

LIMS Data Merge Tool (DMT) User Guide

The Data Merge Tool (DMT) was developed by the FDEP Laboratories to facilitate the integration of data generated or procured by the Central Laboratory with associated field measurements and create a file that can be imported to the Watershed Information Network (WIN). It is a function of the Laboratory Information Management System (LIMS) Browser, a module used to retrieve and export laboratory data. This user guide is not intended to be a tutorial for the LIMS Browser, however, the Laboratory has published an SOP (LB-005) for that purpose.

Steps for Using the DMT

1. Identify the LIMS sampling event of interest using the LIMS Browser. From the form displaying

The screenshot shows the LIMS Browser interface. At the top, there is a menu bar with buttons: Search, View QC, Report/File, Data Merge Tool (highlighted with a red circle), Assessment Workspace, and Exit. Below the menu bar, the main content area displays event information for 'Event: WQAP-2017-09-06-02 with Status: A'. It includes details like 'Reports Certified: Chemistry, Biology', 'Algal Bloom Response', 'Request ID: RQ-2017-09-04-43', 'Customer: WQAP', 'Project: BLOOM-RESP', and 'PMAS:'. A tree view on the left shows a hierarchy of events, with 'Event: WQAP-2017-09-06-02' selected. To the right, a table lists jobs with columns: Job ID, Status, Description, and Group. The jobs listed are 'TLH-2017-09-06-14' (Status: A, Description: Algal Bloom Response, Group: BIOLOGY) and 'TLH-2017-09-06-15' (Status: A, Description: Algal Bloom Response, Group: CHEMISTRY).

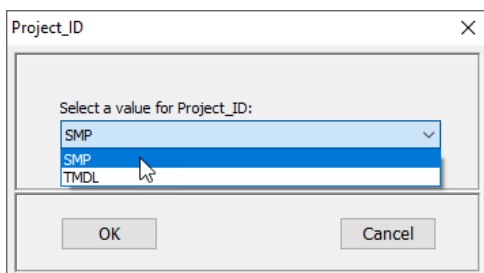
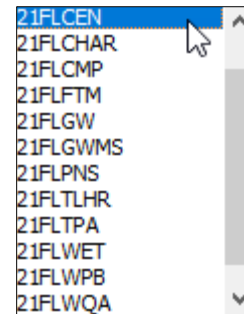
the search results, select the event and click on the *Data Merge Tool* button in the header section. If this button is not visible, contact the Lab to request access to this LIMS Browser function.

2. The DMT interface will display information that was entered into the LIMS from the sample submittal form when the event was logged in. Each row in the upper grid corresponds to a LIMS Field ID. The LIMS project is listed in the grid as well, along with the collection date/time and the sample depth. Click on any row in the upper grid to display the field measurements that

The screenshot shows the DMT interface. At the top, there is a header bar with fields for 'Org. ID: 21FLCEN', 'Sampling Agency', and buttons for 'Select All', 'Range Check Field Params', 'Print', 'Save To File', and 'Memorize Column Width'. Below the header bar, the main content area displays event information for 'Event ID: CEN-DIST-2017-08-16-02' and 'Field ID: G1CE0067'. A table lists field measurements with columns: Link..., Sample_Field_ID, Project_ID, Station_ID, Collection_Date, Sample_Depth, Total_Depth, Depth_Units, Rainfall..., Representa..., Field Blank..., Equipm..., Trip Bla..., Date_L..., and Last_M... The table contains three rows of data. Below the table, a detailed view of a specific field measurement is shown, with columns: Link_int..., Depth, Component_Name, Result, Qualifier, Units, Date_Last_Modified, Last_Modified_By, and Field_Comment. The detailed view shows measurements for 'Dissolved oxygen (DO)', 'Dissolved Oxygen Saturation', 'pH', 'Salinity', 'Secchi disk depth', 'Specific conductance', 'Temperature, water', 'Depth', and 'Dissolved oxygen (DO)'. At the bottom, there are buttons for 'Add Param', 'Remove Param', 'Apply Updates', 'Generate WIN', and 'Close'.

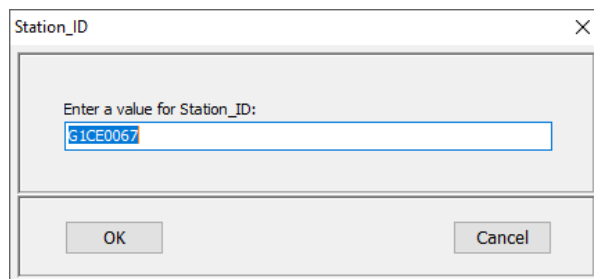
were included on the submittal form in the lower grid.

3. The WIN-EDD generator uses the WIN OrgID to filter certain choice lists. Select the appropriate value from the pull-down menu in the upper left corner of the form. The OrgIDs are associated with the User ID, so if the one you need to select is not on the list, contact the Lab.
4. If the LIMS project does not match a WIN standard value, it must be



changed before the file is generated. Click the *Select All* button to highlight each of the Field ID rowss, and then click the Project_ID column header. A form will be displayed with a pull-down menu of projects associated with the OrgID. If no projects appear in the menu, make sure an OrgID has been selected. If the project needed for WIN upload is not present, contact the Lab to request that it be added to the LIMS.

5. If WIN Station IDs were provided on the sample submittal form, they are also displayed in the upper grid. Review them to make sure they were correctly entered. To add a new value or edit an existing one, highlight the row and click on the Station ID column header and enter the correct value in the edit box. You may also double-click the cell with the incorrect value to bring up the edit box.



6. There are several items that can be added or edited in the upper grid. This is accomplished by clicking on the row(s) to be changed and then the relevant column header. These include:
 - a. Field ID – these may be edited in the DMT (up to 22 characters) for storage in a table outside of the LIMS proper. That means that any changes you make in the DMT will not be reflected in any other part of the LIMS. Also, the WIN EDD generator uses the Field ID to construct an Activity ID which appends the sample date. If the date sampled was part of the Field ID submitted to the Central Laboratory, you can delete it here to reduce redundancy.
 - b. Sample Depth – this is the value logged in with the event. If it was entered or submitted incorrectly, edit it here.
 - c. Total Depth – this replaces the 'Depth, Bottom' element that was formerly entered in the lower grid. If you are working with a dataset with field parameters entered with the former interface, add it here and remove it from the lower grid.

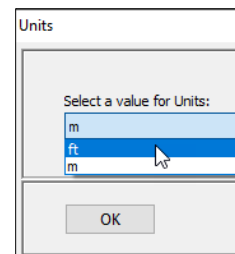
- d. Rainfall Indicator – You may enter or remove an ‘R’ to indicate a significant rainfall event occurred within the 48 hours prior to sampling. Addition of this element will add a qualifier to all associated lab and field results.
 - e. Representative Indicator – indicator that site conditions were typical.
 - f. Field, Equipment and Trip Blank Batch IDs – enter where appropriate according to syntax guidance provided by the Water Quality Assessment Program.
7. The field measurements listed in the lower grid represent those currently stored in the Labs LIMS. Any that were incorrectly entered at login may be edited by double-clicking the appropriate cell in the result column and typing in the correct value. This will not alter the value stored in the LIMS; the new value will be saved to a different table and propagated through to the WIN EDD.

8. Additional field parameters may be added to any or all of the Field IDs. To add a field parameter to multiple rows, click on the *Select All* button (ctrl-click to de-select) and then *Add Parm* button. A form will display to allow selection of one or more field parameters. Ctrl-click to select multiple parameters and then click *OK*. These additional field parameters will be associated with the sample depth included on the sample submittal form (Depth 1).

9. The new parameter is inserted into the lower grid. Double-click in the result cell to enter a value.

Link_int...	Depth	Component_Name	Result	Qualifier	Units
1	1	Dissolved oxygen (DO)	8.4		mg/l
1	1	Dissolved Oxygen Saturation	116		%
1	1	pH	8.6		None
1	1	Salinity	0.1		ppth
1	1	Secchi disk depth	1.6		m
1	1	Specific conductance	211		umho/cm
1	1	Stream width measure			m
1	1	Temperature, water	32.2		deg C
1	2	Depth	3.4		m
1	2	Dissolved oxygen (DO)	8.1		mg/l

10. A column has been included in the lower grid to enter qualifiers for the field measurements. To add a qualifier, highlight the appropriate row and click on the Qualifier column header to display the form for data entry. Note that if the 'I' qualifier is added, a field comment is required.
11. The DMT stores a default value for units for each field parameter, but in a few cases there is an alternative unit. To edit the unit, select the field parameter row and click on the Units column header to display the choice list.
12. To add parameters to an existing depth, click the pull-down menu at the top of the form and select the appropriate depth

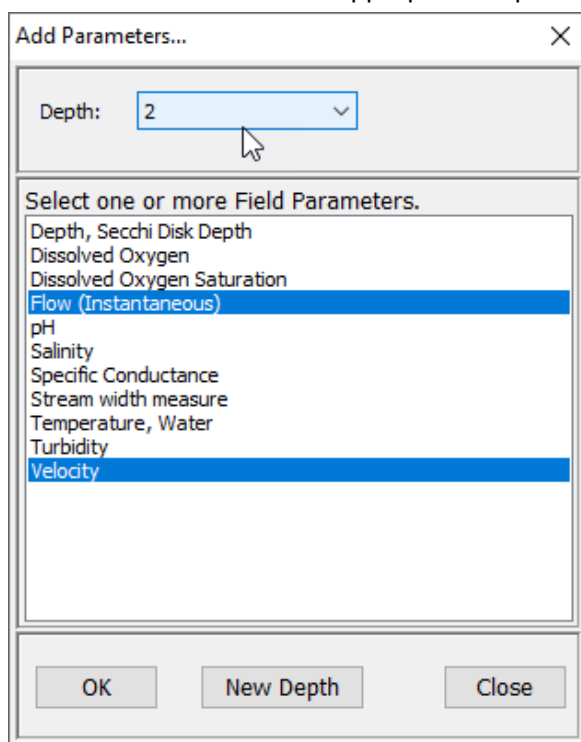


Units

Select a value for Units:

- m
- ft
- m

OK



Add Parameters...

Depth: 2

Select one or more Field Parameters.

- Depth, Secchi Disk Depth
- Dissolved Oxygen
- Dissolved Oxygen Saturation
- Flow (Instantaneous)
- pH
- Salinity
- Specific Conductance
- Stream width measure
- Temperature, Water
- Turbidity
- Velocity

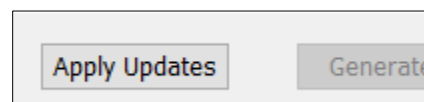
OK New Depth Close

Values for field parameters measured at multiple depths may be added using the DMT interface. First, select the all of the rows in the top grid that represent stations for which depth profile data is relevant. Then, click the *Add Parm* button. The *Add Parameters...* form will display, allowing selection of field parameters. After choosing the parameters to add, click on *New Depth* button.

Li...	Depth	Component_Name	Result	Qualifier	Units
1	2	Depth	3.4		m
1	2	Dissolved oxygen (DO)	8.1		mg/l
1	2	Dissolved Oxygen Saturation	108		%
1	2	pH	8.3		None
1	2	Salinity	0.1		ppth
1	2	Specific conductance	211		umho/cm
1	2	Temperature, water	31.4		deg C
1	3	Depth			
1	3	Flow (Instantaneous)			
1	3	Velocity			

The new list of field parameters is inserted at the bottom of the grid. Note that the *Depth* parameter is automatically inserted as well. Enter the relevant depth along with the rest of the field measurements, results and units (if the default unit needs to be changed). Continue this process until all of the depths for which field parameters were measured have been entered.

13. All of the changes made to values originally entered into the Labs LIMS, as well as the additional field measurements, are stored in oracle tables. To save these updated values, click on the *Apply Updates* button at the bottom of the form.



Apply Updates Generate

14. Before the WIN file can be generated, all of the field parameters and metadata must be entered, verified and saved and the Central Laboratory must have certified and reported the analytical

Browser

Search View QC Report/Files Data Merge Tool Assessment Workspace

Event: CEN-DIST-2017-08-16-02 with Status: A

Reports Certified: Chemistry, Biology

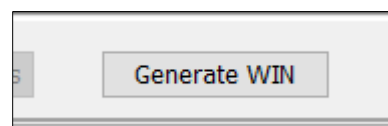
Request ID: RQ-2017-08-14-50 Customer: CEN-DIST Project: SMP

work. If samples from both laboratories were included in the event, both the Chemistry and Biology versions of the event must have been certified. This is easily determined by checking the header information on the form that displays following the initial

search. The 'Reports Certified:' area will indicate *Chemistry* and/or *Biology*, or *None*. The second item to check is the event status, indicated by the arrow in the above figure. The event must be status 'A', indicating all of the jobs associated with the event have been authorized.

15. To generate the results grid, click on the sites in the top grid that are to be included for entry to WIN. The program will include ONLY those data associated with the highlighted field locations in the file, so this is a critical step. Click the *Select All* button to highlight all of the rows and Ctrl-Click to deselect individual field locations.

16. The next step is to Click the *Generate* button at the bottom of the form. The resulting grid contains all of the metadata necessary for entry to WIN, as long as the standard values are in place for the relevant OrgID.



LIMS component names and methods have been translated to the WIN compliant names, as have expressions for units.

17. There are a few items that need to be added in the results grid, or they can be added once the EDD has been imported to WIN. **IT IS IMPORTANT TO REMEMBER** that the edits made to this grid are not stored in Oracle. That means that if additional changes need to be made to the first grid or the EDD needs to be regenerated, updates to the results grid will need to be done again.

Dataset attributes that can be added in the results grid include:

- Master Activity ID – In cases where a field replicate has been collected, the Activity ID of the site it must be associated with is entered in this grid. Select the result rows of the **Lab Results** of the replicate samples and click the Master Activity ID column

Master_Activity_ID

Select Master_Activity_ID:

FieldBlank-08/15/17-FB

G1CE0067_DUP-08/15/17

G1CE0067_DUP-08/15/17-FP1

G1CE0067_DUP-08/15/17-FP2

G1CE0067-08/15/17

G1CE0067-08/15/17-FP1

G1CE0067-08/15/17-FP2

G1CE0067-08/15/17-FP3

P330338-114-39-1921716-22-DUP

P330338-114-39-BLANK-16-MB

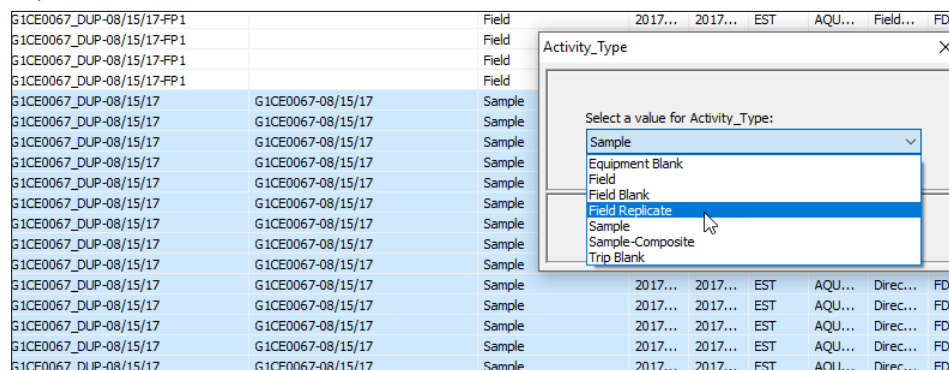
P330346-114-43-1921709-37-MS

P330346-114-43-1921709-38-MS2

P330346-114-43-1921709-38-MSRPD

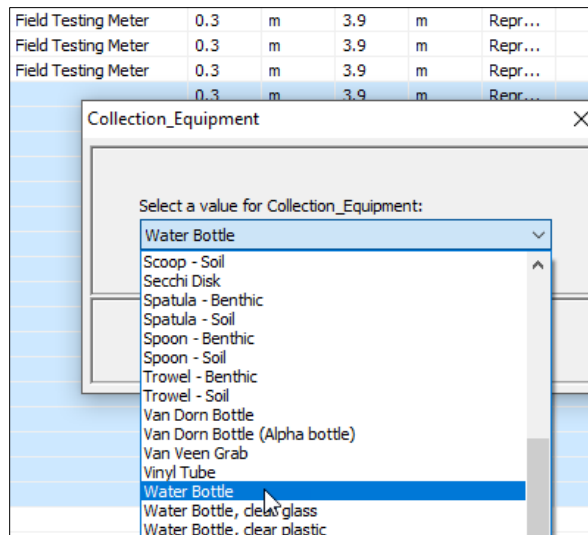
header. Shift-click to highlight a group of contiguous rows or Ctrl-Click to select or de-select individual rows. A pull-down menu will be presented with all the Activity IDs in the dataset (including QC – they all start with the letter 'P'). Select the appropriate Activity ID.

- b. Activity Type – The program translates the Activity Type from the LIMS matrix entered for the event at login. If it is not correct you may change it here. The only time that it must be changed is for those occasions where a field replicate has been collected. Highlight the result rows of the replicate sample (the same ones that were assigned a Master Activity ID) and click on the Activity Type column header and select *Field Replicate*.

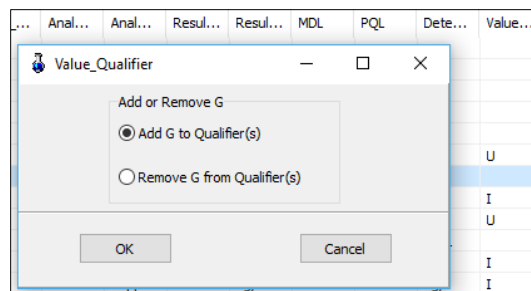


- c. Collection Equipment Name – This field must be populated for each of the lab and field parameter result rows, either in the DMT or in WIN. Highlight the rows to edit and select the appropriate collection equipment name. Note that this field is left blank for Field, Equipment and Trip Blanks.

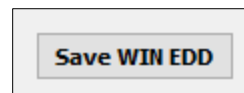
18. A few other fields in the results grid are editable. These include Sampler Name, Finfish Species, Finfish Size and Finfish Size Units. As in the example above, highlight the rows to be edited and click on the appropriate header to display the edit form.



19. The laboratory results qualifier field is editable, but only on a limited basis. Users may only add or remove a 'G' to the current list of qualifiers. As with the other editable fields, highlight the row(s) that need to be edited and click the column header.



20. When all of the field measurements and WIN metadata have been entered, verified and saved, the EDD can be generated. Click on the *Save WIN EDD* button at the bottom of the results grid. A dialog box will be displayed, allowing the user to select a directory for file storage. A default file name is provided, which represents the LIMS event and the file generation date (e.g., *CEN-DIST-2017-08-16-02_11-29-2017.txt*). This file name may be edited.



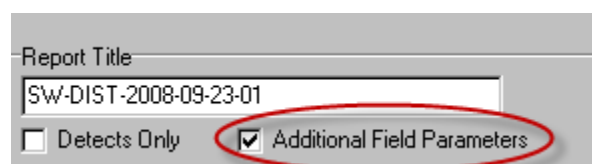
21. The file is now ready to be imported to WIN.

Data Retrieval and Reporting

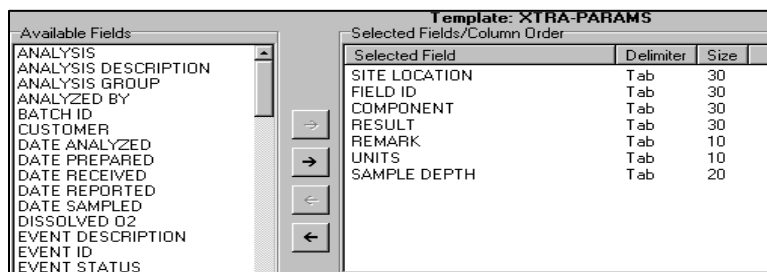
1. The LIMS Browser provides a means for generating reports or text files for events identified by the search criteria. From the form displaying the search results, click on the *Report/Files* button.



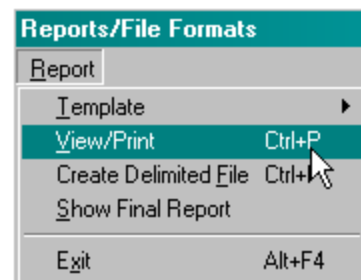
2. Identify the event(s) and jobs to be included in the report. If you have typed in results for field parameters other than those entered at login, check the *Additional Field Parameters* box to include them in the file or report.



3. Select items from the *Available Fields* to include in the file or report. If a template has been stored with a customized list of fields and delimiters, it can be retrieved for the report.



4. From the Report menu or the icon at the top of the form, select View/Print to generate a report that will display on the screen and be saved as a .PDF document. Choose Create Delimited File to generate a text file that can be opened in Excel or other applications.

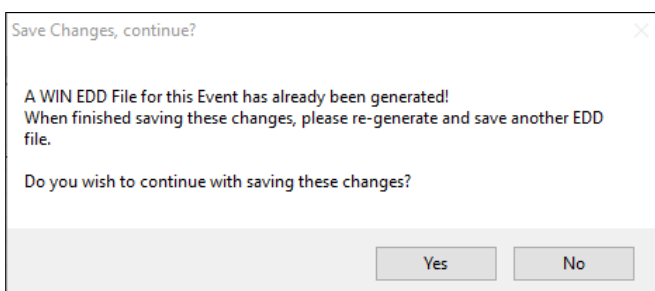


Important Notes

1. There is one field entered by the Labs login staff that may not be edited. The collection date/times represent the information provided on the sample submittal form and are used to calculate sample holding times. If errors in collection date/time are discovered, it is **essential** that the Central Laboratory be notified so the error can be corrected. If possible, the laboratory should be alerted before the final results are released.
2. Aside from adding a 'G' to the laboratory result qualifier (as described above) this field may not be edited in the DMT. If a qualifier-related error is encountered during the WIN validation process, notification of the Central Laboratory and your WIN Coordinator is critical to addressing it appropriately. The problem could either be on the laboratory side or with WIN. Do not ever edit the qualifier in WIN to make the error go away.
3. The Generate button will not be enabled unless the following conditions are met:
 - a. The event status must be 'A' (Authorized) and both the Biology and Chemistry versions of the event have been reported. Note that field parameters may be entered as soon as the events are logged in to the LIMS.
 - b. Results for field parameters and updates to other metadata must be saved to the oracle tables. This is accomplished by clicking on the Apply Updates button.

4. The DMT maintains an audit trail of certain actions:

Event ID: CEN-DIST-2008-10-31-01 Event Status: A Generated: 3/3/2009 4:28:17 PM By: LURDING_K					
Link...	Sample_Field_ID	Project_ID	Station_ID	Collection_Date	Sa...
1	26166	LVI		10/30/2008 10:00:00 AM	



saving edited data, generating the results and saving the results to a text file. The username and date/time appear in the upper and lower grids to indicate the last individual to edit a result. Once a WIN EDD has been generated, the username and date/time the file was created are displayed above the main grid. The next time a user edits a result and attempts to apply the updates, a

message will display an alert that a file has already been generated. This is useful to know, as it

may indicate the need to alter a result that has already been migrated to WIN.