Windows 98 or above.
- Current on all Windows Service Packs (see http://www.microsoft.com/windows/default.mspx).
- Microsoft Access 2000 or above, including installation of all wizards.

b) Connect to Permissions File for Access 2002/2003

Once the Database Program has been installed, the first thing to do is to connect to the proper permissions file.

- Open the database and select Tools from the Access menu bar, then Security and then Workgroup Administrator.



- When the Workgroup Administrator window appears, click on center button JOIN.
- Browse to permissions file provided by CV RDC e.g. CV_RDC_v25_082310.MDW
- Click OK.
- The message confirming a successful join should appear. Click OK.
- Click OK on the Workgroup Administrator window to close it.

c) Reconnect to Original Permissions File Access 2002/2003

It may be necessary due to other Access use to reverse the above process when not using the CV RDC Database. If this is so, the following steps should be followed.

- Open the database and select Tools from the File Menu, then Security and then Workgroup Administrator.
- When the Workgroup Administrator window appears, click on center button JOIN.
- Browse to C:\Program Files\Common Files\SYSTEM
- Highlight the Sys.MDW file.
- Click OK.
- The message confirming a successful join should appear. Click OK.
- Click OK on the Workgroup Administrator window to close it.

b) Connect to Permissions File for Access 2007

Once the Database Program has been installed, the first thing to do is to connect to the proper permissions file.

- Open your database that you want to link to the sys file.
- Press CTRL + G to open the immediate window.
- Type the following line of code, and then press ENTER.
  DoCmd.RunCommand acCmdWorkgroupAdministrator
- When the Workgroup Administrator window appears, click on center button JOIN.
- Browse to permissions file provided by CV RDC e.g. CV_RDC_v25_082310.MDW
- Click OK.
- The message confirming a successful join should appear. Click OK.
- Click OK on the Workgroup Administrator window to close it.

2) Field Data Entry

To begin entering field data into the database, it is best to have completed Field Data Sheets available which contain the data to be entered. All codes are described in Appendix C of this document. If at any time the appropriate code/value is not found in one of the drop down menus please contact the CV RDC.

Open the database program and the first prompt will be your log in. Log in with the user name and password provided by the CV RDC. If any complications occur verify that the database is connected to the correct permissions file (See Section 1: Database Program Setup). Otherwise, the Menu screen should appear as follows:

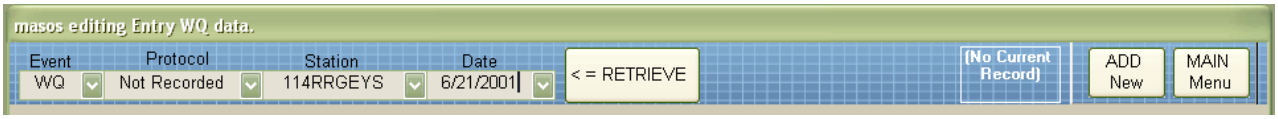
a) Select Event Code

To open the SWAMP Forms Entry Program, click on the Entry option under Data Sets on the top of the Main Menu window. On the left of the Main Menu window, select Bioassessment ("BA"), Tissue ("TI") or Water Quality ("WQ") as the *EventCode* in the pull-down list.

After you choose the *EventCode* click ADD/EDIT.

b) Add a New Record

The Data Entry portion of the program will appear with the following at the top of the window:

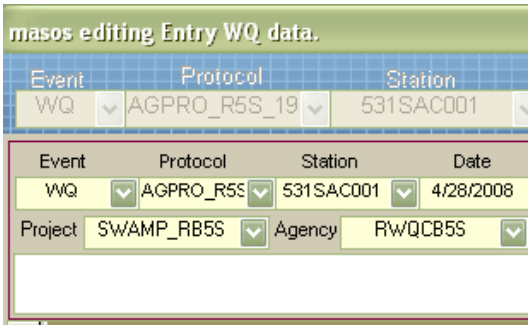


There are three options at this point: a user may 1) retrieve an existing record, 2) add a new record, or 3) revert back to the main menu or previous screen. In this section, add a new record will be discussed.

Click ADD NEW to move to the next step.

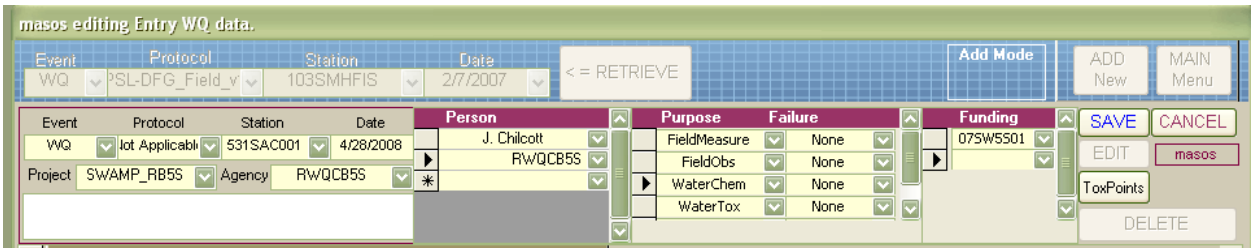
c) Enter Sample Information

To enter the sample information, tab through and enter data into the fields as follows:



- Select the appropriate *ProtocolCode* from the pull-down beneath Protocol.
- Select the appropriate *StationCode* from the pull-down beneath Station.
- Enter the *SampleDate*, expressed as mm/dd/yy.
- Select the *ProjectCode* from the pull-down next to Project.
- Select the *AgencyCode* from the pull-down next to Agency.
- Enter any comments in the white box that are related to the sampling event.

Complete the Associated Sample Information:



d) Enter records for PersonnelCode

- Select the first person that collected the sample from beneath the Person pull-down box in the middle of the screen. Continue entering all personnel that collected the sample.

e) Enter records for SamplePurposeCode and PurposeFailureCode:

- Select the first purpose related to the sample from beneath the Purpose pull-down box in the middle of the screen. Continue entering all purposes associated with the sampling event.

- Next to the first purpose, enter a *PurposeFailureCode* related to the *SamplePurposeCode* on the left from beneath the Failure pull-down box in the middle of the screen. Continue

entering all failure codes associated to each purpose. For example, if all samples except for SedChem were able to be collected, only the SedChem purpose would receive a failure other than "None".

f) Enter records for FundingCode:

- Select the first *FundingCode* related to the sample from beneath the Funding pull-down box on the right of the screen. Continue entering all *FundingCodes* associated with the sampling event.

g) Enter records for GroupSample:

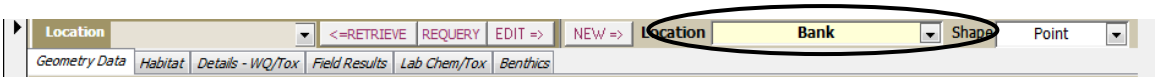
- Select the first *GroupCode* related to the sample from beneath the Group Sample pull-down box in the middle of the screen. Continue entering all *GroupCodes* associated with the sampling event. Note if the sampled water body is non contiguous, i.e. an isolated pool, then a "Non Contiguous" group code must also be added.

g) Save Sample and Associated Sample information:

Click the SAVE button on the top right of the form before entering the Location information. This saves the sample information that was previously entered. To begin entering the *Location* information click **EDIT** on the top right of the form.

h) Enter Location Information:

.



- Select the first *Location* from the Location pull-down box on the middle right of the form. The first *Location* will be where the water collection took place and it is recommended to include *FieldObservations* and *FieldMeasure* purposes at this location. This *Location* could also include the sediment collection. If a there was no water collection, enter the first Location as where the sediment collection took place and that may include *FieldObservations* and *FieldMeasure* purposes.

i) Enter Shape Information:

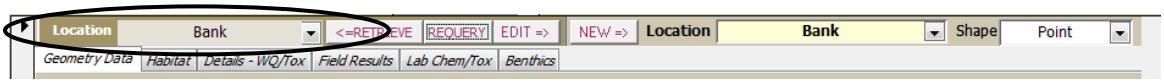
- Select the physical shape of the location.

j) Save Location Information:

Click the SAVE button on the top right of the form before entering the *Geometry* information. This saves the location information that was previously entered. To begin entering the *Geometry* information **click EDIT** on the top right of the form.

k) Retrieve Location information:

- Select the *Location* from the Location pull-down box on the middle left of the form and click RETRIEVE before entering any information for a specific location.



l) Enter Geometry Data:

If actual latitude and longitude was not obtained skip this step and do not enter any Geometry Data.

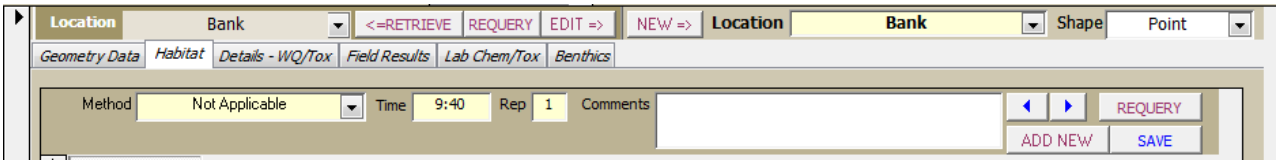
- To enter the *Geometry* information associated to the retrieved *Location*, tab through and enter data into the fields. Enter the *Geometry* data including the actual latitude and longitude through elevation and including comments if applicable. If there is more than one geometry associated to a location multiple geometry records may be entered here. Source is generally GPS unless the actual latitude and longitude was obtained using a map, post sampling. When a location's *Shape* is **Point**, only one actual latitude and longitude is recorded.

m) Enter Habitat Data:

If *FieldObservations* were not recorded, do not create a habitat collection record and proceed to the next step.

To enter the *Habitat* data (*FieldObs* purpose) associated to the retrieved *Location*, tab through and enter data into the fields. It is recommended that the field observations be associated with the water collection location if there is one. If there is no water collection, the field observations may be associated with the sediment collection.

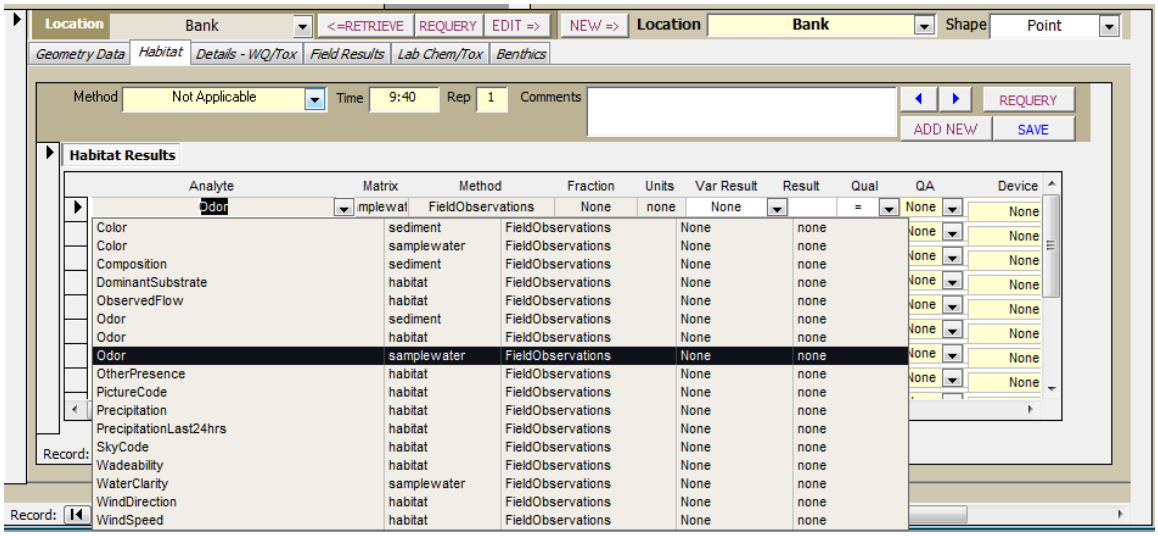
Complete the Habitat Collection Information:



- Select the *Method* from the pull-down menu. Use the default code of Not Applicable for field Observations.
- Enter the *Time*, expressed as hh:mm in 24 hour time.
- Enter the Replicate number. Default is "1".
- Enter any comments in the white box that are related to habitat collection.

Complete the Habitat Results Data:

The *Habitat Results* refer to the field observations or visual observations of personnel at a sampling event location, e.g. water color, sediment composition, or odor.



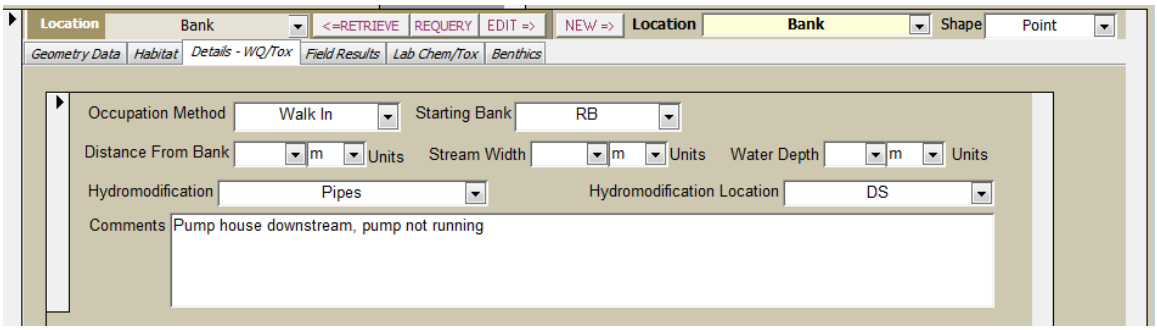
- Click on the pull-down under *Analyte*. This list will show the combination of analyte, matrix, method, fraction and unit where applicable. Be sure to select the appropriate analyte/matrix combination, as certain analytes appear multiple times to describe different matrices.
- Once the parameter has been selected, select the *Variable Result*, or observation made, from the pre-determined *Var Result* pull-down list.
- Enter the *QACode* and *CollectionDeviceCode*.
- For any habitat result or observation that needs further clarification or when the result is **Other**, enter notes or comments in the *Comments* field.

- When recording **PictureCode**, in the comments type the unique codes for each picture in the format StationCode_yyyy_mm_dd_uniquecode. The unique code could include US (upstream), DS (downstream), or 02 to represent the second picture.
- Tab to the next record before moving on to the next step.
- Repeat the above steps for each habitat result to be entered.
- **Click the SAVE button** in the middle right of the form.

n) Enter Location Details for WQ/Tox Data:

To enter the *Location Details-WQ/Tox* information associated to the retrieved *Location*, tab through and enter data into the fields.

Complete the Details WQ/Tox Information:



The *Location Details - WQ/Tox* refers to the details associated with the collection of the water quality or toxicity sample. Comments refer only to the details of the water quality or toxicity collection. **If any information was not collected leave blank.**

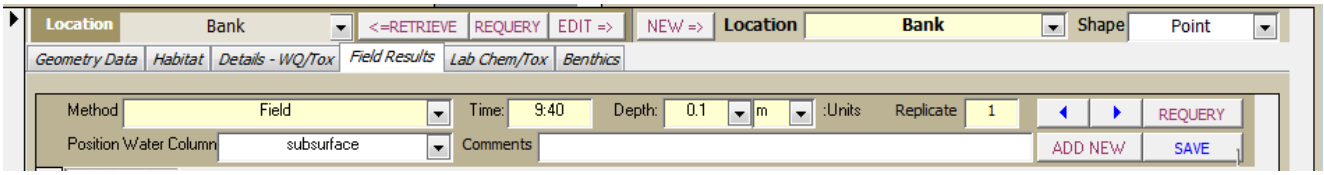
- Enter *Occupation Method*.
- Enter *Starting Bank*
- Enter *Distance From Bank*
- Enter *Stream Width*
- Enter *Water Depth*
- Enter *Hydromodification and Hydromodification Location.* Pick from drop down menu, or use other and explain in the comments section. Fill in comments section if more than one Hydromodification is present.
- **Click the SAVE button** in the middle right of the form.

o) Enter Field Results Data:

If *FieldResults* were not recorded, do not create a field collection record and proceed to the next step.

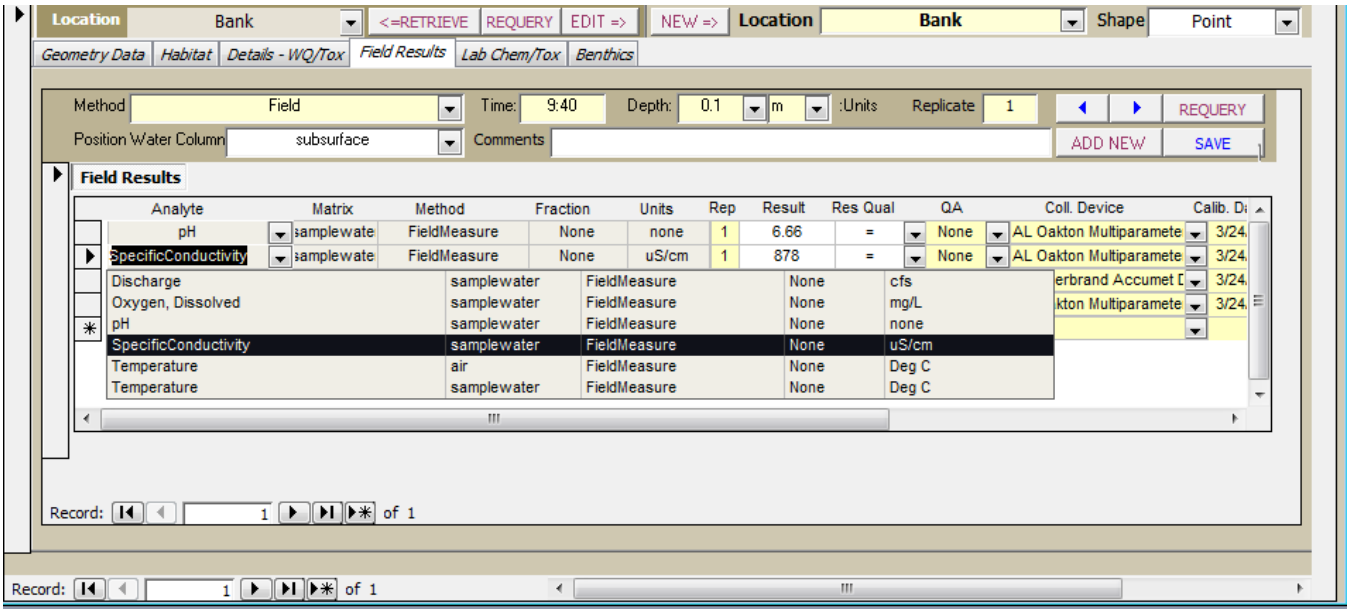
To enter the *Field Results* information associated to the retrieved *Location*, tab through and enter data into the fields. The field results can be associated to the water collection location if there is one. If there is no water collection, the field results may be associated with the sediment collection.

Complete the Field Collection Information:



- Enter *Method.* Default is Field for Field Measurements.
- Enter the *Time*, expressed as hh:mm in 24 hour time.
- Enter *Depth*
- Enter *Replicate*
- Enter *PositionWater Column*
- Fill in comments section with any detail information for Field Results
- **Click the SAVE button** in the middle right of the form.

Complete the Field Results Information:



The *Field Results* refer to the *FieldMeasures* purpose or the discrete probe measurements recorded in the field at a sampling event location, e.g. pH, Dissolved Oxygen, Turbidity.

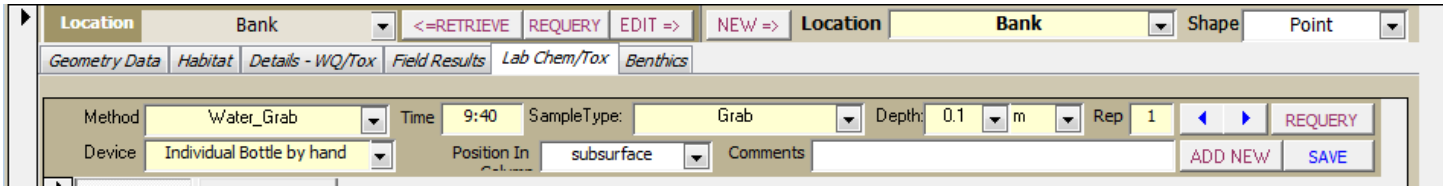
- Click on the pull-down arrow under *Analyte*. This list will show the combination of analyte, matrix, method, fraction and unit where applicable. Be sure to select the appropriate analyte/matrix combination, as certain analytes appear multiple times to describe different matrices.
- Once the parameter has been selected, enter the Replicate number. This is an incremental number beginning with 1.
- Enter the probe or meter result in the *Result* field. When typing the result, include the correct amount of significant figures. For example, if the result is 7.0, the only way to communicate the significance of the ".0" through the CV RDC database is to type "7.0" and essentially have a trailing 0.
- Enter the *ResQualCode*, *QACode*, *CollectionDeviceCode*, and *CalibrationDate*.
- For any field result that needs further clarification or when the *CollectionDeviceCode* is **Other**, enter notes or comments in the *Comments* field.
- Tab to the next record before moving on to the next step.
- Repeat the above steps for each field result to be entered.
- Click the SAVE button in the middle right of the form

If an additional replicate or more than one depth or time was used in the field measure collection, click the ADD NEW button in the middle right of the form and enter the additional Field Collection and Field Results.

p) Enter Lab Chem/Tox Information:

To enter the *Lab Chem/Tox* collection information associated to the retrieved *Location*, tab through and enter data into the fields. If no laboratory chemistry or toxicity was collected skip this step.

Complete the Lab Collection Information:



All lab collections that were created in the field are entered as a separate collection record. For example, if an additional replicate, such as a field duplicate, or more than one depth, time or sample type was collected for the lab collection, click the ADD NEW button in the middle right of the form and enter the additional lab collections.

For each individual record:

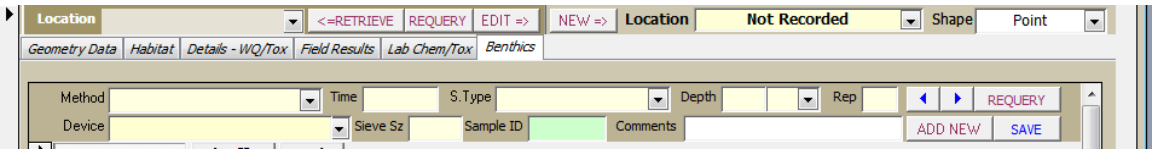
- Enter *Method.* Default is Water_Grab or Sed_Grab.
- Enter the *Time*, expressed as hh:mm in 24 hour time.
- Enter *Sample Type*
- Enter *Depth*
- Enter *Replicate*
- Enter Collection *Device*
- Enter *PositionWater Column*
- Fill in comments section with any detail information for Field Results
- **Click the SAVE button** in the middle right of the form.

After entering all lab collections associated to the retrieved *Location*, click the SAVE button in the middle right of the form. Click the REQUERY button in the middle right of the form to query all the lab collections that were entered that are associated to the retrieved *Location*. Review the entries and check that the correct number of lab collections was created.

If the sediment or other collections have a different location, remember to go back up to the middle of the form and click NEW to enter a new *Location* and the associated data.

When all the information has been entered for a sampling event, click SAVE on the top right of the form. Begin entering a new sampling event by clicking ADD NEW or click MAIN MENU to return to the main menu.

Complete the Benthic Collection Information:



All benthic collections that were created in the field are entered as a separate collection record. For example, if an additional replicate, such as a field duplicate, or more than one depth, time or sample type was collected for the benthic collection, click the ADD NEW button in the middle right of the form and enter the additional benthic collections.

For each individual record:

- Enter *Method.*
- Enter the *Time*, expressed as hh:mm in 24 hour time.
- Enter *Sample Type*
- Enter *Depth*
- Enter *Replicate*
- Enter Collection *Device*
- Enter *Sieve Size*
- Enter *Sample ID*
- Fill in comments section with any detail information for Benthic collection
- **Click the SAVE button** in the middle right of the form.

After entering all benthic collections associated to the retrieved *Location*, click the SAVE button in the middle right of the form. Click the REQUERY button in the middle right of the form to query all the benthic collections that were entered that are associated to the retrieved *Location*. Review the entries and check that the correct number of benthic collections was created.

If the other collections have a different location, remember to go back up to the middle of the form and click NEW to enter a new *Location* and the associated data.

When all the information has been entered for a sampling event, click SAVE on the top right of the form. Begin entering a new sampling event by clicking ADD NEW or click MAIN MENU to return to the main menu.

A-2: Form Data Entry Tools

Please utilize the tools below to help provide data entry staff with a tailored data entry process for your program.

1. Field sheets

Using field sheets that contain all the necessary information for data entry will help speed up the data entry process. Example field sheets can be found at: http://mlj-llc.com/cvrdc_templates.html .

2. Training New Data Entry Staff on Form entry

The CV RDC can provide an example power point presentation that can guide new staff through in the field form data entry process.

3. Form Entry Checklist

An example checklist created by the CV RDC can step data entry staff through the form entry process. Programs can fill this checklist out to include their unique programs codes and individual needs.

Appendix B: Entering Field Data into the CV RDC Field Templates

Appendix B Sections

Appendix B Tables

B-1: Entering Field Data through Excel Templates

Field information can be entered into an excel template that can be found at the following link: http://mlj-llc.com/cvrdc_templates.html. This template is a modified version of the CEDEN template. Modifications to the CEDEN template are the additions of the GroupCode, FundingCode and Personnel tab which are optional to fill out. This template has 8 excel worksheet tabs, including a notes/information tab, that contain all field and collection information needed to load data into the CV RDC database. Columns within the worksheets have multiple formats to indicate the following:

1. Bolded green text indicates a minimum/required field necessary for loading data into CEDEN.
2. Black bolded text indicates a requested/desired field to help increase the usability of the data by CEDEN users.
3. Grey highlighted cells indicate an extra field used for additional information and completeness purposes.

The Stations, Locations, GroupCode, FundingCode and Personnel tabs do not need to be filled out unless desired/needed.

The following sections will explain how to enter collection information by each worksheet tab and include a table showing the structure of the specific table within each excel worksheet tab. Appendix C has additional descriptions and business rules for each column name when applicable. Current LookUp lists can be found at http://ftp.mpsl.mlml.calstate.edu/CVRDC_LookUpLists.php. Please contact the CV RDC or look on the CV RDC website at http://mlj-llc.com/cvrdc_step2.html for how to add new codes to the CV RDC database if needed.

1. Stations

Only fill out the stations tab if they are not currently within the CVRDC database. Each row represents a single station.

STATIONS TABLE STRUCTURE:

Table B1: Stations template header definitions, cell requirements and LookUp list availability.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
StationSource*	Text	Yes	50		Agency or project that created the station.
StationCode*	Text	Yes	25	Station LookUp	A code representing the StationName and site and should be unique within a study design.
StationName*	Text	Yes	100	Station LookUp	Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. Station name must be unique for all

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
					stations.
StationDescr	Text	No	255		Description of the StationCode.
StationComments	Text	No	255		Any pertinent comments regarding the station and/or station area.
GeometryShape	Text	No	50		Physical shape of the Station. Example values are Line, Point, or Polygon.
DirectionsToStation	Text	No	255		A general description of how to get to the station using streets, landmarks, etc.
AddDate	Date/ Time	No			Date the StationCode was added.
CoordinateNumber	Integer	**Yes**			Number of the coordinate recorded at a Station; e.g. 1 for Points (target and actual coordinates), 1 and 2 for Lines.
TargetLatitude	Decimal	**Yes**			Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places.
TargetLongitude	Decimal	**Yes**			Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative).
Datum	Text	**Desired**	10		The Datum field records the datum that was used on the GPS Device to record the GPS measurements.
CoordinateSource	Text	No	50		Describes how the coordinate was measured. For example, if measurement was taken from a map or GPS.
Elevation	Decimal	No			Elevation at which the sample was taken.
UnitElevation	Text	No	2		Unit of the Elevation measurement.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
StationDetailVerBy	Text	No	100		Agency or person who performed the verification of the station detail information.
StationDetailVerDate	Date/ Time	No			Date the station detail information was verified.
StationDetailComments	Text	No	255		Comments related to the station detail information.
LocalWatershed	Text	**Desired**	50		Local watershed of the station as supplied by data user.
LocalWaterbody	Text	**Desired**	50		Local waterbody of the station as supplied by data user.
State	Text	**Desired**	2		State in which the station was surveyed. Default = CA
Counties_2004_County	Text	**Desired**	50		County in which the station was surveyed.
SWRCBWatTypeCode	Text	**Desired**	10	WBType LookUp	Unique code assigned by the state for the appropriate waterbody type.
CalWater_2004_RB	Integer	**Desired**	1		Regional Board ID Number from the CalWater 2.2.1 2004 GIS layer. This layer can be retrieved from: https://projects.atlas.ca.gov/frs/download.php/676/calw221_e00.zip
CalWater_2004_ CALWNUM	Text	No	12		Watershed ID Number from the CalWater 2.2.1 2004 GIS layer.
CalWater_2004_ HUNAME	Text	No	35		Hydrologic Unit Name from the CalWater 2.2.1 2004 GIS layer.
CalWater_2004_ SWRCBNUM21	Text	No	6		State Water Resources Control Board (SWRCB) ID Number from the CalWater 2.2.1 2004 GIS layer.
HydrologicUnit	Text	No	50		Name of hydrologic unit from the CalWater 2.2.1 2004 GIS layer.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
GageStationID	Text	No	50		Identifier for USGS Gage station located at the Station location.
UpstreamArea	Decimal	No			Area (measured in km2) upstream that drains to the sampling point.
HBASA2_1995_ NHCOD	Text	No	6		NHDCODE from Teale HBASA watershed GIS layer. This layer can be retrieved from: https://projects.atlas.ca.gov/frs/download.php/389/hbasa2-1997_shp.zip
NHD24k_ GNIS_Name	Text	No	65		Official federal Geographic Names Information System (GNIS) name of stream from the NHD high-resolution GIS layer. This layer can be retrieved from: http://nhd.usgs.gov/data.html
NHD24k_ ReachCode	Text	No	14		14-digit ReachCode ID Number for streams from NHD high-resolution GIS layer.
NHD24k_HUC12	Text	No	12		12-digit Hydrologic Unit ID for NHD watershed polygon (WBD) from NHD high-resolution GIS layer.
NHD24k_ Hu_12_Name	Text	No	120		Name of 12-digit Hydrologic Unit for NHD watershed polygon (WBD) from NHD high-resolution GIS layer.
NHD_100k_GNIS_Name	Text	No	120		Official federal Geographic Names Information System (GNIS) name of stream from the NHD medium-resolution GIS layer. This layer can be retrieved from: http://nhd.usgs.gov/data.html
NHD_100k_ReachCode	Text	No	14		14-digit ReachCode ID Number for streams from NHD medium-resolution GIS layer.
Ecoregion_1987_ Level	Text	No	5		EPA Ecoregion Level III name (US_L3NAME). This layer can be retrieved from: ftp://ftp.epa.gov/wed/ecoregions/ca/

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
IBI_NorthCoast_ 2005_WithinPolygo	TRUE/ FALSE	No			True if the Station is located within the IBI North Coast 2005 polygon. False if otherwise.
IBI_SoCal_ 2005_WithinPolygo	TRUE/ FALSE	No			True if the Station is located within the IBI Southern California 2005 polygon. False if otherwise.
StationGISVerBy	Text	No	100		Agency or person who performed the verification of the GIS station information.
StationGISVerDate	Date/ Time	No			Date the GIS station information was verified.
StationGISVer Comment	Text	No	255		Comments related to the GIS station information verification.

* Primary Key, required for record uniqueness.

2. LOCATIONS

Only fill out the locations tab if actual latitude and longitude measurements are being recorded. Each row represents a single location.

LOCATION TABLE STRUCTURE:

Table B2: Location template header definitions, cell requirements and LookUp list availability.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
StationCode*	Text	Yes	25	Stations 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.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
EventCode	Text	No	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.
SampleComments	Text	No	255		Comments related to the GIS station information verification.
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.
CoordinateNumber	Integer	**Yes**			Number of the coordinate recorded at a Location; e.g. 1 for Points (target and actual coordinates), 1 and 2 for Lines.
ActualLatitude	Decimal	**Yes**			Represents the actual latitude for the sample site in decimal degrees with 5 decimal places.
ActualLongitude	Decimal	**Yes**			Represents the actual longitude for the sample site in decimal degrees with 5 decimal places (must be negative).
Datum	Text	**Yes**	10		The Datum field records the datum that was used on the GPS Device to record the GPS measurements. Example = NAD83

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
CoordinateSource	Text	No	50		Describes how the coordinate was measured. For example, if measurement was taken from a map or GPS.
Elevation	Decimal	No			Elevation at which the sample was taken. Example = 1
UnitElevation	Text	No	2		Unit of the Elevation measurement. Example = m
StationDetailVerBy	Text	No	100		Agency or person who performed the verification of the station detail information.
StationDetailVerDate	Date/ Time	No			Date the station detail information was verified.
StationDetailComments	Text	No	255		Comments related to the station detail information.

3. FIELDRESULTS

The *Field Results* refer to the discrete probe measurements recorded in the field at a sampling event location, e.g. pH, Dissolved Oxygen, Turbidity. Each row represents a single field measure result for each sampling event. Sample, location and collection information must be entered multiple times when there is more than one field measure result. Enter each column, referencing Appendix C for each of the column names. Below are some helpful hints for some of the columns.

- Enter Collection*MethodCode.* Default is "Field" for field measurements.
- Enter the *Time*, expressed as hh:mm in 24 hour time.
- Enter *Depth*
- Enter *Replicate*
- Enter *PositionWater Column*
- Fill in *FieldCollectionComments* with any detail information for field results
- Fill in the MatrixName, MethodName, AnalyteName, FractionName and UnitName. Together these groups of columns are called constituent codes. The below table contains the most commonly used codes.

Table B3: Commonly used Field Measure Constituent Codes

MatrixName	MethodName	AnalyteName	FractionName	UnitName
samplewater	FieldMeasure	Oxygen, Dissolved	Total	mg/L
samplewater	FieldMeasure	Oxygen, Saturation	Total	%
samplewater	FieldMeasure	pH	None	none
samplewater	FieldMeasure	Salinity	Total	ppt
samplewater	FieldMeasure	SpecificConductivity	Total	uS/cm
samplewater	FieldMeasure	Temperature	None	Deg C
samplewater	FieldMeasure	Turbidity	Total	NTU
air	FieldMeasure	Temperature	None	Deg C
samplewater	FieldMeasure	Discharge	None	cfs

- Enter the probe or meter result in the *Result* field. When typing the result, include the correct amount of significant figures. For example, if the result is 7.0, the only way to communicate the significance of the ".0" through the CV RDC database is to type 7.0 and essentially have a trailing 0.
- Enter the *ResQualCode*, *QACode*, *CollectionDeviceCode*, and *CalibrationDate*. The *ResQualCode* and *QACode* should be "=" and "None" respectively if no issues occurred while sampling for the analyte.
- *ComplianceCode* and *BatchVerificationCode* should be NA for Not Applicable.

- For any field result that needs further clarification or when the *CollectionDeviceCode* is **Other**, enter notes or comments in the *FieldResultComments* field.

FIELD RESULTS TABLE STRUCTURE:

Table B4: Field Result template header definitions, cell requirements and LookUp list availability.

FIELD TEMPLATE 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	No	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.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
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.
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	CollectionMethod LookUp	Refers to the general method of collection such as Sed_Grab, Sed_Core, Water_Grab, Autosampler24h, Autosampler7d.
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.
CollectionDevice Name	Text	**Desired**	50		Unique name of the CollectionDevice.
CollectionDepth	Decimal	**Yes**			Records the level, from the surface in the water or sediment column, at which the sample was collected.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
UnitCollection Depth	Text	Yes	50		Refers to the units used in the CollectionDepth including cm (centimeters) and m (meters).
PositionWaterColumn	Text	No	20		Position in water column where sample was taken.
FieldCollection Comments	Text	No	255		Comments related to the FieldCollection
MatrixName*	Text	Yes	50	MatrixLookUp	Refers to the sample matrix, e.g. samplewater.
MethodName*	Text	Yes	50	Method LookUp	Refers to the analysis method used to analyze the sample. Default is "FieldMeasure".
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.
UnitName*	Text	Yes	50	Unit LookUp	Refers to how the chemistry result is measured or expressed.
FieldReplicate*	Integer	**Desired**			The replicate number identifies replicates created in the field.
Result	Text	Yes	50		Final numeric result of a given analyte, stored as text to retain trailing zeros. The result should be reported with the appropriate number of significant figures.
ResQualCode	Text	Yes	10	ResQual LookUp	Qualifies the analytical result of the sample.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
QACode*	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 should be applied to a record, the convention is to list them in alphabetical order separated by commas and no spaces.
ComplianceCode	Text	**Desired**		Compliance LookUp	Unique code referencing the Compliance with the associated QAPP.
BatchVerificationCode	Text	**Desired**	10	Batch Verification Lookup	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.
CalibrationDate	Date/ Time	**Desired**			CalibrationDate refers to the date the collection device was calibrated. Formatted as dd/mmm/yyyy.
FieldResult Comments	Text	No	255		Holds any comments related to the field result or analysis of the sample.

* Primary Key, required for record uniqueness.

4. HABITATRESULTS

Each row represents a single field observation for each sampling event. Sample, location and collection information must be entered multiple times when there is more than one field observation. Populate each column (i.e. sample, location, collection and field observation information if applicable) with the appropriate code or information. If no habitat is collected leave worksheet blank. Below are some helpful hints for some of the columns.

- Enter the Collection*MethodCode*. Use the default code of Not Applicable for field observations i.e. habitat data.
- Enter the *Time*, expressed as hh:mm in 24 hour time.
- Enter the Replicate number. Default is 1.
- Enter any HabitatCollectionComments that are related to habitat collection.
- Fill in the MatrixName, MethodName, AnalyteName, FractionName and UnitName. Together these groups of columns are called constituent codes. The table below contains the most commonly used codes.

Table B5: Commonly used Habitat Constituent Codes

MatrixName	MethodName	AnalyteName	FractionName	UnitName
habitat	FieldObservations	BeaufortScale	None	none
samplewater	FieldObservations	Color	None	none
sediment	FieldObservations	Color	None	none
sediment	FieldObservations	Composition	None	none
habitat	FieldObservations	DominantSubstrate	None	none
habitat	FieldObservations	Evidence of Fire	None	none
habitat	FieldObservations	ObservedFlow	None	none
habitat	FieldObservations	Odor	None	none
sediment	FieldObservations	Odor	None	none
samplewater	FieldObservations	Odor	None	none
habitat	FieldObservations	OtherPresence	None	none
habitat	FieldObservations	PictureCode	None	none
habitat	FieldObservations	Precipitation	None	none
habitat	FieldObservations	PrecipitationLast24hrs	None	none
habitat	FieldObservations	SkyCode	None	none
habitat	FieldObservations	Wadeability	None	none
samplewater	FieldObservations	WaterClarity	None	none
habitat	FieldObservations	WindDirection	None	none

- Enter the *ResQualCode*, *QACode*, *CollectionDeviceCode*, and *CalibrationDate*. The *ResQualCode* and *QACode* should be "=" and "None" respectively if no issues occurred while sampling for the analyte.
- *ComplianceCode* and *BatchVerificationCode* should be "NA" for Not Applicable.

HABITAT RESULTS TABLE STRUCTURE:

Table B6: Field Result template header definitions, cell requirements and LookUp list availability.

FIELD TEMPLATE 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.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
EventCode	Text	No	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.
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.
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.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
CollectionDevice Name	Text	**Desired**	50	Collection Device LookUp	Unique name of the CollectionDevice. Default value for habitat is "None".
CollectionDepth	Decimal	**Yes**			Records the depth or penetration, from the surface in the water or sediment column, at which the sample was collected.
UnitCollection Depth	Text	**Yes**	50		Refers to the units used in the CollectionDepth including cm (centimeters) and m (meters).
PositionWater Column	Text	No	20		Position in water column where sample was taken.
HabitatCollection Comments	Text	No	255		Comments related to the habitat collection.
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 to analyze the sample. Default is "FieldObservation".
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 field observations this is "None".
UnitName*	Text	**Yes**	50	Unit LookUp	Refers to how the result is measured or expressed. For field observations this is "None".
VariableResult	Text	**Yes**	80	FieldObs VarLooku p	Categorical result for field observation.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
Result	Text	**Yes**	50		Final numeric result of a given analyte, stored as text to retain trailing zeros. The result should be reported with the appropriate number of significant figures.
ResQualCode	Text	**Yes**	10	ResQual LookUp	Qualifies the analytical result of the sample.
QACode*	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 should be applied to a record, the convention is to list them in alphabetical order separated by commas and no spaces.
ComplianceCode	Text	**Desired**		Compliance LookUp	Unique code referencing the Compliance with the associated QAPP.
BatchVerification Code	Text	No	10	Batch Verification Lookup	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.
HabitatResult Comments	Text	No	255		Comments related to the habitat result.

* Primary Key, required for record uniqueness.

5. GROUPCODE

Each row represents an individual sample group code for each sampling event. Sample information must be entered multiple times when there is more than one group code. Populate each column (i.e. sample information plus the GroupName and GroupSampleComments (if any)) with the appropriate code or information. Note that if the water body sampled was non contiguous i.e. an isolated pool it **must have** a "Non Contiguous" GroupName code if samples were taken; see the Specific Business Rules section within the main document for details. Group code can be used to group collections to a specific event (e.g. the first irrigation event or a storm event).

GROUPCODE TABLE STRUCTURE:

Table B7: GroupCode template header definitions, cell requirements and LookUp list availability.

FIELD TEMPLATE 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	No	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.
GroupName	Text	No	50	Group LookUp	Allows programs to group samples together to meet individual program needs.
GroupSampleComments	Text	No	255		The comments field should be used for any notes or comments specifically related to the group name.

* Primary Key, required for record uniqueness.

6. FUNDINGCODE

Each row represents an individual funding code for each sampling event. Sample information must be entered multiple times when there is more than one funding code. Populate each column (i.e. sample information plus the FundingCode and SampleFundingComments (if any)) with the appropriate code or information. Funding code can be used to associate a set of samples collected over a range of dates to a specific funding year/contract and/or a specific report. For example, the ILRP uses funding codes to associate sample collection dates to a specific quarterly, semi-annual or annual report.

FUNDINGCODE TABLE STRUCTURE:

Table B8: FundingCode template header definitions, cell requirements and LookUp list availability.

FIELD TEMPLATE 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	No	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.
FundingCode	Text	No	50	Funding LookUp	Unique code referencing the sample and/or analysis funding.

FIELD TEMPLATE HEADER	DATA TYPE	REQUIRED	SIZE	LOOKUP LIST	DEFINITION
SampleFunding Comments	Text	No	255		The comments field should be used for any notes or comments specifically related to the sample funding.

* Primary Key, required for record uniqueness.

7. PERSONNEL

Each row represents an individual PersonnelCode for each sampling event. Sample information must be entered multiple times when there is more than one PersonnelCode. Populate each column (i.e. sample information plus the PersonnelCode) with the appropriate code or information.

PERSONNEL TABLE STRUCTURE:

Table B9: Personnel template header definitions, cell requirements and LookUp list availability.

FIELD TEMPLATE 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	No	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.

FIELD TEMPLATE 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.
PersonnelCode	Text	No	50	Personnel LookUp	PersonnelCode is a unique code referencing the personnel or person that collected the sample.

* Primary Key, required for record uniqueness.

B-2: Excel Template Data Entry Tools

Please utilize the tools below to help provide data entry staff with a tailored data entry process for your program.

1. Field sheets

Using field sheets that contain all the necessary information for data entry will help speed up the data entry process. Example field sheets can be found at: http://mlj-llc.com/cvrdc_templates.html.

2. Template Entry Checklist

An example checklist created by the CVRDC can step data entry staff through the field template entry process. Programs can fill this checklist out to include their unique programs codes and individual needs.

B-3: DATA CHECKER

When the chemistry data template is complete please utilize the online Data Checker to verify entry against current CV RDC LookUp lists, business rules and formatting. The Data Checker can be found at: http://checker.cv.mpsl.mlml.calstate.edu/CVRDC/CVRDCUpload.php. Directions on how to use this tool are described below in five easy steps:

1. Choose "Field Results" for the data category.
2. Enter your Name, Email Address and select your Agency.
3. Browse for your file.
5. Click "Check Excel File".

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 field template has been verified through the Data Checker and all applicable errors have been addressed one can submit their programs data to the CV RDC. (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 to the CV RDC 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://mlj-llc.com/cv_rdc.html.

Appendix C: CV RDC Descriptions and Business Rules

Appendix C Tables

Table C1: Sample Information (Database Form: Sample Information; Excel Template Worksheet: Field Results)

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Event / EventCode (Not Required)	EventLookUp	**EventCode represents the primary reason for the sampling event at a particular station and date.** • The EventCode will be in a hierarchical order as follows: *"BA" – If the primary reason for sampling is for Bioassessment (Tissue and/or WaterQuality samples may or may not also be collected) *"TI" – If the primary reason for sampling is for Tissue (WaterQuality samples may or may not also be collected; no associated Bioassessment samples collected) *"WQ" – If the primary reason for sampling is for WaterQuality (no associated Bioassessment or Tissue samples collected) *For example, if the primary reason for 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 be WQ because WaterQuality was the primary reason for sampling on Day 2 even though it was intended to be sampled on Day 1.
Protocol / 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 SOP_v1.0. Established protocols may be used or Regions may document their own sampling protocols.**

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
		• It is preferable to combine protocols per StationCode and date so that all WaterQuality, Bioassessment, 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. Default value is "Not Recorded".
Station / StationCode (Required)	StationLookUp	**StationCode represents a unique sampling site in a sampling design. A single waterbody may have multiple stations.** • 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".
Date / SampleDate (Required)		**SampleDate refers to the date the sample was collected in the field.** • The format for electronic data submission (not data entry forms) is dd/mmm/yyyy, such as "10/Nov/2007". For samples with collection times that last longer than one day, e.g. autosamplers, the sample date is the date sampling began. • When entering data using the forms, the format is mm/dd/yy. • For transplanted bivalves, the SampleDate is the date when the bivalves were deployed in the field.

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Project / ProjectCode (Required)	ProjectLookUp	**ProjectCode references the project that is associated with the sample.**
Agency / AgencyCode (Not Required)	AgencyLookUp	**AgencyCode refers to the organization or agency that collected the sample.**
(Sample Comments) / Sample Comments (Not Required)		**SampleComments are any comments related to the sample.**

Table C2: Associated Sample Information(Database Form: Associated Sample Information; Excel Template Worksheets: FundingCode, GroupCode, Personnel)

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Funding / FundingCode (Not Required)	FundingLookUp	**Unique code referencing the sample and/or analysis Funding** *Funding code can also be used to associate data with specific reports submitted for regulatory purposes.
GroupSample/ GroupName (Not Required)	GroupLookUp	**Allows programs to group samples together to meet individual program needs.** • Examples are by season, sampling events, etc. • If samples were collected from a non contiguous waterbody i.e. isolated pool, group this event as "Non Contiguous". See Specific Field Business Rules within the main document for more details on non contiguous waterbodies.
Purpose / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	SamplePurposeLookUp	**Unique code referencing the purpose of collecting the sample (e.g. "WaterChem", "WaterTox", "Tissue", "BenthicAbundance") whether or not the sample was actually collected.** • Enter all purposes associated with the sampling event.
Failure / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	PurposeFailureLookUp	**PurposeFailureCode is a unique code referencing the PurposeFailure.** • Code references individual SamplePurpose. If no samples were collected, failure code is still entered.
Person / PersonnelCode (Not Required)	PersonnelLookUp	**PersonnelCode is a unique code referencing the personnel or person that collected the sample. A single or multiple personnel may be entered.**

Table C3: Location Information (Database Form: Location Information; Excel Template Worksheet: FieldResults)

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Location / LocationCode (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.** • For a single point of sampling, the physical location in the waterbody can be used such as "Bank", "Thalweg", "Midchannel", "OpenWater". • Location for field results should be the same as the location for the "Water_Grab" collection method. • For "TI" EventType sampling, the physical location plus the CollectionMethod is used such as "BankNet1", "BankShock1", "OpenWaterTrawl1", "OpenWaterNet1". 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". • Multiple physical locations within a single station could consist of LocationCodes such as "BankShock1", "BankNet1", "OpenWaterHook1". • OpenWater sampling with multiple sub-locations within a single water body or station could have locations of "OpenWaterTrawl1", and "OpenWaterTrawl2" describing one large location with two smaller areas of sampling within the OpenWater Location. • If recording specific locations within a station is necessary for the project, LocationCodes such as "Location1Net1", "Location1Net2", "Location2Shock1" may be used.
Shape / GeometryShape (Not Required)	VariableCodesLookUp	**GeometryShape is the physical shape of the location; e.g. "Line", "Point", "Line Centroid", "Polygon", "Polygon Centroid"** • For Field QA use associated environmental sample's shape or leave blank.

Table C4: Geometry Data (Database Form: Geometry Data; Excel Template Worksheet: Locations)

Form Name /Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Source / CoordinateSource (Not Required)	VariableCodesLookUp	**CoordinateSource describes the way a coordinate was measured; e.g. "Map", "GPS"**
Number / CoordinateNumber (Required)		**CoordinateNumber refers to the number of coordinates recorded at an individual Location; e.g. "1" for Points (target and actual coordinates); 1 and "2" for Lines**
Latitude / ActualLatitude (Required)		**Coordinate Latitude records both the actual and target Latitudes in decimal degrees with 5 decimal places.**
Longitude / ActualLongitude (Required)		**Coordinate Longitude records both the actual and target Longitudes in decimal degrees with 5 decimal places as a negative number.**
Fix / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	VariableCodesLookUp	**GPSFix is the fix provided by the GPS device; e.g. "2D", "3D", "NR"**
GPS / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	GPSDeviceLookUp	**GPSDeviceCode refers to the GPS device used to record the GPS measurements.**
Accuracy / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**		**GPSAccuracy records the accuracy of the GPS from the GPSDevice.**
Units / Not within template contact the CV RDC if you would	UnitLookUp	**UnitGPSAccuracy records the units used in measuring the GPSAccuracy.**

Form Name /Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
like to populate this information **(Not Required)**		
Within 10 Seconds? / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**		**Used to assess if site is within 10 seconds of Map coordinates**" • If the site was within 10 seconds of map coordinates then the box is checked "yes" (true).
Datum / Datum (Required)	VariableCodesLookUp	**The Datum field records the datum that was used on the GPSDevice to record the GPS measurements.** • "NAD83" is recommended for CV RDC.
Elev / Elevation (Not Required)		**Elevation of where the sample is being collected**
Units / UnitElevation (Not Required)	VariableCodesLookUp	**Units for elevation**
Comments / StationDetailComments (Not Required)		**GeometryComments are any comments related to the Geometry.**

Table C5: Habitat Data (Database Form: Habitat; Excel Template Worksheet: HabitatResults)

Form Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Method / CollectionMethodCode (Required)	CollectionMethodLookUp	**CollectionMethodCode refers to the general method of collection.** •*The CV RDC habitat default is "Not Applicable".*
Time / CollectionTime (Required)		**Time habitat information was taken.**
Rep / Replicate (Required)		**Replicate is the collection replicate number used to distinguish between replicates created at collection.** •The default value is "1".
Comments / HabitatCollectionComments (Not Required)		**Any comments associated with Habitat collection**
Analyte / AnalyteName (Required)	AnalyteLookUp	**The AnalyteName is the 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.**
Matrix / MatrixName (Required)	MatrixLookUp	**MatrixName refers to the sample matrix.** • For field-generated water samples, the MatrixName is "samplewater". • For field-generated sediment samples, the

Form Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
		MatrixName is "sediment".
Method / MethodName (Required)	MethodLookUp	**MethodName refers to the analysis method used by the laboratory to analyze the sample.** • "FieldObservation" is used for categorical descriptions made in the field by observation i.e. habitat • "ObservedFieldMeasure" is used for numeric measurements made in the field by observation
Fraction / FractionName (Required)	FractionLookUp	**FractionName is a specific descriptor of the Analyte.** • Default is "none" for Habitat Observations
Units / UnitName (Required)	UnitLookUp	**Unit refers to how the result is measured or expressed.** • For Field Observations this is "None".
Var Result / VariableResult (Required)	FieldObsVarLookUp	**Categorical Result of FieldObservation**
Result / Result (Required)		**The result of the ObservedFieldMeasure. Be sure to key any trailing zeros that were entered on the field sheet. Can leave blank if variable result is populated.**
Qual / ResQualCode (Required)	ResQualLookUp	**The Result Qualifier Code or ResultQualCode qualifies the analytical result of the sample.** • Default value is "=" for Habitat • When the result is left blank due to a failure etc, a ResultQualCode other than "=" is required. If the ResultQualCode value is "NR" for Not Recorded, then a reason for this code

Form Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
		must be written into the comments field and an appropriate QACode would be applied.
QA / QACode (Required)	QALookUp	**QACode is applied to the result to describe any special conditions, situations or outliers that occured during or prior to the observation to achieve the result.** • Default value is "None" for habitat or "NR" for Not Recorded
Device / CollectionDeviceName (Not Required)	CollectionDeviceLookUp	**CollectionDeviceCode refers to the specific device used in the collection of the sample.** • Default value is "None" for Habitat.
Comp / ComplianceCode (Not Required)	ComplianceLookUp	**ComplianceCode is a unique code referencing the compliance with the associated QAPP.** • Default value for Habitat is "NA" for Not Applicable
Comments / HabitatResultComments (Not Required)		**Any comments related to habitat**

Table C6: Location Details (Database Form: Details - WQ/Tox; Excel TemplateWorksheet: Information not in template)

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Occupation Method / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	VariableCodesLookUp	**Method of station occupation e.g. "Walk In", "From Bridge", or report "RV" research vessel name.**
Starting Bank / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	VariableCodesLookUp	**Bank where distances are measured from; Left or Right Bank.**
Distance From Bank / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**		**Recommended if multiple samples are taken along a transect; horizontal distance from bank where sample was taken; units in meters**
Units / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	VariableCodesLookUp	**Distance from bank units in meters**
Stream Width / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**		**Stream Width at the station where sample was taken, "-88" if not recorded**
Units / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	VariableCodesLookUp	**Stream width units in meters**
Water Depth / Not within template contact the CV RDC if you would like to populate this information		**Water depth at location of sample**

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
(Not Required)		
Units / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	VariableCodesLookUp	**Water depth units in meters**
Hydromodification / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	VariableCodesLookUp	**Describe any hydromodification at sample sample site e.g. "Bridge", "ConcreteChannel", "Pipes" etc**
Hydromodification Location / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	VariableCodesLookUp	**Location of hydromodification in relation to the sample i.e. is the sample upstream, downstream, not applicable, or not recorded ("US", "DS", "NA", "NR") to the hydromodificaiton.** • Only enter if there is a hydromodification was recorded.
Comments / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**		**The comments field should be used for any notes or comments specifically related to location details. Put additional hydromodifications here.**

Table C7: Field Results (Database Form: Field Results; Excel Template Worksheet: FieldResults)

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Method / CollectionMethodCode (Required)	CollectionMethodLookUp	**CollectionMethodCode refers to the general method of collection.** • The CV RDC field default is "Field".
Time / CollectionTime (Required)		**Time field samples are taken.** • The CollectionTime format should be expressed as hh:mm in 24 hour time, such as "13:30" for 1:30 pm.
Depth / CollectionDepth (Required)		**CollectionDepth measures the depth at which the sample was collected.** • Default of "0" m collection depth is Surface, "0.1" m collection depth is Subsurface.
Units / UnitCollectionDepth (Required)	UnitLookUp	**CollectionDepth units in "m"**
Replicate / Replicate (Required)		**The replicate number identifies replicates created in the field.** • Default is "1"
Position Water Column / PositionWaterColumn (Not Required)	VariableCodesLookUp	**PositionWaterColumn is the position in the water column where the sample was taken. This assists with sorting when multiple depths are used in collection.** •Project specific but for CV RDC water collections, 0 m collection depth is "Surface", 0.1 m collection depth is "Subsurface". For sediment collections use "Not

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
		Applicable".
Comments / FieldCollectionComments (Not Required)		**Any comments related to field collection**
Analyte / AnalyteName (Required)	AnalyteLookUp	**The AnalyteName is the 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.**
Matrix / MatrixName (Required)	MatrixLookUp	**MatrixName refers to the sample matrix.** • For field-generated water samples, the MatrixName is "samplewater".
Method / MethodName (Required)	MethodLookUp	**MethodName refers to the analysis method used by the laboratory to analyze the sample.** • Default is "FieldMeasure"
Fraction / FractionName (Required)	FractionLookUp	**FractionName is a specific descriptor of the Analyte.**
Units / UnitName (Required)	UnitLookUp	**Unit refers to how the field result is measured or expressed.** * Water units are indicated by weight/volume, e.g. "ng/L". Sediment units are indicated by weight/weight and includes whether the sample result is reported as wet weight ("ww") or dry weight ("dw"). For example, "ng/g ww" for ng/g wet weight. Surrogates recovery results will use a unit of "%".

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Rep / FieldReplicate (Required)		**The replicate number identifies replicates created in the field.** • Default is "1".
Result / Result (Required)		**The result of the field measurement. Be sure to key any trailing zeros that were entered on the field sheet.**
Res Qual / ResQualCode (Required)	ResQualLookUp	**The Result Qualifier Code or ResultQualCode qualifies the analytical result of the sample.** • Default value is "=" • If result is left blank because of a failure then the ResQualCode can not be "=".
QA / QACode (Required)	QALookUp	**QACode is applied to the result to describe any special conditions, situations or outliers that occurred during or prior to the observation to achieve the result.**
Coll. Device / CollectionDeviceName (Not Required)	CollectionDeviceLookUp	**CollectionDeviceCode refers to the specific device used in the collection of the sample.**
Calib. Date / CalibrationDate (Not Required)		**CalibrationDate refers to the date the collection device was calibrated.** • The format for electronic data submission (not data entry forms) is dd/mmm/yyyy, such as "10/Nov/2007". • Default value is 01/01/1950.

Form Name / Template Column Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Verify / BatchVerificationCode (Not Required)	BatchVerificationLookUp	**BatchVerificationCode is a unique code referencing the Verification of a Batch.** • *Habitat and field data will be coded as "Not Recorded" for the CV RDC unless otherwise specified.*
Compl / ComplianceCode (Not Required)	ComplianceLookUp	**ComplianceCode is a unique code referencing the Compliance with the associated QAPP.** • *Habitat and field data will be coded as "Not Applicable" for the CV RDC.*
Comments / FieldResultComments (Not Required)		**Enter comments to explain any conditions encountered in obtaining the constituent result.**

Table C8: Laboratory Collection(Database Form: Lab Chem/Tox; Excel Template Worksheet: Information not in field template)

Form Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
Method / Not within template contact the CV RDC if you would like to populate this information **(Required*)**	CollectionMethodLookUp	**CollectionMethodCode refers to the general method of collection such as "Grab_Sed", "Core_Sed", "Grab_Water", "Autosampler24h", "Autosampler7d".** • The CV RDC water default is "Grab_Water" and the sediment default is "Grab_Sed".
Time / Not within template contact the CV RDC if you would like to populate this information **(Required*)**		**CollectionTime refers to the time when the first sample of a sampling event was collected in the field.** • If the sampling crew collects 18 bottles at a single station, the CollectionTime for each would be the time of the first bottle collected. By doing so, the samples can easily be linked and any holding time issues will be consistent, and conservative, for the laboratory work. • The CollectionTime format should be expressed as hh:mm in 24 hour time, such as "13:30" for 1:30 pm.
SampleType / Not within template contact the CV RDC if you would like to populate this information **(Required*)**	SampleTypeLookUp	**SampleTypeCode refers to the type of sample collected or analyzed.** • The primary SampleTypeCode choices are as follows and the rest can be found in the LookUp list: *"Grab" - A single environmental sample

Form Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
		* "Integrated" - An environmental sample composed of multiple samples; depth-integrated, time-integrated or integrated from different locations across a waterbody, or any combination of the three; a composite * "MS1" - A Matrix Spike or Matrix Spike Duplicate laboratory QA sample * "CRM" - Certified Reference Material or Standard Reference Material; Homogeneous matrix that closely matches samples being analyzed with certified concentrations of analytes of interest purchased by the laboratory * "LCS" - Laboratory Control Spike or Blank Spike; Blank matrix or solvent spiked with analytes of interest, created in the laboratory * "LabBlank" - A blank sample which is processed through the entire analytical procedure in a manner identical to the samples and is analyzed in the laboratory * "CNEG" - Clean water or sediment free of contaminants or test material used to determine test acceptability and is used as a baseline for gauging adverse effects among animals exposed to treatments * "Composite" - Used for Tissue Samples regardless of whether composite has one or more than one organism
Depth / Not within template contact the		**CollectionDepth records the level, from the surface in the water or sediment column, at which the**

Form Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
CV RDC if you wouldlike to populate this information **(Required*)**		**sample was collected.** • This information should be listed on the Chain of Custody (COC) document that accompanies the samples from the field. 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"). • 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. • 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.
Units / Not within template contact the CV RDC if you would like to populate this information **(Required*)**	VariableCodesLookUp	**UnitCollectionDepth refers to the units used in the collection depth including "cm" (centimeters) and "m" (meters). This information should be listed on the Chain of Custody (COC) document that accompanies the samples from the field.**
Rep / Not within template contact the CV RDC if you would		**The Replicate number is used to distinguish between replicates created at a single collection in the field.**

Form Name	LookUpList	Description & Business Rules Description in bold, business rules are noted with (·), and examples are noted with (*), CV RDC specific business rules are italicized
like to populate this information **(Required*)**		• 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.
Device / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	CollectionDeviceLookUp	**CollectionDeviceCode refers to the specific device used in the collection of the sample.**
Position In Column / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**	VariableCodesLookUp	**PositionWaterColumn is the position in the water column where the sample was taken. This assists with sorting when multiple depths are used in collection.** • Project specific but default for CV RDC water collections, 0 m collection depth is "Surface", 0.1 m collection depth is "Subsurface". For sediment collections use "Not Applicable".
Comments / Not within template contact the CV RDC if you would like to populate this information **(Not Required)**		**LabCollectionComments records any comments relating to the collection of the field sample for laboratory analysis.**

* Note that this information is not within the field template but is required within the chemistry template.