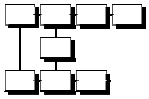
A Quick Introduction to

State-of-the-Art Software for the Design and Cost Estimation of Wastewater Treatment Plants



Hydromantis, Inc.
Consulting Engineers

Introducing CapdetWorks

Accurate and rapid preliminary design and cost estimating for wastewater treatment plant construction projects is a worldwide priority. Spreadsheet models are commonly used to provide planning or design level cost estimates, but these models are relatively inflexible and time consuming to modify.

CapdetWorks has been designed to give public and private planners, design consultants and construction companies the ability to quickly evaluate design alternatives. The software calculates the design of each unit process based on the influent to the process and then costs the design. This two-step approach gives the user the option to review the produced design and modify the design by using the design override features in the program, if necessary. Typical design defaults have been used for each unit process to increase the acceptability of the calculated designs and make the software easier to use for planners that require a planning-level cost estimates of a new facility or an upgrade to an existing facility.

Using CapdetWorks

This introduction is intended for first-time users of CapdetWorks and is meant to introduce the basic features of CapdetWorks. To best understand this material, you should have a background in the fundamentals of wastewater treatment including unit processes and typical wastewater treatment facility design criteria. It is assumed that you have a working knowledge of your computer's operating system and that CapdetWorks is properly installed on your computer.

Limitations of the Demo

When the software protection device is attached to the parallel port (or USB port if applicable) then CapdetWorks will detect its presence and operate in Full mode. Without the software protection device CapdetWorks works in Demo mode and has the following limitations:

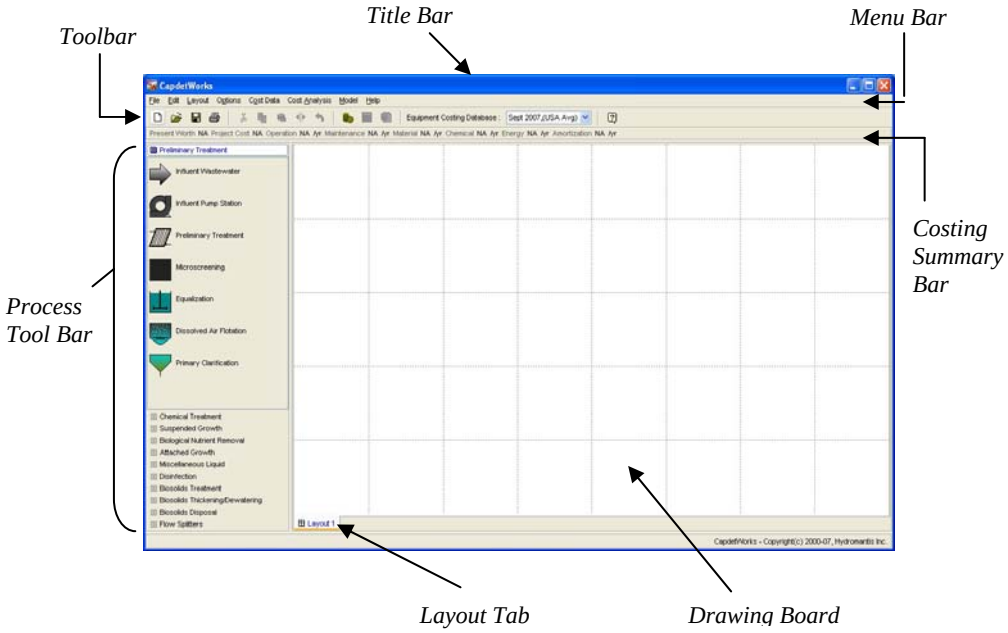
- No printing or export to files/spreadsheets.
- No saving of layouts.
- Influent settings are fixed.
- Limited number of process objects are draggable to the drawing board.

Getting Started

To start CapdetWorks: Click the 'Start' button, select 'All Programs', select the 'Hydromantis CapdetWorks 2.5' program group, and select CapdetWorks. Note that CapdetWorks will start in *demonstration mode* unless an appropriate hardlock protection device is plugged into your computer system.

When CapdetWorks is first launched, the user will see the Main Window. The Main Window consists of the following key components:

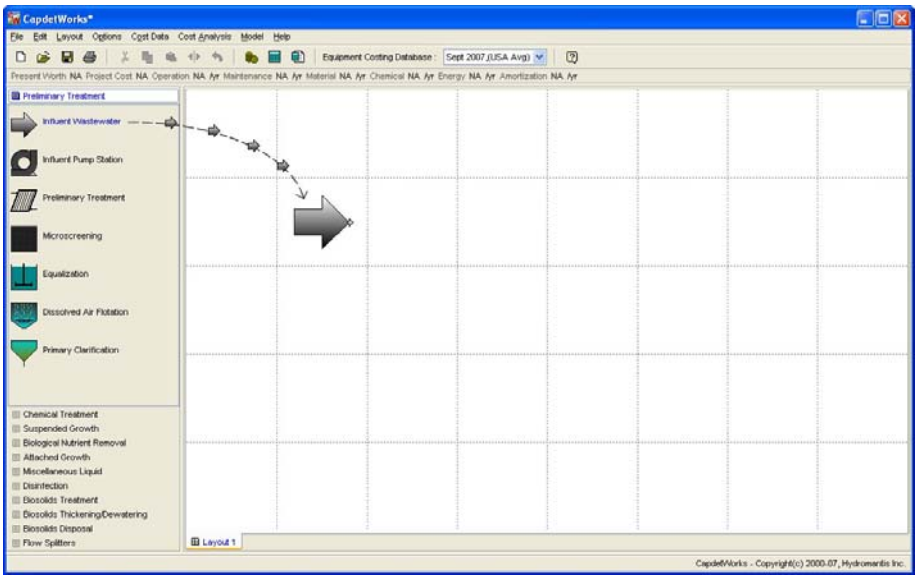
- Title Bar
- Menu Bar
- Toolbar
- Costing Summary Bar
- Process Tool Bar
- Drawing Board with Layout Tab(s)



CapdetWorks has many unique features that make it a powerful tool for the design and preliminary costing of wastewater treatment facilities. As you become acquainted with CapdetWorks, you will quickly see ways it can be used to make your engineering tasks more productive.

Placing Unit Processes on the Drawing Board

The drawing board forms the basis for the design of the system flow scheme. Unit process objects are dragged from the Process Tool Bar to the drawing board with the mouse.



Connect Unit Processes – Drawing the Flow Stream

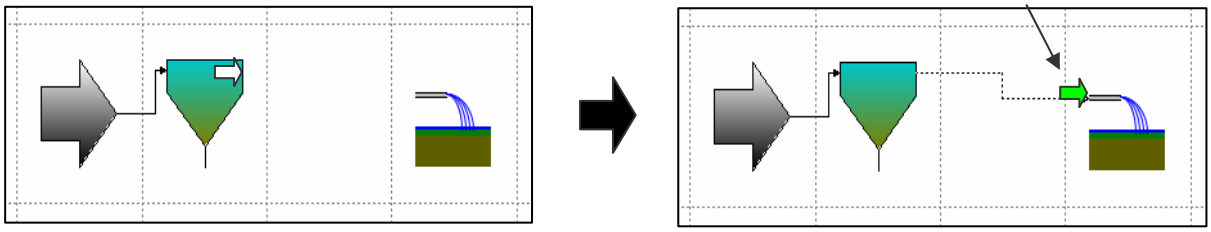
The objects are linked *via* virtual pipes to signal the flow of the liquid and/or solid streams. After the objects have been placed on the drawing board, they must be connected to define the flow stream.

To connect a flow stream between two unit processes:

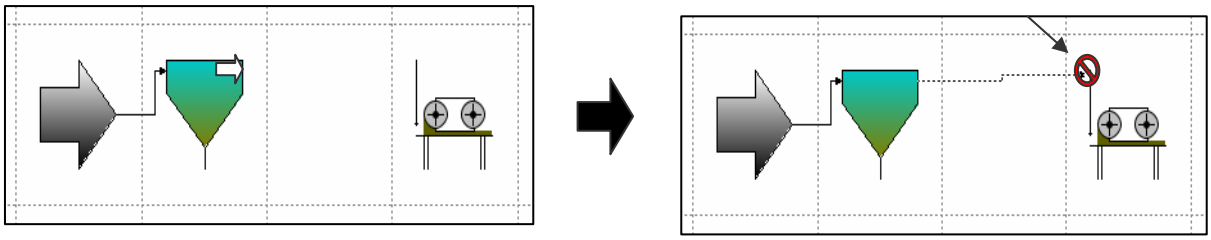
- Position the cursor over the effluent connection point of an upstream unit process. A successful positioning will result in a change in the cursor icon to a white block arrow (⇨).
- While holding down the left mouse button, drag the cursor to an influent connection point on a downstream object. Allowable connections are signified by a change in the block arrow from white to green (➡).

  If an unacceptable connection is attempted, the block arrow will change to a red circle with a line through it (⊘).

Acceptable Connection



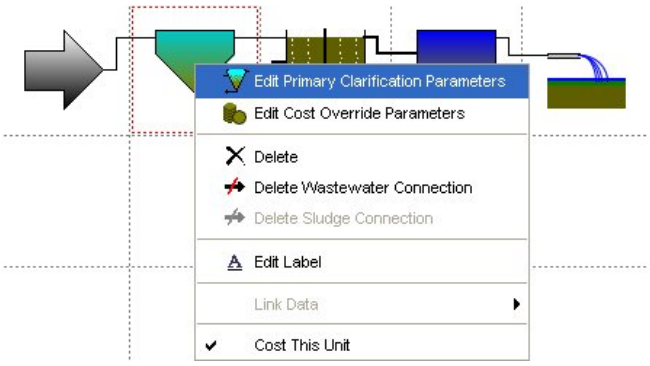
Unacceptable Connection

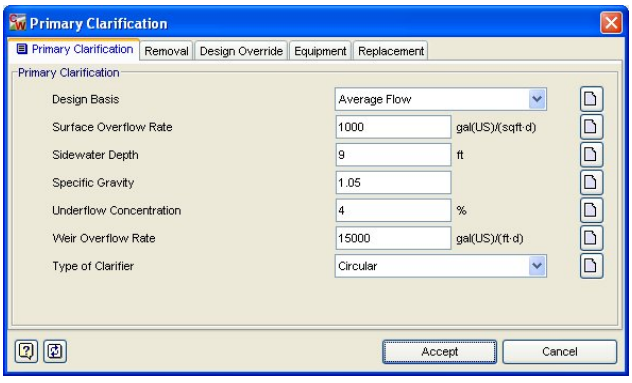


Edit Unit Process Parameters

To edit the process parameters used for a given unit process:

1. Access the unit process edit menu by right-clicking on it.
2. Select 'Edit <process name>' from the displayed menu. The unit process dialog will be displayed.





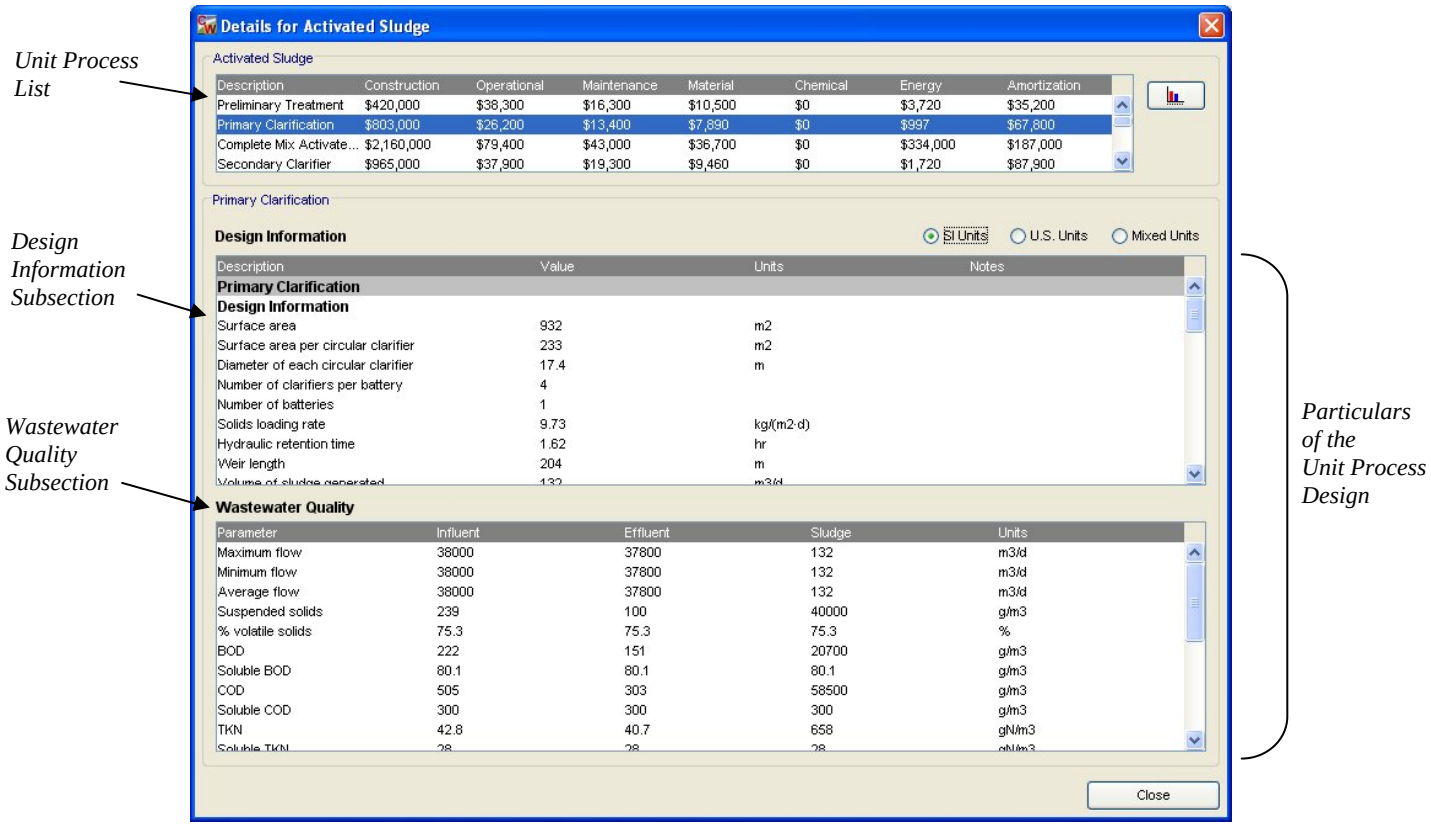
3. Using the tabs to navigate through the various variables, locate and change the variables of interest.
4. Click 'Accept' to save the changes, or 'Cancel' to discard any changes.

Cost Analysis

Once the flow schematic is drawn and the appropriate unit process and construction costs have been entered, a cost estimate for the layout can be determined by selecting the 'Estimate Cost of Current Layout' menu item in the Cost Analysis drop-down menu or by clicking on the shortcut button on the Toolbar. A summary of the cost estimate for the layout will be displayed on the Costing Summary Bar.

A more detailed breakdown of the estimated costs can be viewed by selecting the 'Details of Cost Estimate' menu item in the Cost Analysis drop-down menu or by clicking on the shortcut button on the Toolbar. These procedures bring up the cost details, which include a cost breakdown, design information and estimated wastewater quality data for each unit process.

The details of the cost estimate are the crucial part of the CapdetWorks design. It is important to realize how the costs are calculated and how they are grouped together.



More…

Tutorials covering customizing the Cost Information, comparing multiple layouts and performing sensitivity Analysis can be found in the CapdetWorks User's Guide provided on the CD. If you have any questions regarding the use of CapdetWorks, please contact us at:

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The CapdetWorks Demo is a free download from our website. Please check back regularly for the most recent version. Our website address is:

www.hydromantis.com

Printing Date: November, 2007

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