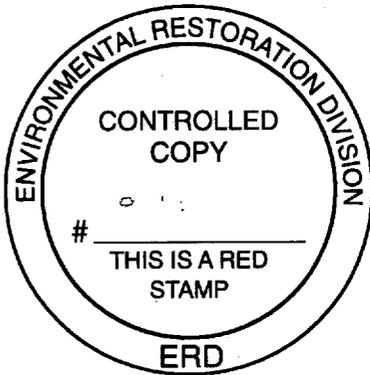


LLNL Environmental Restoration Division (ERD)
Standard Operating Procedure (SOP)

ERD SOP 5.4: Data Management Hand Entry of Analytical
Results—Revision 1

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1.0 PURPOSE

The purpose of this procedure is to establish the means for storing electronically hand-entered hard copy analytical results received from analytical laboratories and to ensure complete and consistent hand entry of all hard copy analytical records (not received electronically) within the Environmental Restoration Division (ERD) Data Management Team (DMT).

2.0 APPLICABILITY

This procedure applies to DMT hand entry of analytical results not received electronically.

3.0 REFERENCES

Not applicable.

4.0 DEFINITIONS

See SOP Glossary.

5.0 RESPONSIBILITIES

5.1 Division Leader

The Division Leader's responsibility is to ensure that all activities performed by ERD at the Livermore Site and Site 300 are performed safely and comply with all pertinent regulations and procedures, and provide the necessary equipment and resources to accomplish the tasks described in this procedure.

5.2 ERD Data Management Team (DMT)

The DMT's responsibilities are to receive analytical result reports and process them as outlined in this procedure. Furthermore, the DMT's responsibility is to communicate with the QC Chemist and analytical laboratories regarding necessary corrections or clarifications of reported analytical results.

6.0 PROCEDURE

6.1 Preparation

Once the highest entry priority data has been obtained from the hand-entry box, it must be prepared before entry. Data for the sample and analysis table fields must be determined. There are some fields that may be blank, but many others are required. To locate information not listed on the hard copy analytical results, refer to documentation (i.e., sampling plans, field log books, sample location maps, and the sampler who originated the samples). Recommendation: enter only one type of data and only one batch at a time. Select which method is to be used, if spreadsheets follow Section 6.2. If entering directly into INGRES follow Section 6.3.

6.2 Entry via Spreadsheets

6.2.1 Set up two files in MS Excel with the following columns:

- Column headings for SAMPLE file:
log_no, lab_loc_id, type, project, requester, depth, sampled, note, lab, doc_cntrl_no, matrix
- Column headings for NON-RAD ANALYSIS:
log_no, parameter, los_ind, result, los_value, units, req_analys, anl_method, clp_qa_flag, analyzed
- Column headings for RAD ANALYSIS:
log_no, parameter, los_ind, result, los_value, units, anl_method, clp_qa_flag, analyzed, extracted, calcd_value, error, error_type, req_analys

Note: Data columns must conform to the above stated order.

6.2.2 Populate spreadsheets.

- Copy and paste information that does not change with each number.
- Enter data that varies within each log number.
- Print and proofread the spreadsheets.

Note: There must be NO commas in the spreadsheet file.

- Save the files with a unique name, identifying them as a pair. A suggested naming convention example:

MB09-22samp.csv, MB09-22anal.csv

- Save file as a “CSV”.
- Write the file to your desktop or a transfer directory.

Note: MS Excel files must be closed.

- Use a text editor to examine the newly created pair of files.

Note: The last field (matrix for sample, analyzed for non-rad analysis, req_analysis for rad analysis) must not be blank and there should be no extra commas after the last field, or at the bottom of the file.

- Remove the header row from the file.

6.2.3 Convert spreadsheets to UNIX files.

- Transfer the files to EPDBS account using transfer program of your choice.
- Before importing data into INGRES and the EPDData database, verify that work tables are empty.
- Using the UNIX command:

```
%dmg copyin.d
```

Note: This program shows the standard field order, then asks for each file name to be copied into INGRES. Verify that the import was successful by examining the log files copysamp.log and copyanal.log in your current directory.

```
%dmg updates
```

6.2.4 Skip to Section 6.4.

6.3 Entering Directly into INGRES Working Tables

6.3.1 Enter the sample data into the wsample table using the monitor menu program.

From the monitor menu select:

```
U1 Work Tables
S1 Sample (24 hour).
```

6.3.2 Enter the analysis data into the wanalysis table. Refer to either Sections 6.3.2.1 or 6.3.2.2.

- #### 6.3.2.1 Data with few analytes per sample: Enter the data into wanalysis, one field at a time.

From the monitor menu program select:

U1 Work Tables
S2 Analysis

6.3.2.2 For data with a large suite of analytes per sample: append the template data corresponding to the requested analysis and lab.

- From the monitor menu select:

C3 Utilites (Edit & Verify Rpts)
U1 Append an Analysis Template

1. Fill in the template name, log_no (log_no must already exist in the wsample table), and other fields as appropriate.
2. Do a single template append for each sample.
3. Enter the result for each parameter, as appropriate.

- From the monitor menu select:

U1 Work Tables
S2 Analysis

6.4 Groom the Data

6.4.1 Screen the data set for inconsistencies or potential problems by using the UNIX command:

```
%scanqry
```

6.4.2 Shorten the output list by using the UNIX command:

```
%scanlog scanquery.out.xxx>scanlog.xxx
```

Note: The 'out' file provides the number of problems found for that particular query with the written SQL.

6.4.3 When scanqry has finished, use the output to resolve any remaining problems with the dataset.

6.4.4 Use the appropriate programs below or SQL commands to groom the data. Look at the current list of available checks by using the UNIX command:

```
%dmg info
```

badunits: Examples of checks are units of mg/L where req_analys is EPA8015, units of µg/kg where matrix is SO, and units not equal to "Units" where parameter is 7000 (pH).

blind: Looks for potentially "blind" sample names and offers to make changes.

chgloc: Looks for loc_id's that aren't in LOCATION table. Allows user to change loc_id's in WSAMPLE or add them to LOCATION table. Runs only on epgem - SAS.

cleanup: Deletes unnecessary spaces in tables wsample (footnote and loc_id) and wanalysis (clp_qa_flag).

statlimitchk: Produces a printout of pertinent information regarding "hits" in sampled locations where "hit" exceeds statistical limit.

cleanwell:	Produces a printout of pertinent information regarding “hits” in sampled locations where there are not supposed to be any hits.
cntdlm:	Counts the number of delimiters on electronic files.
info:	Lists a category of commands available.
pftime:	Sets time zone field to ‘PDT’ or ‘PST’ - runs only on epgem.
qtime:	Sets time in sampled field from lab_loc_id- runs only on epgem.
rpt:	Creates a detailed edit report by log numbers or loc id.
stdrpt:	Creates an edit report of all the data in wsample and wanalysis tables.
updates:	Fills in many of the blank fields with the appropriate data in the wsample and wanalysis tables.
widow:	Runs SQL to show widowed rows in either wsample or wanalysis.

Note: A single program can be run by command preceded with a “dmg.” Use the programs independently as appropriate to make further changes to the tables. Use interactive SQL, QBF, or the monitor application update mode if one of the above programs will not accomplish the change.

UNIX command:
%dmg badunits

- 6.4.5 If there are hits in the cleanwell and/or statlimitchk program, inform the appropriate task leader(s), Water Guidance and Monitoring Group (WGMG) Analyst, or their designee(s).
- 6.4.6 If locations need to be added to the location table, corresponding entries in additional tables may be necessary. Boreholes must be added to the boreholesprg table if not already present. Wells must also be added to the well tables. For every treatment facility influent name that is labeled as a well name and the influent name, store in sample by the well name. Add a record to extract1 well table with the same log_no, the influent name, and sampled date. There is no need to enter multiple wells going to one influent.
- 6.4.7 Re-run the scanqry program as necessary, to check the state of the data set. The goal is for each check to result in a count of zero (0) in the SCAN log. This goal is not always possible; however all non-zero results must be understood and explained in writing on final output.
- 6.4.8 Produce standard printout as necessary to check for project codes, locations, sample dates and document control numbers on the standard report (stdrpt) to match the chain-of-custody information by running the standard report:
(stdrpt) program.
Print the report.
%mprint

Note: The mprint settings should be:

Font size 8
Page Orientation Landscape
Bottom Margin 2.4

6.5 Record Data Qualifier Flags

Review validated data returned from the QC chemists to determine whether qualifier flags have been assigned.

Add electronic flags using the monitor application select:

C3 Utilities (Edit & Verify Reports)

U8 Assign (D,H,U,E, and T flags)

Add all other assigned data qualifier flags to the appropriate analysis record in the analysis table, clp_qa_flag field.

Note: If an “R” flag is assigned, add an explanation in the note field of the record in the sample table.

Initial and date yellow data qualifier flag form when done.

6.6 Verifications

6.6.1 Run verifications for each working table with non-zero count (wsample, wanalysis, wtic_analysis, wsur_analysis, wanal_comments) using the verification process provided by the monitor program.

- From monitor menu select:

C3 Utilities (Edit & Verify Rpts)

U3 Verify (each table, respectively)

Type ‘X’ for “All Checks”

- Note the name(s) of output file(s). Print out a screen print of this menu selection.

6.6.2 Run verifications for wqcanal and wqckey tables using the monitor application.

- From monitor menu select:

U3 QC Tables

U2 Verify Table Data

Type ‘W’ for Work Tables

Type ‘X’ for “All QAQC Table Checks”

- Note the name(s) of output file(s). Print out a screen print of this menu selection.

6.6.3 Print the output files and include them in the final review documents.

The mprint settings should be:

Font size 8

Page Orientation Landscape

Bottom Margin 2.5

6.6.4 Make changes based on a careful review of the verifications.

If necessary, rerun the individual verifications to show that changes were made.

6.7 Generate Edit Report and Check Data

6.7.1 Generate an edit report of the selected samples. The selected samples can be retrieved by log_no or loc_id. From the monitor menu select:

C3 Utilities (Edit & Verify Rpts)
U2 Generate An Edit Report
E1 Sample and Analysis

and /or use the UNIX command:

% dmg rpt

6.7.2 Compare every field with the printed analytical results and verify identical content.

- If discrepancies between work table and hard copy data are discovered, particularly with result and los_value, contact the analytical laboratory to confirm data.
- Request revisions with any necessary changes.
- Note requested revision in the new_data_log table.
- Make applicable changes in the work tables including a remark in the sample table note field that the revision was made on a certain date, and include your initials.

6.8 Peer Review

6.8.1 Assemble a packet of:

- Standard printout
- Edit report
- Scan log
- Verifications for all tables
- Other printouts and data copies (if applicable)

6.8.2 Provide packet to another DMT member for peer review for 100% proof.

6.8.3 Make necessary changes based on the reviewer's recommendations.

6.8.4 Have the reviewer make a final recheck and place their initials on data packet.

6.9 Append Data to Global Tables

6.9.1 Use standard monitor procedures to append wsample, wanalysis, wtic_analysis, wsur_analysis and wanal_comments tables.

From monitor menu select:

C3 Utilities (Edit & Verify Rpts)
U4 Append Work to Global Table
A1 Sample, Analysis, and Anal_Comments Tables
A7 Tic_analysis and Sur_analysis Tables

6.9.2 Append QC data if applicable.

From the monitor menu select:

U3 QC Tables
U6 Append QC work table data to global tables

6.9.3 Following completion of appends, print the append log file(s).

% mprint appendsamanl.log

6.9.4 Compare final counts with those expected (based on the known number of rows in the work tables). If they do not agree, contact the DMT leader and/or the EPDData database administrator.

6.9.5 In the global sample table, perform random retrievals to verify that the records just appended are accessible.

6.10 Record the Append Activity in the Global Append Logbook

6.10.1 Record the following in the Global Append Logbook

- Lab
- date appended
- number of rows appended to
- analysis
- qckey
- qcanal
- log no range
- initials
- Tic
- sur
- send date

6.11 File the Append Documentation

6.11.1 File the append documentation with the printed analytical results.

6.11.2 File by lab and month in the appropriate file drawer in the Division Records Center.

7.0 QA RECORDS

7.1 Electronic Storage of Printed Analytical Records

7.2 Global Append Log book

8.0 ATTACHMENTS

Not applicable.