Standard Operating Procedure (SOP) #16

Data Entry and Verification

Version 1.01 (February 26, 2021)

Change History

New Version #	Revision Date	Author	Changes Made	Reasons for Change	Previous Version #
1.01	2/26/2021	Kelly Kozar Kim Weisenborn	Updates to general instructions. Updated to NRR formatting; renumbered SOP from #18 to #16; updated SOP, back-end file, and user guide references.	To accurately reflect the data entry procedures. Formatting needed to be applied; some SOPs were removed or renumbered within the protocol; references were out-of-date.	1.0

Only changes in this specific SOP will be logged here. Version numbers increase incrementally by hundredths (e.g., version 1.01, version 1.02) for minor changes. Major revisions should be designated with the next whole number (e.g., version 2.0, 3.0, 4.0). Record the previous version number, date of revision, author of the revision, changes made, and reason for the change along with the new version number.

Purpose

This SOP document describes the general procedures for entry and verification of field data in the working project database. Refer to protocol sections Overview of Database Design (section 4.3 of the protocol narrative), and Data Entry and Processing (4.4) for related guidance and a clarification of the distinction between the working database and the master database. Refer to the Water Quality Monitoring Database User Guide, located at *I:\vital_signs\13_water_quality\Data\Database\Database_documentation*, *PACN_water_quality_database_users_guide.doc* for detailed instructions on how to operate the database application.

Data Entry

The following are general guidelines to keep in mind:

1. Data entry will be conducted by the PACN Aquatic Ecologist or another trained biological science technician at their duty station.

2. Data entry should occur as soon after data collection as possible so that field crews keep current with data entry tasks and catch any errors or problems as close to the time of data collection as possible.

3. There are working database applications for each park or set of parks. The working database applications can be found in the project workspace on the network server (I:\ drive). Users should copy the front-end database onto their workstation hard drives and open it there for enhanced performance. This front-end copy may be considered "disposable" because it does not contain any data, but rather acts as an interface with data residing in the back-end working database. The back-end database for a park or set of parks should be copied to the project workspace on the user's computer since the connection to the networked server is too slow (see SOP #12 Workspace Setup and Project Records Management, with daily uploads to the network server after data entry is complete for the day.

4. Each data entry form is patterned after the layout of the field form and has built-in quality assurance components such as pick lists and validation rules to test for missing data or illogical combinations. The database allows the users to view only the pre-built forms and does not permit users to view the raw data tables and other database objects as a way of ensuring the maximum level of quality assurance.

5. As data are being entered or imported, the person entering the data should visually review each data form to make sure that the data on screen match the field forms. This should be done for each record prior to moving to the next form for data entry.

6. At regular intervals and at the end of the field season the PACN Aquatic Ecologist should inspect the data that have been entered to check for completeness and perhaps catch avoidable errors.

7. After each data entry session for a day, the PACN Aquatic Ecologist should upload the working copy of the database onto the networked server with the date stamp at the end of the file name replaced with the current date (i.e., [PARK][1]_ working_copy_2021_water_quality_be_20210208.mdb).

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[1] [PARK] = park code. There are 4 working copy versions of the database for different regions where water quality monitoring occurs: AMME_WAPA, KALA_HALE, NPSA, and WHI (west Hawai‘i parks – ALKA, KAHO, PUHE, and PUHO)

Data Verification

Data verification checks that the digitized data match the source data. The following guidelines regarding data verification should be followed:

1. The PACN Aquatic Ecologist is responsible for specifying in the project protocol one or more of the data verification methods available and ensuring proper execution. At the discretion of the PACN Aquatic Ecologist, additional verification methods may be applied.
2. Data verification is carried out by staff thoroughly familiar with data collection and entry.
3. All records (100%) should be verified against original source data using the method below.
4. Visual review after data entry: Upon completion of data entry, all records are printed and compared with the original values from the hard copy. Errors are clearly marked and corrected in the database as soon after data entry as possible. Reliability increases if someone other than the person keying the data performs the review. Alternatively, two technicians (one reading from the original data and one checking the entered data) can perform this review.
5. A subset of randomly selected records (10%) should be reviewed after initial verification by the PACN Aquatic Ecologist. If errors are found, the entire data set should be verified again.
6. A record of the verification process for each data set, including number of iterations and results, will be prepared by the PACN Aquatic Ecologist as part of formal metadata generation.
7. Spatial data collected as part of the project will be viewed in a GIS and visually inspected for accuracy (e.g., points located outside park boundaries, upland locations occurring in water).

Database Instructions

Getting Started

The first action to be taken is to make sure the data entry workspace is set up properly on the user's computer since networked server connections are too slow for efficient data entry. If you are unclear about where the data entry workspace should be contact the PACN Data Manager (see SOP #12 Workspace Setup and Project Records Management for more information).

- Store the park/set of parks working copy back-end database file in the database folder in the project workspace. The back-end file has "_be_" as part of its name.
- The user's copy of the front-end database should also be stored in the same folder.
- If it doesn't already exist, also create a folder in the same network folder named "backups" for storing daily backups of the back-end database file. If this step is neglected, a backup folder will automatically be created during the first back up.

- Open the front-end database. The first thing it will do is to ask to update the links to the back-end database file.

Important Reminders for Daily Database Use

- Copy the front-end database to the project workspace on your local computer. Do not open up and use the front-end on the network as this 'bloats' the database file and makes it run more slowly.

- The front-end application will automatically prompt you to make a backup upon initially opening the application.

- New issues of the front-end application may be released as needed through the course of the field season. If this happens, there should be no need to move or alter the back-end file. Instead, the front-end file may be deleted and replaced with the new version, which will be named in a manner reflecting the update (e.g., water_quality_fe_20210127.mdb).

- Copy the working park back-end database file to the backups folder on the I:\ drive before moving it to the workspace on your local computer. This will ensure there is a backup of the database file before it is taken off the I:\ drive and moved to your computer. The file should be out of the working database folder on the I:\ drive so that no one else uses the database file at the same time.

General Use Instructions

To view detailed instructions for entering and editing data, refer to the Water Quality Monitoring Database User Guide, located at *I:\vital_signs\13_water_quality\Data\Database\Database_documentation*, *PACN_water_quality_database_users_guide.doc*.