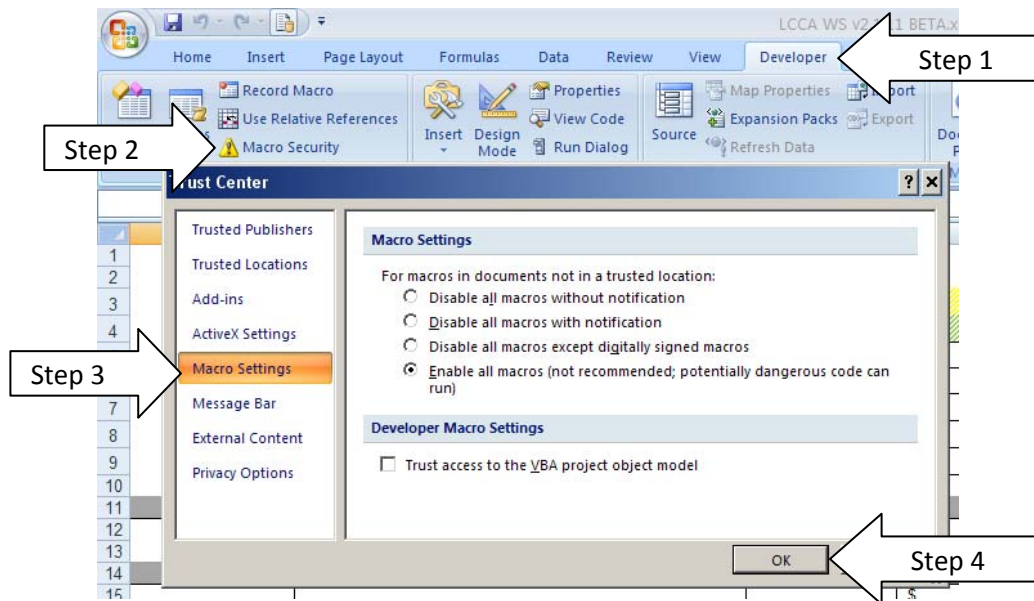Metropolitan Sewer District of Greater Cincinnati
Wastewater Engineering Division

LCCA WORKSHEET USER GUIDE v3.0

Contents

Enable Macros

Macros **must** be enabled prior to using the Life Cycle Cost Analysis Worksheets (LCCAW).

Step 1: In a new/blank Microsoft Excel file, click the developers tab above.

Step 2: Click "Macro Security" to open the Trust Center options.

Step 3: Click on Macro Setting on the left hand side of the Trust Center. "Enable all macros…" must be selected.

Step 4: Click OK.

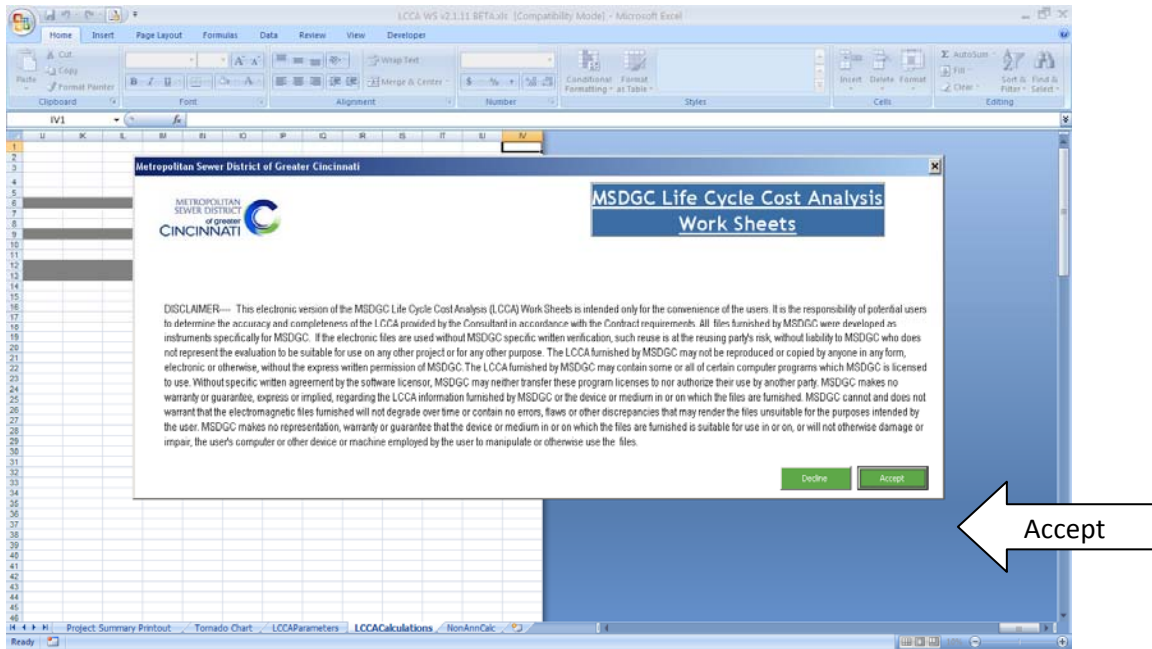## Opening the Document

Step 1: Open the Estimating Forms page on the MyMSD site at this address:
http://mymsd/PD/ProjectControls/Estimating/Estimating%20Forms/Forms/AllItems.aspx
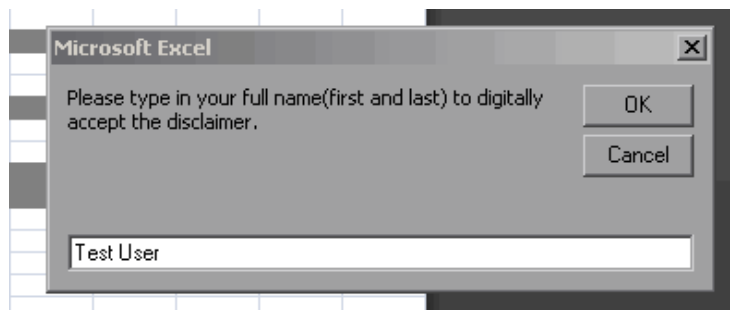

Step 2: Click the blue name "LCCA WS" to open the document in Excel.

LCCA Work Sheet Disclaimer

Upon opening the LCCA worksheet, a disclaimer will be displayed. If the disclaimer is not accepted the LCCAW cannot continue to be used and will close.

Digitally Signing the Disclaimer

Once the "Accept" button has been clicked a small window opens asking the user to input their full name in the text box. This is your digital signature accepting the terms of the disclaimer. If this is not completed the form cannot be used.

Project Information
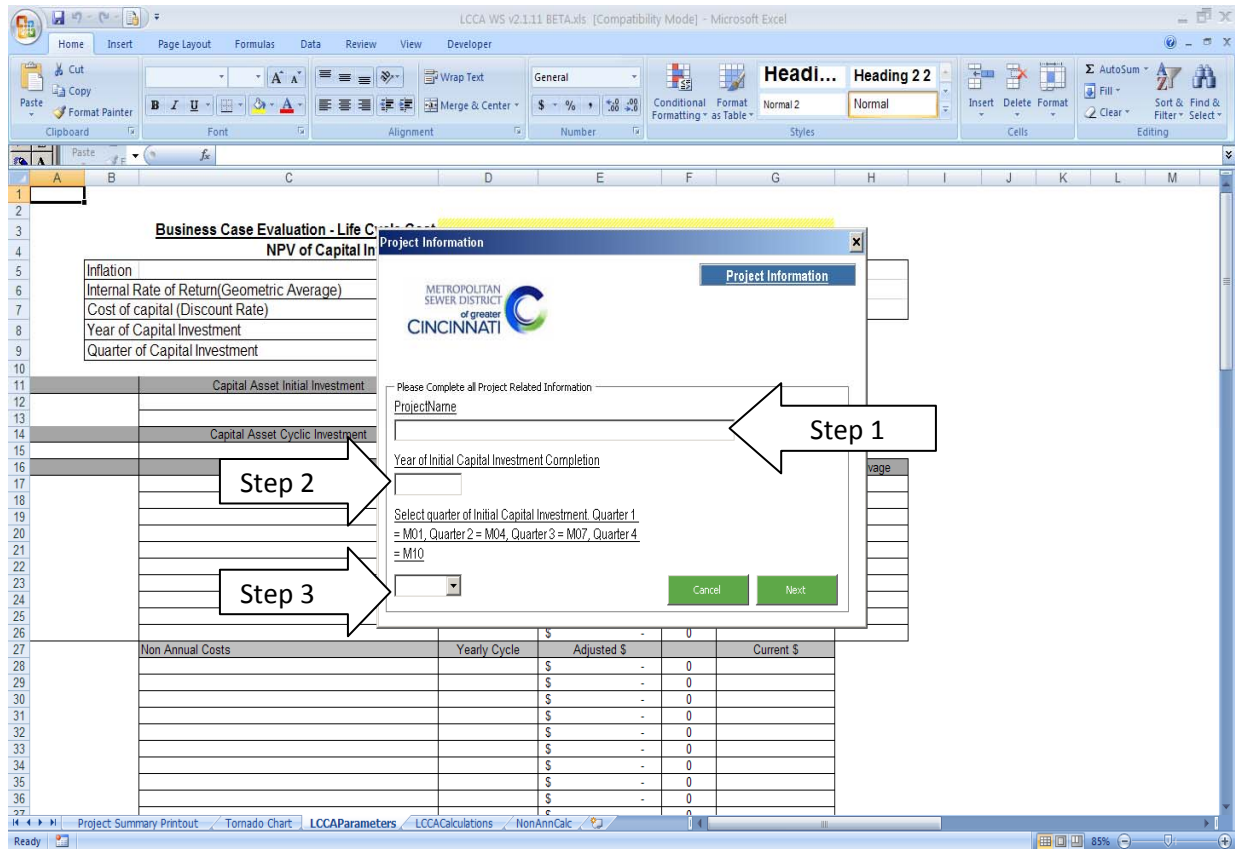
After the disclaimer acceptance process has been completed, the Project Information screen opens.

This is where the user inputs the project name, year of construction, and what quarter the construction takes place.

DO NOT CLICK "CANCEL"!!!!

If the user clicks the "Cancel" button you will compromise the integrity of the original template. Please follow through the steps until the file is saved under a new corresponding with the associated project.

Step 1: Enter the Project Name in the space provided.

Step 2: Enter the year (yyyy) that construction will be complete.

Step 3: Select the quarter in which the construction will be completed.

M01 = January through March

M04 = April through June

M07 = July through September

M10 = October through December

NOTE: DO NOT OFFSET THE QUARTER AS IF THE MSD ESCALATION TABLES ARE BEING USED. USE THE EXACT QUARTER OF THE INVESTMENT.

Step 4: When the form is complete click next to continue.

Saving the LCCA

After clicking the "Next" button the Project Information screen will close and the "Save As" screen will open. The name of the project from the Project Information Screen will automatically be inserted into the "File name:" line as shown below.
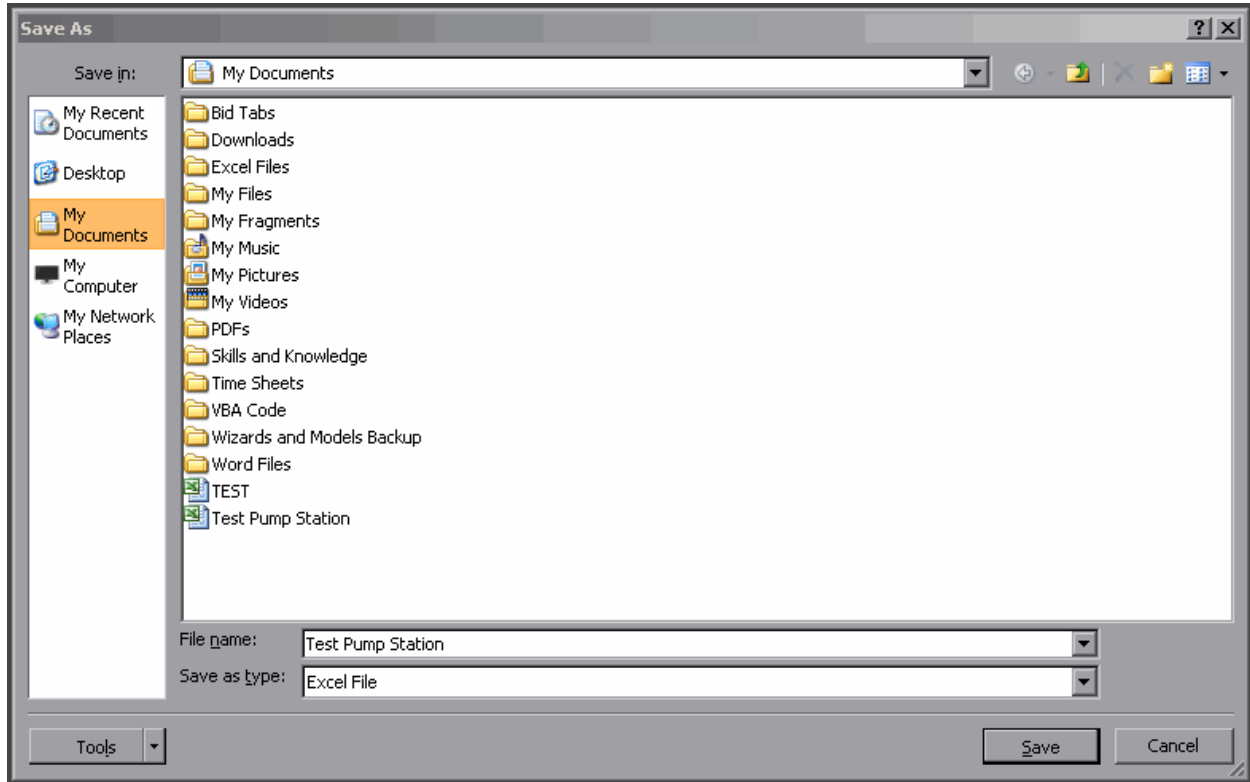
Choose the location where you would like to save the file and click "Save".

Note: You can change the file name if you would like before saving.

The LCCA Dashboard
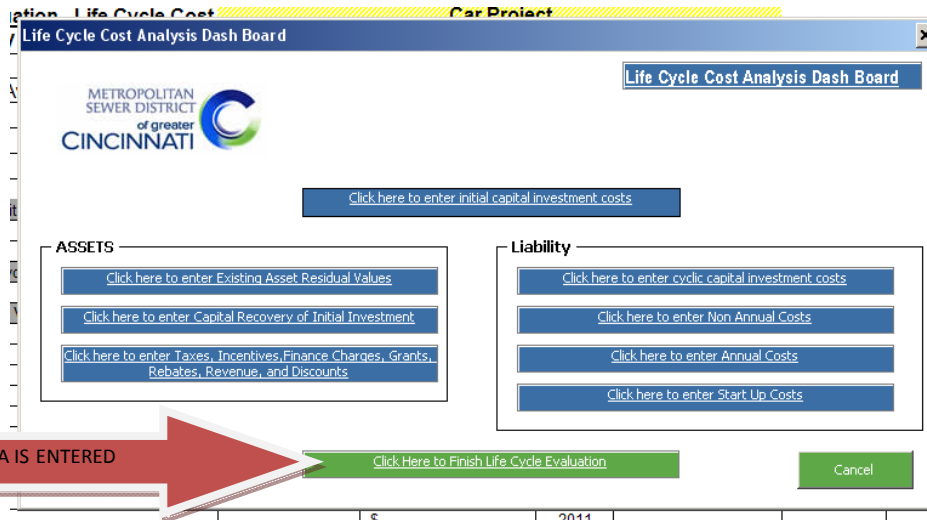
Above is the LCCA Dashboard. This screen is what is used to navigate through the LCCAW data entry user forms.

!!Cyclic Capital Investment input is used differently than the other data inputs. Please view the Cyclic Capital Investment section for more info before use!!

Do not click "Click Here to Finish…" until you are certain all data has been entered and you are ready to complete the analysis.

Entering Data

Initial Capital Investment
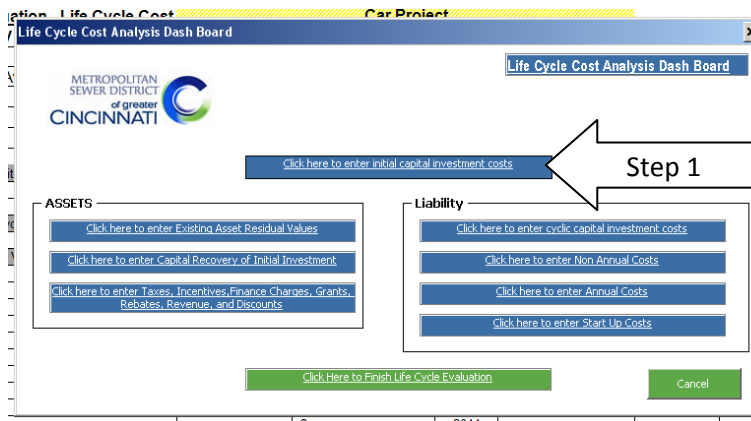
Step 1: From the Dashboard, click on the button that says "Click here to enter initial capital investment costs".

Step 2: "Initial Capital Investment" is already displayed in the description line. If you would like to change the description, click in the box and make the desired changes.

Step 3a: You will notice that the "Year of occurrence" box has a "1" displayed. This cannot be changed because the investment will always occur in year 1 of the analysis.

Step 3b: Enter the amount of the initial capital investment in the space provided. The amount entered should include construction costs and all soft costs for the project.

Step 4: When the Capital Investment Costs user form is complete click "OK" to continue.

Step 5: After submitted the form will reappear cleared of data. Click the "Dashboard" button to return to the Dashboard screen.

Annual Costs

Step 1: After clicking on the "Annual Costs" button on the Dashboard, enter a description of the annual cost.

Step 2a: The year of occurrence will always be 1 because the annual cost happens every year.

Step 2b: Enter the dollar amount of the annual cost in the space provided.

Step 3: When finished entering an annual cost click "OK" to continue.

Step 4: After clicking "OK" the Annual Cost screen will reappear cleared ready to enter more data. If you wish to enter another annual cost repeat steps 1 through 4 or click the "Dashboard" to return to the Dashboard. Only 10 annual costs can be entered into the evaluation so it is recommended that similar annual costs be combined.

Non Annual Costs

Step 1: After clicking on the "Non Annual Costs" button on the Dashboard, enter the description of the Non Annual Costs.

Step 2a: Enter the interval in which the non annual cost occurs.

Step 2b: Enter the cost in dollars.

Step 2c: Enter the year in which the investment is completed.

Step 3: When complete, click "OK" to continue. If you would like to enter another non annual cost do so now. When finished click "Dashboard" to return to the Dashboard and enter other data.

Note: A useful resource for this data is the MSD Useful Life of Capital Assets document found within the Financial Analysis Manual.

Cyclic Costs

Cyclic costs are used in LCCA evaluations when the evaluation period is longer than the life of the asset. An example of this is calculating a 50 year evaluation of a pump station. Pump stations have a 30 year useful life. In a default evaluation a cyclic cost would not be used because the evaluation period is only 25 years. Changing the evaluation period to 50 would constitute the need for a cyclic cost.

DO NOT USE CYCLIC COSTS UNLESS YOUR EVALUATION PERIOD IS LONGER THAN THE LIFE OF THE ASSET BEING EVALUATED.

Save Again!!

Before entering a Cyclic Cost, it **is a good time to save the file again**.

Note: Cyclic investment costs will be the same cost as your Initial Capital Investment.

Once all data on the input screen has been input, click the "OK" button to continue.

WARNING
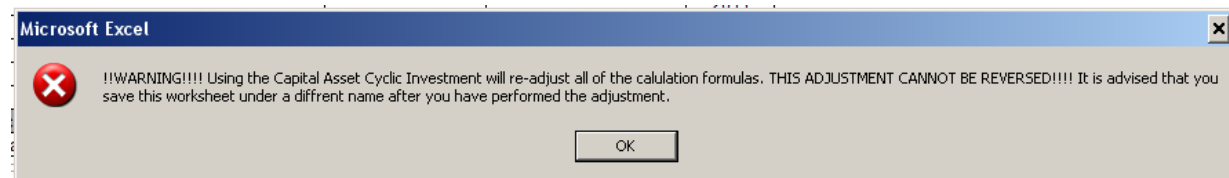
After clicking "OK", you will see a warning. Click "OK" to continue with the recalculations for the cyclic costs. You will notice on the warning screen that it advises you to save the worksheet as a different

name if you did not save it before you ran the Cyclic Cost. Again, if for some reason you have not saved the LCCA WS, **DO SO BEFORE YOU INPUT A CYCLIC COST**!!!

Once you click "OK" on the warning, a new window will appear that will show a recalculation process bar.

Finalizing the LCCAW

Now that we have finished the Cyclic Costs, the LCCAW needs to be finalized. The next steps allow you to finish this by inputting the longest useful life of the analysis and the evaluation period.

Step 1: Open the LCCA Dashboard.
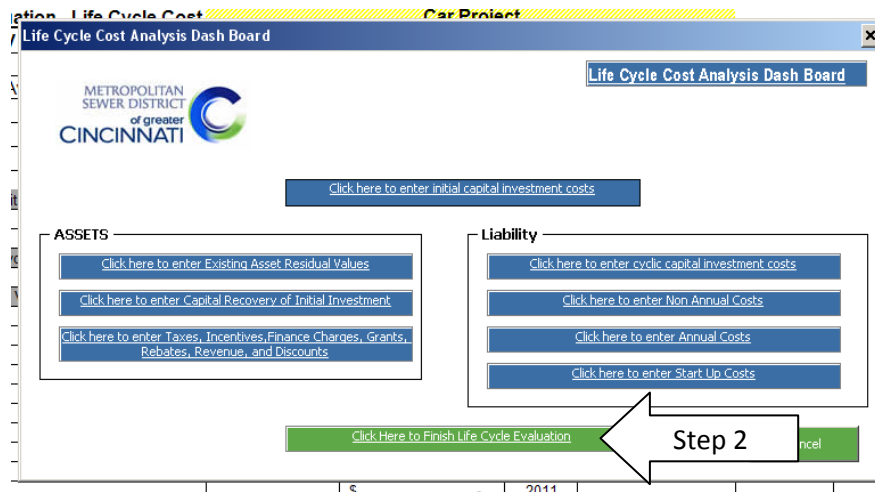
Step 2: Click "Click Here to Finish Life Cycle Evaluation" to begin finalizing.
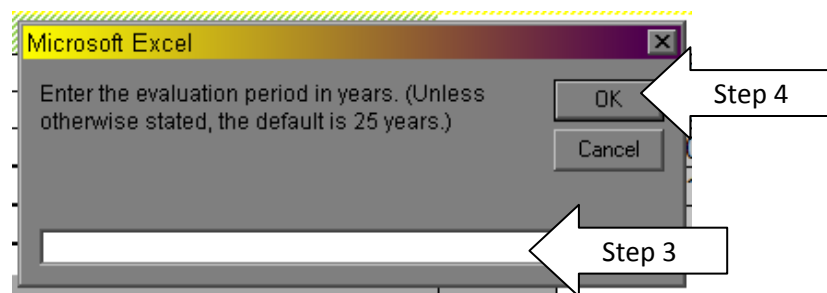
Step 3: Enter the evaluation period of the Analysis. The default evaluation period will be 25 years.

Step 4: Click "OK".
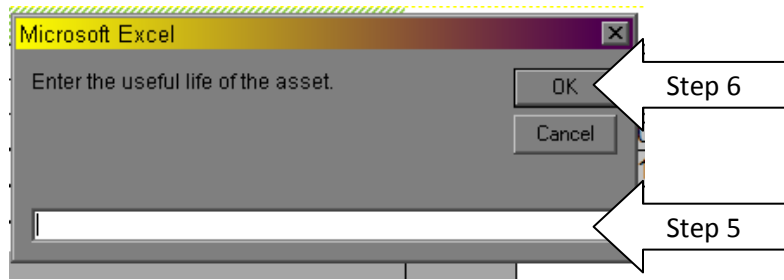
Step 5: Enter the useful life the asset being evaluated. For most assets, this can be found in the MSD Useful Life of Capital Assets data within the appendices of the MSD Financial Analysis Manual.

Step 6: Click "OK" when finished.

Reports

After finalizing the LCCA, the reports are ready for review.

At the bottom of the excel window is a series of tabs. The first two tabs are the reports that are generated from the input information.

Project Summary Report

Click on the "Project Summary Printout" tab.

Test Project			02/02/2012
Aggregated Cash Flow for Project			
Capital Investment Factor For Comparison			1.095535
Total Capital Expenditure	Modified NPV - Current Year	$	331,037.24
	Modified NPV - Construction Year	$	460,899.07
Initial Capital Investment	Initial Capital Investment - Current Year	$	233,428.77
	Initial Capital Investment - Construction Year	$	325,000.00
Project Cashflows			
Project Operating Costs			
Total Non Annual Costs		$9,238.89	
Total Annual Costs		$86,468.06	
Total Startup Costs		$0.00	
Total Project Operating Costs		$95,706.96	
Project Residuals - Not Used by MSD			
Total Existing Residuals		$0.00	
Total Capital Investment Residuals		$0.00	
Total Project Residuals	$	-	
Project Cyclic Costs			
Total Cyclic Costs		$0.00	
Total Project Cyclic Costs	$	-	
Project Taxes, Incentives,Finance Charges, Grants, Rebates, Revenue, and Discounts - Not Used by MSD			
Total Revenues		$0.00	
Total Project Revenues	$	-	
Financial Measures:			
Evaluation Period		25.0 yrs	
Quarter of Assessment		M04	
Useful life of the asset		50.0 yrs	
Cost of Capital (Discount Rate)		5.00%	
Project Internal Rate of Return		-100%	
Life Cycle Cost Analysis completed by:	Steven		
Approved by			

Clicking on the "Project Summary Printout" tab displays a project summary report that shows total dollar amounts for operating costs, residual costs(unused by MSD), cyclic costs and taxes, incentives, revenues and discounts but not all values are factored in to the final NPV calculation.

Using the Summary Report

The Project Summary Printout Displays the Modified Net Present Value for the project. The Modified NPV is based on the Capital Recovery method which is outlined in the Financial Analysis Manual. The Project Summary Printout also shows the Initial Capital Investment for the project. Both the Modified NPV and Initial Capital Investment are shown in current year dollars and construction year dollars.

These costs are used to compare one project alternate to another.

When the MSD Estimating group completes an alternative evaluation they will provide an extra sheet that looks similar to the one shown below.

Test Project
Alternatives Evaluation

02/02/2012

Alternative	Alternative Description	Initial Capital Investment (In Construction year dollars)	Modified Economic NPV (In Construction year dollars)	Initial Capital Investment (Current Year Dollars)	Modified Economic NPV (Current Year Dollars)
1	Test Project	$ 325,000	$ 460,899	$ 233,429	$ 331,037
1 TOTAL		$ 325,000	$ 460,899	$ 233,429	$ 331,037
2					
2 TOTAL					
3					
3 TOTAL					

Features excluded from current LCCA Worksheet

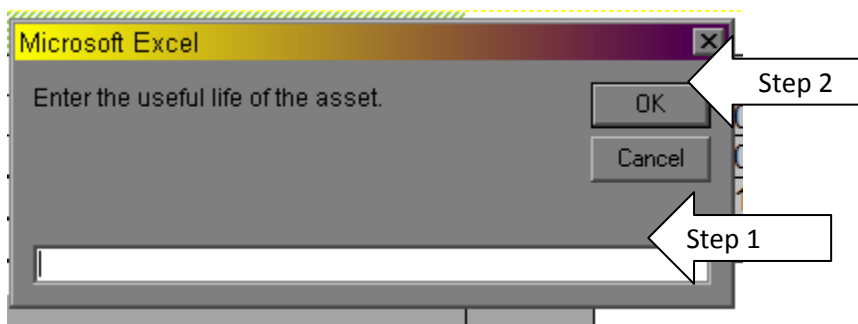The following features were built into the LCCA Worksheet but are not used by MSD at this time.

Tornado Chart

Click on the "Add-Ins" tab at the top of the screen.
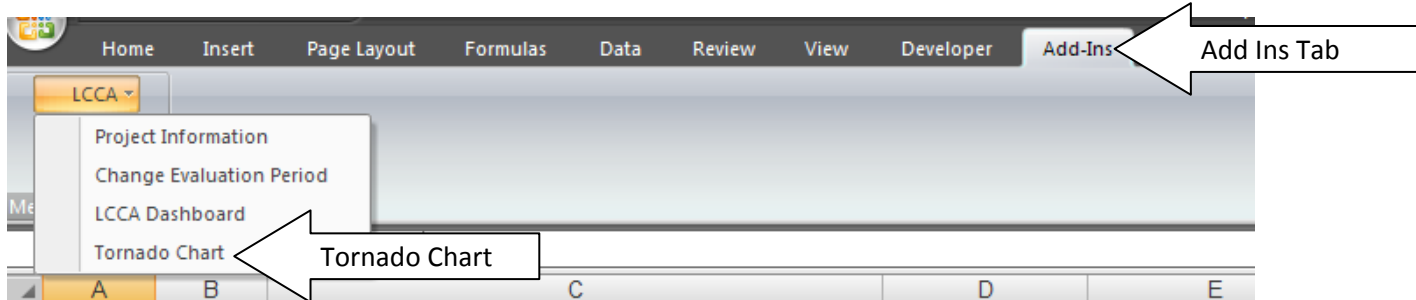
After clicking on the "Add-Ins" tab, click "Tornado Chart" from the drop down menu.

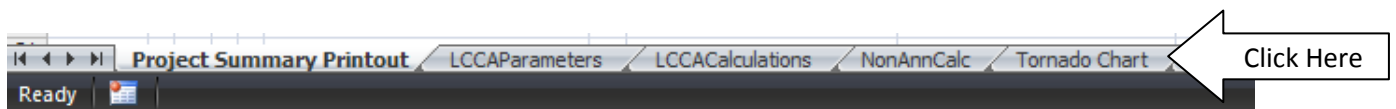You will see a pop up asking you to enter the asset's useful life.

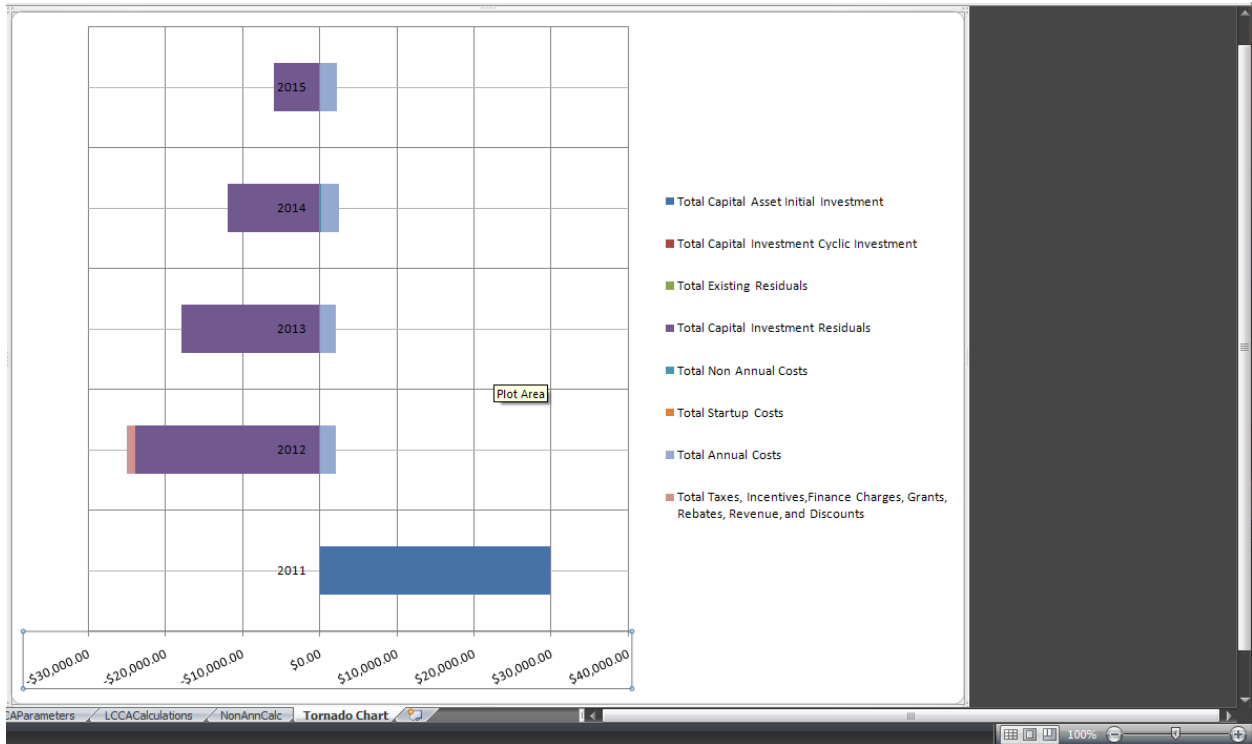Step 1: Enter the asset's useful life.

Step 2: Click "OK"

After you click "OK" you will see a new tab at the bottom of the Excel window that says "Tornado Chart".

Click on the Tornado Chart tab.

After you click the "Tornado Chart" tab, you will see a chart similar to this:

The above is the Tornado Chart. This is the graphical representation of the data that can be found on the "LCCACalculations" tab.

NOTE: The Tornado Chart is optional and is not required to complete the LCCA.

Assets

Existing Assets

Step 1: After clicking on the "Existing Assets Residual Values" button on the Dashboard, enter the description of an Existing Asset Residual Value.

Step 2a: Enter the life of the asset in years.

Step 2b: Enter the cost of the existing asset in current year dollars.

NOTE: Salvage Values of the asset will always be $0 and cannot be changed in the work sheet.

Step 2c: Enter the year in which the asset was initial complete.

Step 3: When finished, click "OK" and continue to the dashboard.

Capital Recovery of Initial Investment

Step 1: Click on the "Capital Recovery of Initial Investment" button on the Dashboard. The description for this entry will already be filled in for you. The description matches that of the Initial Capital Investment that was entered earlier.

Step 2a: Enter the life of the Initial Investment.

Step 2b: The dollar amount will also be carried over from the input of the Initial Capital Investment.

NOTE: Salvage Values will not be used for Initial Investments and cannot be modified from "0".

Step 2c: Enter the year of construction or placement of the initial investment.

Step 3: When finished click "OK" to continue. After clicking "OK", click "Dashboard" to return. Only one Capital Recovery of Initial Investment can be input per evaluation.

Revenue, Incentives, and Discounts

Step 1: Open the Revenue input window and enter a description of the revenue/incentive.

Step 2a: Enter the year of occurrence. If it is a one time revenue/incentive, enter "0".

Step 2b: Enter the amount of the revenue/incentive.

Step 3: When finished click "OK". Click "Dashboard" when finished entering revenues/incentives.