Appendix 4: Data review checklists and methods

Field data review checklist and review steps
Lab data review checklist and review steps
Warehouse checklist and review steps

AMS Field Data Review Checklist

Time Period of Data: _____ to _____

☐ Review Monthly Spreadsheets

☐ Combine Spreadsheets to One File
File: _____

☐ Field Cleaner
Table: _____# of rows: _____
Notes: _____

☐ Data Stacked in JMP
Notes: _____
File (txt):_____

yyyyDataQA.accdb
Table: _____# of records: _____

☐ Duplicates Results without Depth

☐ Crosstab Query: ____ 10
____ 300
____ other: _____

☐ Duplicates for Results

☐ Minimum of Date/Time Table: _____
Total # of Sampling Events: _____

☐ Range of Results

☐ Null Values

☐ Comments Field

☐ Results by Station

☐ Random Sample Set- hard copy review
____% of Data, _____# of Sampling Events, _____ # of Data Reviewed

Files (txt): _____
Non-recorded: _____ No Hard Copy: _____ Non-Matching: _____
Notes: _____

# of Records: _____
Other Comments: _____

Review Completed Date: _____ by: _____

AMS Field Data Review and Finalization

Field data are entered by regional monitors into a regional monthly field data spreadsheet saved as yyyy_mm rRO.xlsx. Regional spreadsheets are reviewed when received and identified concerns (such as values out of range or missing values) are sent back to the monitors for review and revision if necessary. This review process pulls the regional monthly spreadsheets together and includes a more thorough review and check of the data.

Monthly Spreadsheets
(D:\AMS Everything Useful\Shared_AMS\Monthly AMS data summaries\yyyy)
Combine regional sheets into one excel file per month. Save file as **yyyy_mm.xlsx.**

Review monthly spreadsheet columns for missing data, typing errors, and miskeys.
Common errors:

Date: Not within time period or missing; format: yyyymmdd
Time: Odd times such as early morning and late night or missing; format: hhmm
Depth: Very high numbers or missing
Results: Out of normal range for parameter
Collector: Missing or wrong format (lastname firstinitial\lastname firstinitial)

Make changes or add missing data. This may require contacting monitors so they can check their records. Also if you have received the corresponding lab sheets some data may be on them.
Save file.

Combine monthly spreadsheets for time period reviewing usually by quarter or 4 month interval. Review quarterly spreadsheet again to make sure no data are missing.

Save file as **yyyy_month-month_Field.txt**. (ex. 2013_Jan-Apr_Field.txt)

Field Cleaner
(D:\AMS Everything Useful\ Data Review)

Import txt file into **FieldCleanerB.accdb**
When importing change date/time fields to text fields and parameter fields to number-double. You will want Access to add a primary key (autonumber).
Name imported data table- **tblyyyy_month-month_Field**
Once imported review table especially check date/time fields for correct format.

Delete all RAMS Visit IDs (begin with R instead of V) from table

Append recent Visit IDs to **tblCurrentVID** with query **qappVisitIDsToCurrentVID.**
Open **qappVisitIDsToCurrentVID** in design view.
Change the criteria to the month(s) and year associated with the Visit IDs to be added.
!Run Query. *(Note: tblVisitID is linked from the Labsheet database)*

Open table **tblToBeCleaned**- Clear old data by highlighting all rows and selecting delete records.

Append new field data to **tblToBeCleaned**
Open design view of append query- **qappAddTotblToBeCleaned**.
Add new table to query- Query Tools> Design Tab> Show Table.

Change Table source in query fields to new table and then remove old table from query.
**Make sure you have changed all applicable columns or you may end up losing a column when you remove the old table.
!Run query- should say appending ## of rows
Check table **tblToBeCleaned** to make sure all data were included and no columns were lost.

!Run macros **mcrRunErrorChecks**- enter start date, end date for time period of field data being reviewed.

Check table **tblErrors.**
Go through table to verify or change errors generated by macros.
Main errors will be: Mismatch VID, Duplicate VID, Bad date/time, Duplicate Record, and Null Header Info.

Append records back to main table by running- **qappFixedErrorsToMainTable**.

Rerun **mcrRunErrorChecks** until satisfied that no more changes need to be made.

Append records back to main table (**tblToBeCleaned**) each time after checking errors.

Stacking Data in JMP
(D:\AMS Everything Useful\ Data Review)

Open JMP.
Open Stack Field Data Script- **StackFieldDataRev.JSL**
Run Script.
You will be asked to select which table to open –select **tblToBeCleaned**.
Check the final table that pops up especially the date/time field.
Save file as **yyyyField_month-month.txt**. (ex. 2013Field_Jan-Apr.txt)

*****The SQL StackFieldDataRev should stack the field data for you but if not, here are the step by step directions.***
Open JMP
Open Database Table- Connect to Access- find FieldCleanerB.accdb/**tblToBeCleaned**
Check imported data especially dtmDateTime for blanks. Delete extra date/time fields.

Stack Tables
Table>Stack
Without depth- stack columns= 20, 32, 35, 36, 45, 78, 1351
Stacked Data column= result
Source Label column= methodcode
Click **Stack**
Delete other method code columns

Table>Stack
With Depth- stack columns= 10, 94, 300, 400, 480
Stacked Data Column= result
Source Label Column= methodcode
Click **Stack**
Delete other method code columns

Concatenate Results tables
Tables>Concatenate
Place both of the newly created tables into selected data table
Click **Concatenate**
Check newly created table with both "without depth" and "with depth".

Tables>Summary
Group by results, statistics by N

Select rows with "**.**" in result
Delete selected rows from concatenated table.
Save joined table as **yyyyField_month-month.txt**. (ex. 2013Field_Jan-Apr.txt)
****This completes JMP process.***

Open text file in Excel to check for "**.**" in fields- Depth, Comments, Collector, etc. This also keeps time in 24hr format when imported into Access.
Save file.

Data QA
(D:\AMS Everything Useful\ Data Review\yyyy\yyyyDataQA.accdb)

Import saved text file (**yyyyField_month-month.txt**) into database.
Change the following fields to the listed data type: Date/Time- text, result/depth- double, methodcode- text
Have Access add a primary key (autonumber).
Name imported data table- **tblyyyyField_month-month.** (ex. tbl2013Field_Jan-Apr)

Once imported review table especially check date/time fields for correct format.

Add a field for Month (strMonth) to the table. Save Table.
Import updated **tblCurrentVID** from FieldCleanerB.accdb into database.
Update the month column in data table through an update query using tblCurrentVID- **qupMonthToData.**

Check for duplicate Results without Depth
Create a find duplicates query that looks for duplicate visit ID and methodcode.
Review duplicates- this will be for rows with depth.
Change criteria in depth field to "is null" to check data without a depth.
Review duplicates. Make changes if necessary and delete duplicate rows due to depth profiles.

Make Crosstab Query
Row Heading- Station, methodcode
Column Heading- strMonth
Count(result)
!Run query
Change criteria in query to run for individual method codes
Such as 300- Dissolved Oxygen, 10- Water Temperature

Check each query to see if the correct number of results show up for each month. If there are discrepancies then verify there is no result for that station that month. Update missing or incorrect entries.

Check for duplicate Results
Create a find duplicates query that looks for duplicate visit ID, methodcode or duplicate visit ID, methodcode, depth, or duplicate visit ID, methocode, depth, result.
Review and make necessary changes.

Minimum of DateTime field (with Collector)
Create a query with Visit ID, station, collector and dtmDateTime(min).
Change query type to make-table query
Name table- **tblyyyyField_month-month_MinDTCol**
!Run Query- will ask if you want to append to new table- click **yes**.

Update DateTime to Minimum DateTime (not always necessary)
Make a backup copy of field data table- save as **tblyyyyField_month-month_Copy**.
Create an update query with table **tblyyyyField_month-month_MinDT** and Field data table **tblField_month-month.** Relate tables by strVisitID.
Use DateTime field from Field data- update to minOfdtmDateTime field.
!Run query

Check Range of Result values- (This is done in basic check of monthly spreadsheets but another look does not hurt.)
Create a query with max, min and count of results for each method code
Columns- methodcode, displayname, result(count), result(min), result(max)
Look for appropriate ranges of data, i.e. at or above detection limits, decimal places

Check for null values
Create a query with each column in the results table included. In the criteria start on the first line for the first column and type "is null". Continue this for the other columns except the comments and depth fields but go down one line each time. This should let you know if something is missing.

Check Comments field
Review comments- remove any unnecessary comments that should not carry on with the data.
For all dissolved oxygen (300) readings with "LDO" comments, replace methocode 300 with LDO. Remove LDO comments from all comments.

Compare Results by Station to previous 5 years of data
Create a min, max, count table for each station by methodcode based off the historical data (last 5 or more years). (current table **tblStationDataRanges_2008-2012**)

Compare min/max to new data.
Open design view of **qryCompareResultsToMinMaxField**
Add new data table (**tblyyyyField_month-month)** to query and change Table source to new table -then remove old table from query.
Create relationships between tables to include stationcode=strStation and methodcode=methodcode.
!Run Query

Review results that have a "!!!" in either the min or max column. Check with monitors for verification of results that don't seem reasonable.

Random Sample Set- Compare against field data hard copies
Open the table **tblyyyyField_month-month** in JMP

Tables> Summary
Group by VisitID, station, datetime, collector
Statistics- blank

Create a random subset from the summary table
Tables>Subset>Random sampling rate- enter a % (eg 0.05). Percentage will depend on number of results and feasibility to review. Click- Link to original data table. Click OK.
Save subset table as **Subset of 'tblyyyyField_month-month' RandomReview.txt**

Select all records in the subset table. Go back to the original table **tblyyyyField_month-month** in JMP and create a subset table from the selected rows.
Tables>Subset>Selected rows
Click- Link to original data table.
Save subset table as **Subset of 'tblyyyyField_month-month' RandomReviewData.txt**.
This table will include the individual data points related to the first random subset table.

Split the data from the selected rows subset table for reviewing convenience.
Tables>Split
Split columns- result
Split by- methodcode
Group by- strVisitID, strStation, dtmDateTime, dblDepth
Check "Keep all remaining columns"
Click **Ok.**
Rearrange order of methodcodes to match field data spreadsheet.

- 94, 10, 300, 400, 20, 480, 45, 32, 36, 1351, 35, 78

Save as **Subset of 'tblyyyyField_month-month' RandomReviewData_Split.txt**
Open table in Excel and format for review purposes.

Open file **Subset of 'tblyyyyField_month-month' RandomReview.txt** in Excel.
Sort sampling events by regional office (by collector) and format table.
Save file as **Subset of tblyyyyField_month-month_#.xlsx**. (ex. Subset of tbl2013Field_Jan-Apr_60.xlsx)
Send email to regional office monitors and request copies of the original hard copies for the selected sampling events.

Review field data hard copies against file **Subset of 'tblyyyyField_month-month' RandomReviewData_Split.txt**. Note any values that were not recorded on the hard copy but appear in the electronic version, no original hard copy could be found, and those where the hard copy version does not match the electronic version.

Remove values that were not recorded on the hard copy or no hard copy is available. Revise values to hard copy versions for those that do not match.

AMS Lab Results Review Checklist

Time Period of Data: _____ to _____ Date: _____

☐ Export Data from LABWORKS- AMSPULL
Sample Report Date: From _____ to _____
Collection Date: From _____ to _____
# of Reports: _____
File (mdb): _____
# of Results: _____

yyyy_DataQA.accdb
Table: _____ # of records: _____

☐ Remove _Title_ Results: #_____ # of records: _____
☐ Remove Extra Records: # _____ # of records: _____
☐ Review for Missing Reports

☐ Agency, Location_Code, and Sample_Collector
Notes: _____
_____

☐ Collection_Time
Notes: _____
_____

☐ Sample-Depth
Notes: _____
_____

☐ Matrix and Location_Type
Notes: _____
_____

☐ FieldSample_ID (Visit IDs)
Notes: _____
_____

☐ Analyte_Names
Notes: _____
_____

☐ Combination_Result
Notes: _____
_____

☐ Qualifiers
Notes: _____
_____

☐ Missing Results
Notes: _____
_____

☐ Duplicate Results
Notes: _____
_____

☐ Sample_Comments fields
Notes: _____
_____

☐ Combine Sample_Comments
Notes: _____
_____

☐ Range of Results
Notes: _____
_____

☐ Results by Station
Notes: _____
_____

☐ 5 year Comparison
Notes: _____
_____

☐ Random Sample Set: _____% of Data _____ # of Results
Notes: _____
_____

☐ Flag QC samples with Hits and Corresponding stream samples
Dissolved (DFB#): _____

Other table/query names: _____

# of records: _____
Other Comments: _____
_____

Reviewed Completed Date: _____ by: _____

AMS Lab Results Review and Finalization

AMS data are reviewed every four months. This provides time for the Lab to report analysis and enough data to compare results at each station.

Lab data are exported from the Chemistry Lab's LABWORKS database. Access to LABWORKS is available online at https://sg.ncdenr.org/Citrix/XenApp/auth/login.aspx. The Chemistry Lab has detailed instructions on accessing LABWORKS on their website- http://portal.ncdenr.org/web/wq/lab/staffinfo/labworks.

Data are then reviewed for completeness, accuracy and format.

LABWORKS Export

Cross Reference Search

From the Desktop, double-click **Search** and single-click **Cross Reference**. In the Cross Reference Search window, select **AMSPULL** from the Available search routines and click **OK**. For Sample Report date, **enter the start and end reporting dates**. (End date should be the day of or day before of when you are running the query in order to receive the most up-to-date reports.) For Collection date, **enter the start and end collection dates** for the time period of data review. Once the query has run, click **Exit** to close the window.

Export Sample Data

From the Desktop, double-click **Reports** and single-click **Export Sample Data**. In the Data Export and Conversion to Electronic Formats window, select **Cross Reference Search** on the left toolbar. The AMSPULL search information should appear in the window as the last search. Click **View Selections** and if a window pops up noting the selection criteria returned many samples, click **Yes** to continue querying data. Once all the reports appear in the bottom window, click **Enter Selection**.

The Export details window will appear. The available formats should be **ANDREARAMS** in the top right window. Click the **Specify Output file** button. Select the location on your C: drive to export the file to. (If you want to place in a folder, the name cannot have spaces in it. Currently use LabworksExports folder.) The file name can also be changed here. Save the file as **AMSyyyy_Mon-Mon_yyyymmdd.mdb** (ex. AMS2012_Jan-Apr_20130729.mdb). File will export as a Microsoft Access® database. Then click the **Export Sample Data** button. The data will export which can take a while depending on the amount of results being exported.

Once the data have completed exporting, open the database **AMSyyyy_Mon-Mon_yyyymmdd.mdb** and review briefly to verify results and fields exported.

Lab Data QA

(D:\AMS Everything Useful\ Data Review\ yyyy Data Review \ yyyyDataQA.accdb)

Import table **FLATDATA** from **AMSyyyy_Month-Month_yyyymmdd.mdb** into database. Rename imported data table- **tblyyyyLab_Mon-Mon** (ex. tbl2013Lab_Jan-Apr)

Review imported table for correct number of records and format.

Remove "_Title_" results
Delete records with "_Title_" in the Combination_result field. This appears for Color (PT & ADMI) and Wet_Icchrom.

Review for non-AMS reports
Delete records for Visit IDs not during review period, other non-AMS stations, etc.

Check for Missing Reports by Event
Event Query
Create query with data table **tblyyyyLab_Mon-Mon** and **tblCurrentVID.**
Create relationships between tables to include FieldSample_ID=strVisitID.
Include fields Agency, Sample_ID, Location_Code, Collection_Date, Collection_Time, FieldSample_ID and strMonth.
Totals ∑, group by for all fields.
Save query as **qryyyyyLab_Mon-Mon_Reports.**

Make Crosstab Query
Create a crosstab query based on **qryyyyyLab_Mon-Mon_Reports.**
Row Heading- Location_Code
Column Heading- strMonth
Calculation- Count(SampleID)
!Run query and save as **qryyyyyLab_Mon-Mon_Reports_Crosstab.**

Review Crosstab Query
Review to see if correct number of lab reports and QC reports per station and month. If any reports are missing, check if samples were collected or if data did not pull from Labworks and why. If samples were not collected, note for future use in review process. If data did not pull from Labworks, check to see if Project Account Code in Labworks is equal to AMBIENT, date entered correctly (must be within range requested) or another issue. Contact Lab for corrections. Re-export data once Lab has made corrections.

During review of crosstab results, revisions to dates or regions may be found. Update data based on crosstab review.

Check Agency, Location_Code and Sample_Collector
Review the Agency, Location_Code and Sample_Collector fields to make sure the results match correctly and are spelled correctly. Check reports and revise accordingly.

Check Collection_Time
Review Collection_Time field for 00:00 or times very early and very late. Check reports and revise accordingly.

Check Sample_Depth
Review Sample_Depth field. Stream samples should be at 0.1 or greater for photic zone samples and QC samples should be blank. Check reports and revise accordingly.

Check Matrix and Location_Type
Review Matrix and Location_Type fields. For Matrix, stream samples should be SURFACEWATER and QC samples should be BLANKWATER. For Location_Type,

stream samples should be RIVER/STREAM, CANAL, ESTUARY, RESERVOIR or LAKE depending on location and filter blanks (DFB#) should be FILTER BLANK.

Check FieldSample_ID (Visit IDs)
Review FieldSample_ID field. Stream samples should have a Fieldsample_ID (format V######, ex. V02345) and QC should be blank. Check reports and revise accordingly.

Create a "Find Unmatched Query" with the query wizard to compare **FieldSample_ID** (tblyyyyLab_Month-Month) and **strVisitID** (tblCurrentVID). Review any unmatched Visit IDs. QC samples will not have a Visit ID and should be blank.

Check Analyte Names
Review Analyte_Name field for misspellings. Contact lab if necessary and revise accordingly.

Check Combination_Result
Review Combination_Result field. If a qualifier (X#, Z#) is reported as a result, move to the qualifier field.

Check Qualifier
Review Qualifier field. Remove any spaces and add commas to separate individual qualifiers if more than one reported. May need to increase qualifier field size to 10.

Check for Missing Samples
Create a crosstab query to check for missing samples.
Row Heading- Location_Code
Column Heading- Analyte_Name
Calculation- Count(Combination_Result)
Copy and Paste Special query results to Excel (This can be done in Access but Excel provides more formatting options to make it easier to review).
Save excel file as **AMS_yyyyLab_Mon-Mon_Crosstab.**

Review to see if correct number of results per station and analysis. If any results are missing, check if samples were collected or if samples were incorrectly reported (total vs. dissolved). If samples were not collected, note for future use in review process. If samples were incorrectly reported, contact Lab for corrections. Re-export data once Lab has made corrections.

Check for Duplicate Results
Create a "Find duplicates query" from **tblyyyyLab_Mon-Mon** that looks for duplicate SampleID, Location_Code, Analysis_Code, Analyte_Name, and Combination_Result.

Check Sample_Comments-line_# fields
Review Sample_Comments_Line_# fields. Labworks export format ANDREARAMS pulls the first 15 Sample_Comments_Line_# fields. More can be added, if necessary. Remove any sample comments that do not relate to an analyte/analysis. This may require deleting some sample comments and keeping others. If all sample comments are removed then the Sample_Comments field should be updated to "N". The sample comments should also be checked for spelling and extra spaces.

Combining Sample Comments

Add **Sample_Comments_Memo** and **Results_Comments_Memo** fields to **tblyyyyLab_Mon_Mon**. Data type= **Memo** and placed at end of field list.

Update **Sample_Comments_Memo** with all the Sample_Comments_Line_# fields with comments in them. Create an Update query with the Sample_Comments_Memo and all the needed Sample_Comments_Line_# fields.
Sample_Comments_Memo: update to [Sample_Comments_Line_1] & " " & [Sample_Comments_Line_2] & " " & [Sample_Comments_Line_3] & " " & [Sample_Comments_Line_4] & " " & [Sample_Comments_Line_5] &…….
Criteria- Line 1- is not null and not ""; Line 2- is not null and not ""; Line 3- is not null and not "";……
!Run Query

Check Sample_Comments_Memo for format (add spaces) and remove any extras that were missed in the earlier review. Spell check the comments and correct.

Check Range of Combination_Result values

Open table **tblyyyyLab_Mon-Mon** in JMP. Change Combination_Result field to numeric, continuous. Create a Summary table with Min, 25%, 50%, 75%, and max for Combination_Result and group by Analysis_Code and Analyte_Name.
Save as a text file.
Open in Excel and Review. Look for appropriate ranges of results, i.e. at or above detection limits, decimal places.

Check Combination_Result by Location_Code and Analyte_Name

Open table **tblyyyyLab_Mon-Mon** in JMP. Change Combination_Result field to numeric, continuous.
Analyze- fit y by x; x=Location_Code, y=Combination_Result, group by = Analyte_Name, Agency
Review graphs looking for outliers.

Check Results by Station to previous 5 years of data

Create a min, max, count table for each station by methodcode based off the historical data (last 5 or more years). (current table: tblStationDataRanges_2008-2012)

Open design view of **qryMethodCodeAddition**
Add new data table (**tblyyyyLab_Mon-Mon**) to query and change Table source to new table -then remove old table from query.
Create relationship between tables for Analyte_Name (**tblyyyyLab_Mon-Mon**) = Analyte_Name (**refCharacteristicTranslation**) and include all records from **tblyyyyLab_Mon-Mon** and only matching for **refCharacteristicTranslation**.
Check the query table to make sure all Analyte_Names are included in table **refCharacteristicTranslation**.
Change query to a make-table query with the new table name= **tblyyyyLab_Mon-Mon_methodcode**.
!Run query.

Open table **tblyyyyLab_Mon-Mon_methodcode** in design view. Change Combination_Result to number-double. Save table.

Compare min/max to new data.
Open design view of **qryCompareResultsToMinMaxLab-Labworks**
Add new data table (**tblyyyyLab_month-month_methodcode**) to query and change table source to new table -then remove old table from query.
Create relationships between tables to include Location_Code=stationcode and methodcode=methodcode.
!Run query.

Review results that have a "!!!" in either the min or max column against the lab sheets to check for typo's. Correct typo's and check with lab for other outrageous results that don't seem reasonable.

Check Random Sample Set of Combination_Result
Open table **tblyyyyLab_Mon-Mon** in JMP.
Table>Subset>Random sample- pick a % (eg 0.05 or 0.025). Percentage will depend on number of results and feasibility to review.
Save new table as a text file- **Subset of 'tblyyyyLab_Mon-Mon'.txt**. (ex. Subset of 'tbl2013Lab_Jan-Apr'.txt)
Open text file in Excel and format. Save a .xlsx file and print.
Check results against hard copy lab reports to make sure database matches the lab reports.
Correct any changes.

Flag QC samples with Hits and corresponding stream samples
Add **QC_Flag** field to **tblyyyyLab_Mon_Mon**. Data type= **Yes/No** and placed after Secondary_Result and before Sample_Collector. Save.

Update table source in query **qryEBhits** with table **tblyyyyLab_Mon-Mon**. Run query to see QC Samples with hits.

Use query **qryReviewID** to view and flag samples with related QC hits. Flag QC sample and stream sample as follows:
DFB# flagged if analyte ≥ PQL (not U) or X# or Z# qualifier.

Also flag stream sample results if no QC sample was collected. Report and Analyte crosstab reviews will help with identifying missing QC samples.

AMS Field and Lab Data into Results Database Checklist

Time Period of Data: _____ to _____

Field Data Table: _____ # of records: _____
Lab Data Table: _____ # of records: _____

yyyyDataQA.accdb

☐ Compare DateTime for Results
Notes: _____
_____

☐ Combine Field and Lab Data
Table: _____ # of records: _____

☐ Check Changes in Data due to JMP

☐ Calibration Sheet review
File: _____
# of sampling days: _____
# of missing sheets: _____# of records removed: _____
Table:_____

# of records:_____

AMSData13_be.accdb

☐ Backup Results Table
Notes: _____
Table: _____

☐ Link Combined Field And Lab Data Table

☐ Append Data into Main Results Table
Original # of results: _____
# of results Added: Total: _____
NCAMBNT: _____
NCSPST: _____
Final # of results: _____

Other Comments: _____

Review Completed Date: _____ by: _____

AMS Field and Lab Data to Main Results Database

Data QA
(D:\AMS Everything Useful\ Data Review\yyyy\yyyyData QA.accdb)

Compare datetime for both lab and field data
Open query **qryCompareDateTime_Lab-Field** in design view.
Add both the new lab and field data tables to query- Query Tools>Design Tab>ShowTable.
Create relationships between the tables to include strStation(Field) = Station(Lab), strVisitID(Field) = VisitID(Lab), and Station(Lab) = strStoretNumb(tblStation).
Change table sources in query fields to match new tables and then remove old tables from query.

> **Make sure you have changed all applicable columns or you may end up losing a column when you remove the old tables.

!Run query. This query will let you know which date times do not match in both the field and lab data.

Check all "**!!!**" entries for the correct values. This will require reviewing field data and lab sheets.
Common errors are:

> Wrong date on lab sheet- can look at receiving date if there is a question
> Wrong date in field data- monitor sampled on different date than originally planned or miskeyed data.

Contact monitor if necessary for confirmation of revisions. Correct any mistakes.

Combine Field and Lab data
Copy Lab data table and change name of table to **tblyyyy_month-month** (ex. tbl2012_Jan-Apr).

Create an append query to append the field data (**tblyyyyField_month-month**) to table **tblyyyy_month-month**. The field types will need to match in both tables.
!Run query- will ask if you want to append to table- click **yes**.

Round depth field
JMP likes to change the number of decimal points for depth and results- may need to round fields- Create Update query- update depth field to round([depth_m],1)
!Run query

Calibration Sheet Review
Open query **qrySamplingDatesByRegion** in design view.
Add table **tblyyyy_month-month** to query- Query Tools>Design Tab>ShowTable.
Create relationships between the tables to include Station(combined) = strStoretNumb(tblStation).
Change table sources in query fields to match new table and then remove old table from query.

> **Make sure you have changed all applicable columns or you may end up losing a column when you remove the old tables.

!Run query. This will provide a list sampling dates by collector for the time period reviewed.

Copy table to Excel and paste special as text.
Save as **yyyy_month-month_CalibrationCompare.xlsx** (ex. 2012_Jan-Apr_CalibrationCompare.xlsx).

Open Calibration database (**R:\AMS\AMS Calibration Log**) and query **qryUniqueRegionCollectorDateMeter**. Enter start date and end date for time period of data review.

Copy and paste table into **yyyy_month-month_CalibrationCompare.xlsx** in columns next to the values from **yyyyData QA.accdb.** Go through spreadsheet and match entries. Add spaces to the appropriate fields when matching values are not included. This could be due to no calibration sheet for a sampling event or no AMS sampling event for a calibration sheet since the calibration database has all sampling events including AMS.

Review rows with blanks especially sampling events without calibration sheets. Contact regional monitors about missing calibration sheets and if available, add information to database and spreadsheet.

Once all available calibration sheets are entered, review the reports in the Calibration database for DO, specific conductance, and pH.
When post-sampling checks were not completed, not within QC accept criteria, or no calibration sheet is available, then data for associated dates, stations and parameters are flagged in the comments field of **tblyyyy_month-month** with "to be removed".

Review hard copy calibration sheets to verify failure.

Create a make table query with **tblyyyy_month-month**. Pull all fields and under the Comments field add the criteria "to be removed*".
Name the new table – **tblyyyy_month-month_ToBeRemoved**.
!Run query.

Once the data have been added to the new table, change the query type to delete query.
!Run query to remove associated data from table **tblyyyy_month-month**.

AMS Database
(D:\AMS Everything Useful\ AMS data\AMSData13.accdb

Backup Main Results Table
Copy the main Results table- **tblAMSResults**
Save table. (example- tblAMSResultspre2011JFMAData)

Import Combined Table
Export combined table **tblyyyy_month-month** as a tab delimited text file from yyyyDataQA.accdb.

Import combined Field and Lab data table (**tblyyyy_month-month**) to database.

Append New Data to tblAMSResults
Create an append query- use the combined Field and Lab data table and tblCurrentVID. May need to import or link tblCurrentVID to this database also. Connect the tables by Visit ID and join properties to include all rows from combined Field and Lab data table and only those in tblCurrentVID.

For agencycode column- the agency field will need to be created and assigned to "NCAMBNT" or "NCSPST" depending on the criteria (see below). Add station number, DateTime, depth, methodcode, result, remark, collector, comment fields from combined field and lab data table. Match to fields in tblResults

From tblCurrentVID- add lngSamplingCode.

NCAMBNT criteria
Currently all data except Chronic Special Studies

NCSPST criteria (Chronic Special Studies)
Station-
VisitID- is null

!Run query

Check tblAMSResults for new results and correct formatting.