

Reviewing metrics in the CHaMP_Workbench: CHaMP QA 2016

Step 1: Getting Started:

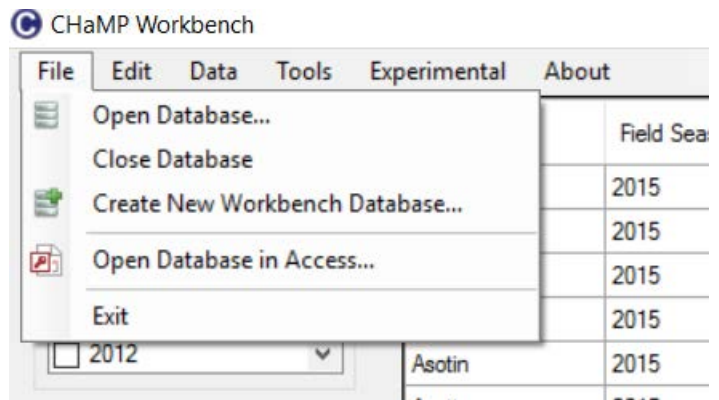
- 1) Save the metric database zip file and unzip the database it to a known location on your computer. (e.g. C:CHaMP_Workbench).
- 2) Open CHaMP Workbench. If using Windows 8 or higher, search for “CHaMP” on your computer.

The software can be downloaded from: <http://workbench.northarrowresearch.com/>

- 3) The Workbench software will come with a blank Access database.

The next step is to connect the Workbench software to an Access database pre-loaded with 2016 CHaMP metrics.

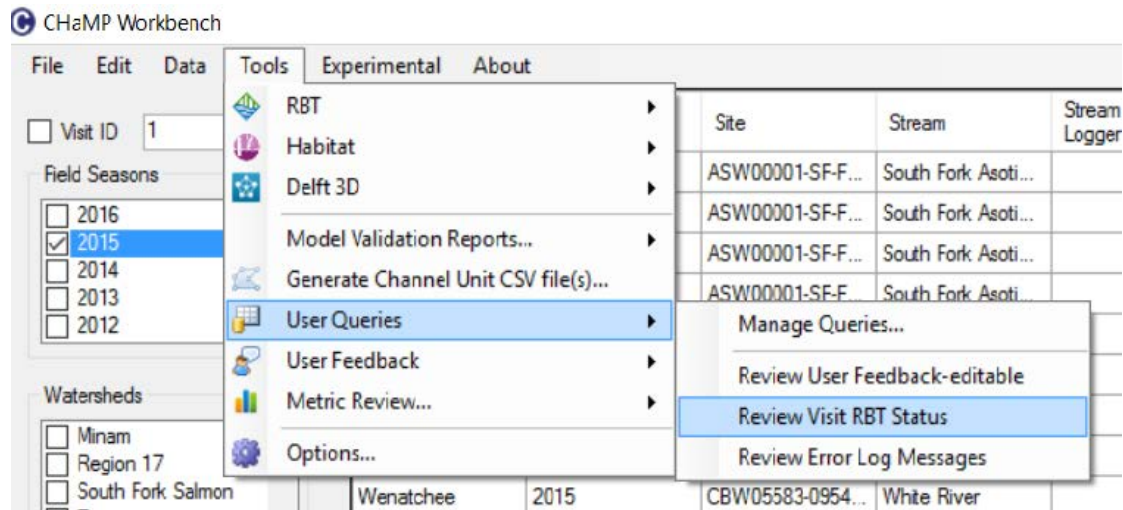
Open the File menu and select ‘Open Database’. This will allow navigation to the database that was stored in Step 1.



Step 2: Reviewing Visit Status

Metric review is most efficient when all metrics for all field season visits are available so that the charts can be reviewed in as few iterations as possible. Visits may not have metrics because data have not been uploaded, metric engines have not run, or there was an error during metric generation.

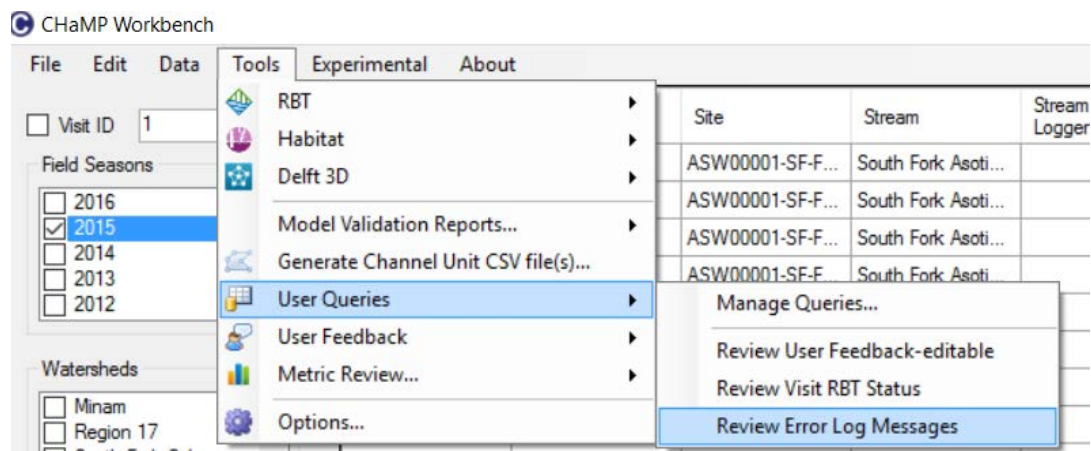
- 1) Ensure all Visits have all available data uploaded (refer to upload review process in Part 1 of the 2016 QA process. Log an issue into [JIRA](#) to document remaining issues.
- 2) Review Visits without metric generation (RBT engine not run). Navigate to the Menu and select Tools, then User queries and select ‘Review Visit RBT Status’. This will prompt a .csv file to be downloaded and opened in Excel.



In Excel, review the Visits where the column “Null-RBTNotRunOnVisit” is NULL. These visits have not had RBT run yet. Contact Carol (carol@southforkresearch.org) to discuss if these nulls are not expected.

These are also available in the Access database via query QA_VisitStatus_Errors.

3) Review Visits with Errors in RBT metric engine. The RBT metric engine produces a list of errors when metrics are not successfully generated. Shortened versions of these errors can be downloaded as a .csv file from the Tools/User Queries/Review Error Log Messages.



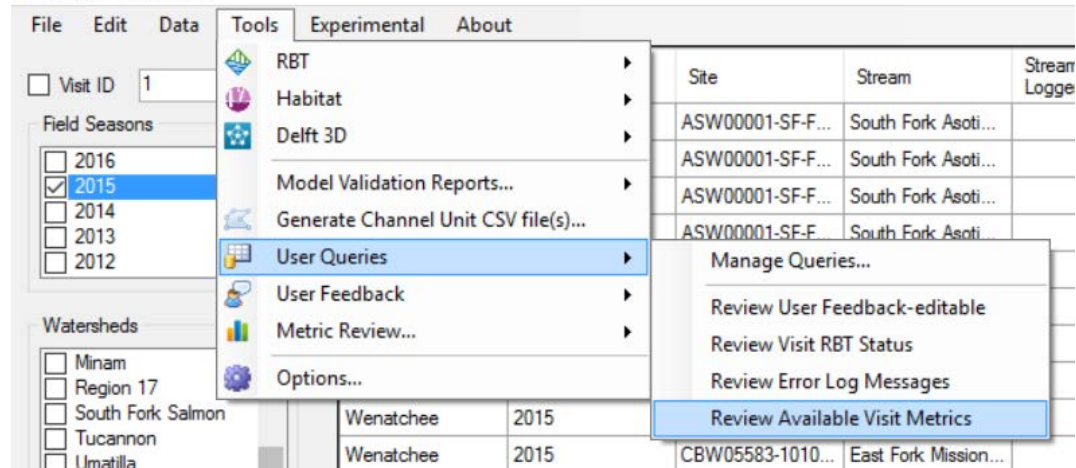
*Note that the .csv file sometimes has formatting issues where columns are shifted by 1-2 places. Use the Access review queries

Full error messages are stored for ALL runs of the Models in the Access table LogMessages and can be reviewed using the query QA_ErrorMessages_6_final.

Step 3: Visit Selection

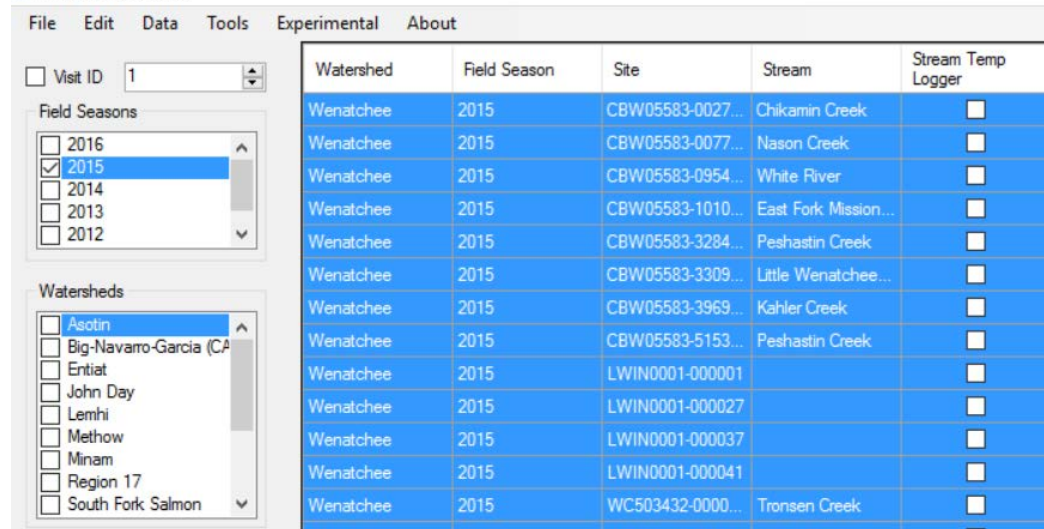
Metrics can be reviewed by Program in the Workbench. A list of available metrics in the database can be reviewed in Tools/User Queries “Review Available Visit Metrics”.

CHaMP Workbench

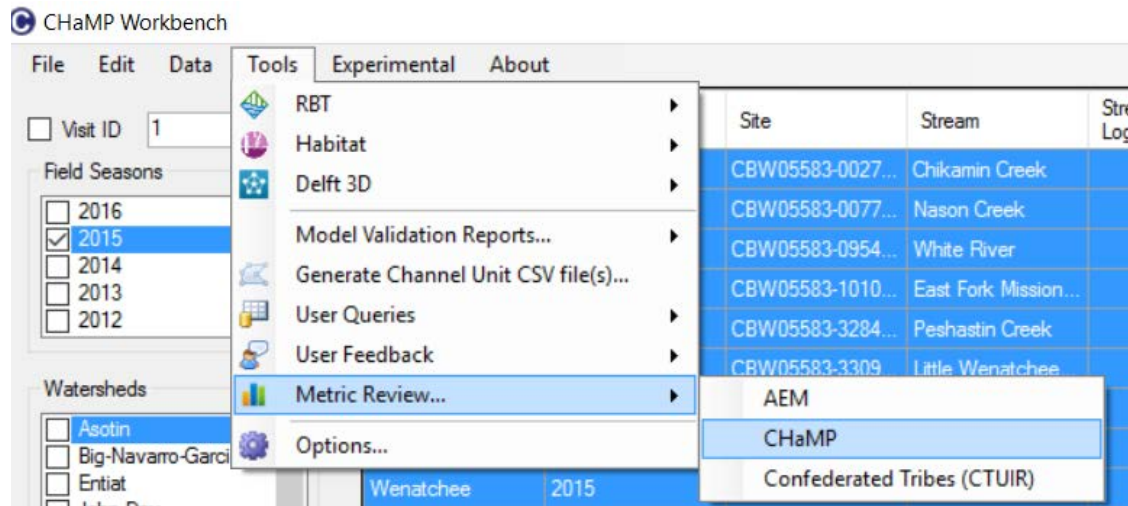


1) Select visits for metric review. Use the year/watershed filters or select Visits individually in the main visit inventory. Rows will be blue when selected. Hold the Shift Key down to select multiple Visits.

CHaMP Workbench



2) Go to the Tools menu and select Metric Review / CHaMP (or another Program) to open the Metric Reviewing window. This step takes a few minutes, so wait patiently.



Step 4: Metric QA/Review

Please Review the Appendix: Introduction to the Metric Review Window Before Proceeding

- 1) Sort each metric in the metric grid and identify any visit with nulls. If an issue is found with a metric or is missing then the source measurement data will need to be located and reviewed.
 - a) Check the Measurement data on champonitoring.org to ensure data exists. If the spurious measurement should be resolved, see the Appendix for how to update Measurement data on champonitoring.org. If you are unsure why the metric may be missing or incorrect, contact Carol@southforkresearch.org.
 - b) If the metric is derived from topographic data, open the survey geodatabase in the CHaMP Toolbar (ArcMap), review the data and resolve the issue (if possible) and re-upload to cm.org via the Data Check in Tab.
 - c) There are three options for how to proceed once a spurious measurement (or metric) has been identified:
 - a) If the spurious value is not valid due to confirmed field collection issue (operator error, equipment error, or not measured) then the measurement value should be deleted and noted (add notes at record level in champonitoring.org and in User Notes in workbench.
 - b) If the spurious value looks suspicious but cannot be confirmed as invalid and spurious value may be due to natural anomalies, note that the anomaly was reviewed but not confirmed as invalid. These

are suspect values at the record-level in champmonitoring.org and the User Notes of the Workbench. The values will remain within the dataset.

- c) If a spurious value is confirmed as a known natural anomaly (e.g. log jam or restoration action contributing to high LWD frequencies) then add note to measurement record(s) and the User Notes in the Workbench.

2) Review preset Metric Plots

- a) Review the first graph in the preset list of plots in "Plot Types".
- b) If a suspect metric value appears, find the Visit in the metric grid and review the metrics more carefully.
- c) Make a User Note* to document the QA status of the reviewed plot (see User Notes section in Appendix for instructions).
 - a. A User Note should be made to rate each plot.
 - b. Follow the same anomaly review/note guidance as described for Metric Grid review.
 - c. If the metric of concern on the plot can be identified, then add the Metric Name (x or y axis label) to the description of the user note. These will be compiled and added to champmonitoring.org at a later time.
- d) Continue reviewing preset Plot Types, anomalies, and making notes until all preset plots are done.

3) Independent review of metrics

Use the X axis and Y axis dropdowns in the metric plot window to do free form review of metrics that are of interest or may have suspect values due to sampling or site concerns. Follow guidance outlined in Metric Grid and Metric Plot sections to resolve issues and make User Notes.

4) Once metric review is complete, we recommend making a User Note to list all Visits that should have the metrics reviewed a second time. Send this list to Carol@southforkresearch.org and when the updated data are available the new metrics will be sent out for review.

A small number of metrics are **not** available for review in the CHaMP workbench at this time.

- a) Temperature metrics: can be reviewed on champmonitoring.org
- b) GCD metrics: will be available for review later this winter (metrics are available in the Workbench database but not accessible through the Workbench Metric Review tools).
- c) Tier 1, Tier 2, and Channel Unit metrics not displayed at the Visit Level (metrics available in the Workbench database but not accessible through the Workbench Metric Review tools).

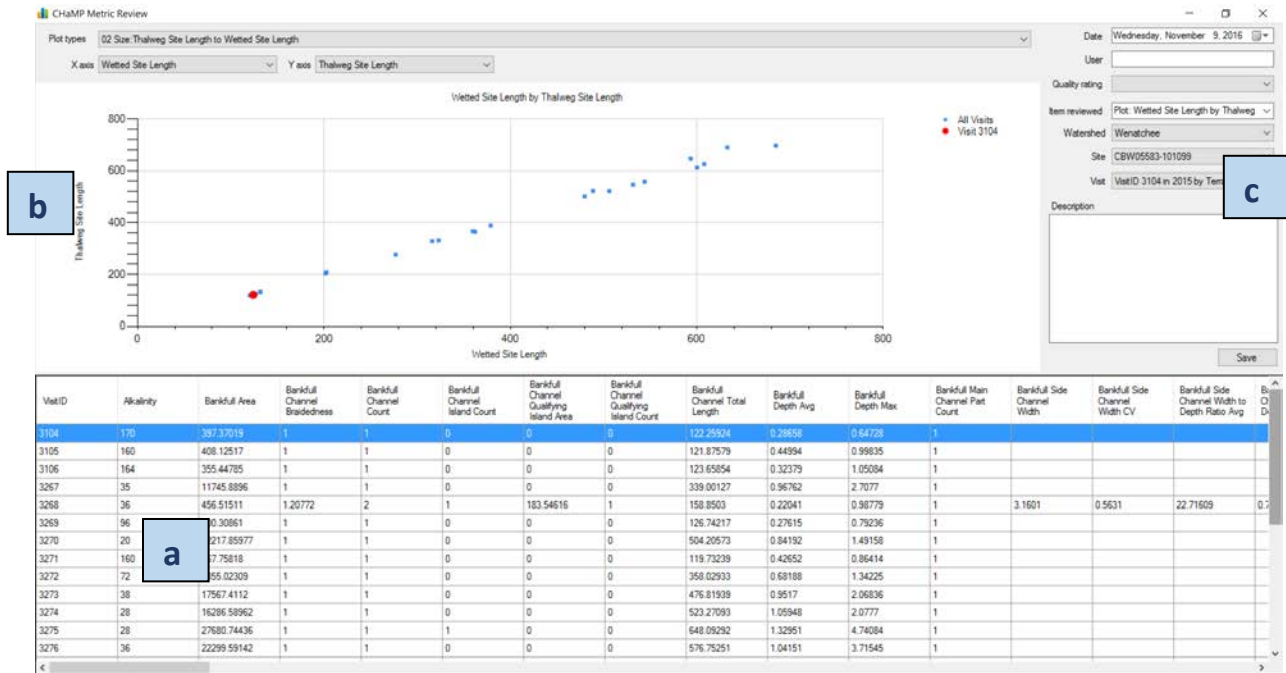
Step 5: Promoting Visits on champmonitoring.org

- a. If data collected for the visit was for an AEM-specific or AEM+CHaMP Protocol, the AEM QA Process and Protocol should be completed PRIOR to promoting a visit.
- b. From the Metric tab on the Site Details page, click “Promote Data”
- c. From the Visit tab on the Watershed page, track progress using Visit Phase column.
- d. Promote all applicable visits within the watershed.
- e. Note: We will **not** be setting the QA rating of tables in champmonitoring.org this year. Relevant notes will be moved to the champmonitoring.org system as needed.

APPENDIX:

Introduction to the Metric Review Window

Before starting Metric QA, review the functionality of the Metric Review Window.



There are 3 panels to the Metric Review Window, the (a) Metric Grid, (b) Plot and (c) User Notes.

a) Metric Grid: This grid lists all program metrics from all metric engines.

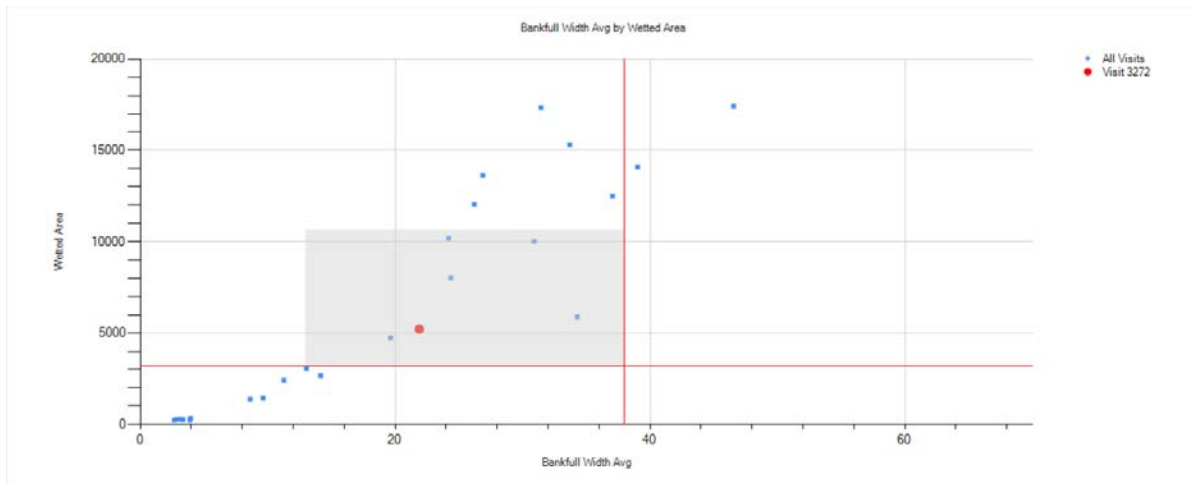
- The Visit selected in the grid will appear as a red dot on the graph.
- Metrics can be sorted by clicking on the metric name in the grid.

b) Metric Plots: The metric plot allows graphing of available metrics in the database.

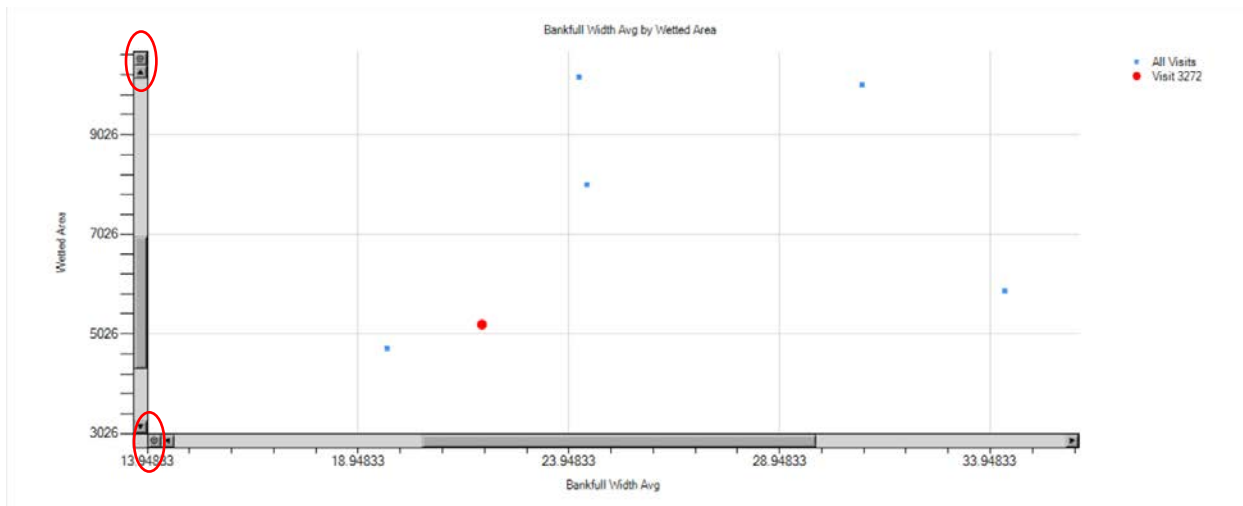
- 01 Size: Wetted Site Length to Bankfull Site Length
- 02 Size: Thalweg Site Length to Wetted Site Length
- 03 Size: Wetted Site Length to Wetted Channel Total Length
- 04 Size: Bankfull Area to Wetted Site Length
- 05 Size: Wetted Area to Bankfull Area
- 06 Size: Bankfull Width Avg to Wetted Area
- 07 Size: Wetted Area to Wetted Volume
- 08 Size: Wetted Volume to Bankfull Volume
- 09 Widths: Integrated Wetted Width to Wetted Site Length
- 10 Widths: Average Wetted Width to Integrated Wetted Width
- 11 Widths: Bankfull Width to Integrated Wetted Width
- 12 Widths: Average Bankfull Width to Integrated Bankfull Width
- 13 Shape: Wetted Width to Average Depth Ratio to Gradient
- 14 Shape: Bankfull Width Avg to Bankfull Width to Max Depth Ratio Avg
- 15 Shape: Gradient to Thalweg Depth Avg
- 16 Shape: Gradient to Sinuosity
- 17 Shape: Bankfull Width to Average Depth Ratio to Gradient
- 18 Shape: Detrended Elevation SD to Gradient
- 19 Shape: Gradient to Wetted Depth SD
- 20 Character: Bankfull Width Average to Discharge
- 21 Character: Conductivity to Alkalinity
- 22 Character: Discharge to Drift Biomass
- 30 Fish Cover: Wetted Area to Fish Cover: Total
- 31 Large Wood: Wetted Width Integrated to Large Wood Frequency Wetted
- 32 Large Wood: Large Wood Frequency Wetted to Large Wood Frequency Bankfull
- 33 Banks: Wetted Area to Percent Undercut By Length
- 34 Riparian: Riparian Cover: No Canopy to Solar Access Summer Avg
- 40 Substrate: Substrate Est: Cobbles to Substrate Est: Coarse and Fine Gravel
- 41 Substrate: Substrate Est: Coarse and Fine Gravel to Substrate Est: Sand and Fines
- 42 Substrate: Substrate Est: Sand and Fines to Substrate: Embeddedness Avg

- The Plot Type dropdown includes a list of preset metric graphs (44 plots). The down arrow can be used to scroll through these without using the dropdown.
- The X axis and Y axis dropdowns can be adjusted for free-form graphing of any metric.

A square can be dragged and dropped over the graph to zoom in.



The small bullseye dot on each axis will zoom out (circled in red).



- c) User Notes. The workbench allows entry of notes and assignment of a data quality rating of a plot. These notes are NOT currently compiled into champpmonitoring.org but might be in the future.

Notes are entered by filling in a “User”, “Quality rating”, and a “Description”. Notes may be specific to a Visit, Site, or Watershed.

Pass: Data are within expectation for the plot/watershed/site or visit.

Does not Pass: Data are not within expectation for the plot/watershed/site or visit.

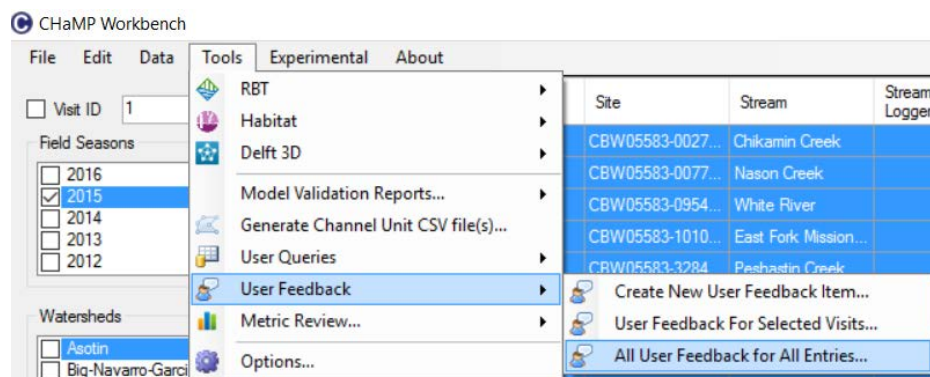
Suspect: Data are not within expectation for the plot/watershed/site or visit but there is no known reason why data do not meet expectations.

Not Assessed: Plot not assessed.

Data Not Available: Data not available.

If a note specific to a site or visit was made and you need to ‘clear’ these values from the notes window, switch the dropdown of Watershed to a watershed that’s not your own and then switch back to the watershed of interest.

To review previously entered feedback, go to the Tools menu and select User Feedback/All User Feedback for All Entries.



Updating Measurement Values on champmonitoring.org.

- 2) In the new browser tab, review the measurements that participate in the derive metric value (see section 10 for description of mapping between measurements and metrics)

The screenshot shows the 'Measurements' section of the website. At the top, there are tabs for 'Overview', 'Visits', 'Measurements', 'Metrics', and 'Tags'. Below these are sub-tabs for 'Auxiliary Data', 'Site Photos', 'Topographic Data', 'Solar Input', 'Air Temp', 'Stream Temp', and 'QA Status'. A dropdown menu labeled 'Measurement Type' is set to 'Discharge' and is highlighted with a red box. Below the dropdown are tabs for 'Grid', 'Graph', and 'QA Notes'. The main content area displays a table of 17 discharge records with columns for Measurement #, Cross Section ID, Station Width, Tape Distance, Depth, Velocity, Station Discharge, and Data Update Notes. A 'Save Changes' button is visible at the bottom right of the table area.

- 3) Update any spurious measurements. If the measurement data is correct, leave data alone. If the anomaly is prominent, it is worthwhile making a note of it in the QA Status notes OR in the Data Update Notes column of the Measurement table.

This screenshot is identical to the one above, showing the same table of 17 discharge records. The 'Save Changes' button at the bottom right of the table is highlighted with a red box, indicating the final step in updating the measurements.

- 4) Be sure to **Save Changes** before moving to a different table or leaving the page.

