



PondsCreationTools – User Manual



Version 1.1

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1. Introduction

The hydraulic design of stormwater ponds is an iterative process that starts with the definition of an initial pond geometry and outlet orifices. The runoff hydrograph is routed through this initial configuration and if the discharge requirements are not met, the geometry of the pond must be adjusted.

The *PondsCreationTools* app accelerates the geometric design through the quick construction of a surface in AutoCAD® Civil 3D® that represents the stormwater pond. The app can be launched by clicking the corresponding button at the Add-ins tab, as shown in *Figure 1*, or by typing **pct** in the command line.

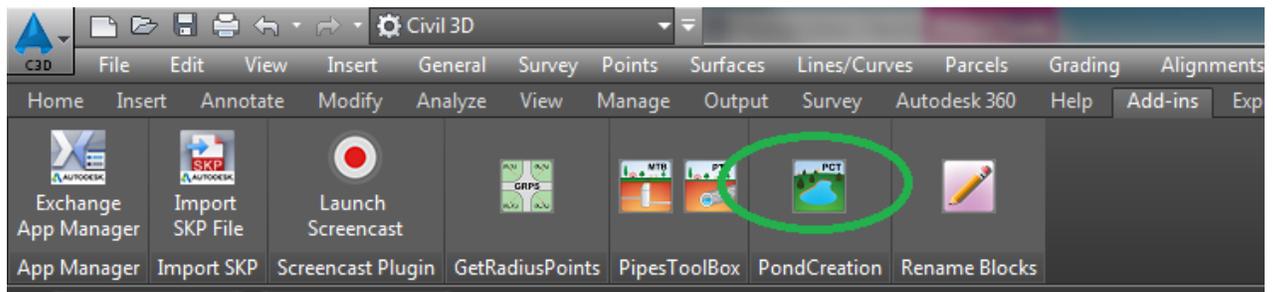


Figure 1

¹ Autodesk, AutoCAD and AutoCAD Civil 3D are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and other countries.



2. Program Validation

The first time the application is launched, the user will be asked to validate the license. As shown in *Figure 2*, the program will create a text file with a Request Code that must be sent to Vantec Solutions (support@vantecsolutions.com). Please also forward the confirmation email that you received either from our website or the Autodesk App Store with the order number.

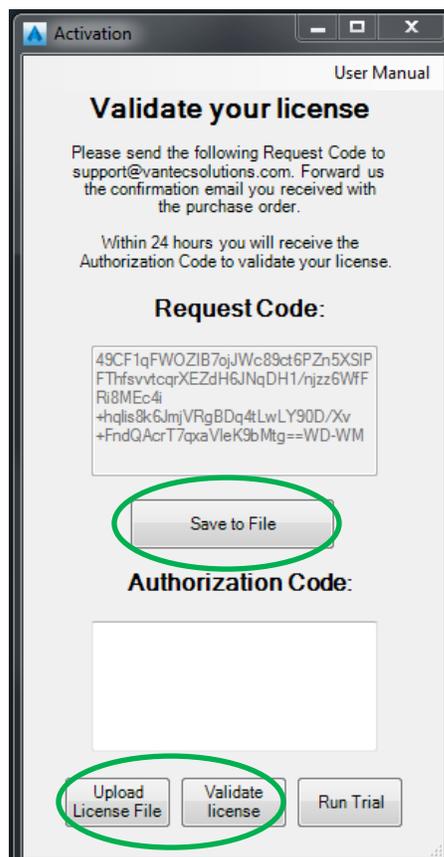


Figure 2



Within 24 hours we will send you back a text file with the Authorization Code. You must upload this file by clicking “Upload License File” and then “Validate License”. In the meantime, you can run the program in trial mode using the “Run Trial” button.

3. Main Interface

Figure 3 shows the main window of the program. This window gives access to the three main tools of the program: *Create Pond Surface*, *Get Pond Volume* and *Export Storage Curve*.



Figure 3

4. Create Pond Surface

Before running the program, the user must draw a polyline that represents the top (maximum water elevation) of the pond. Once this polyline has been



defined, the user must enter the geometric parameters of the pond through the window that is opened after pressing the *Create Pond Surface* button (shown in *Figure 4*).

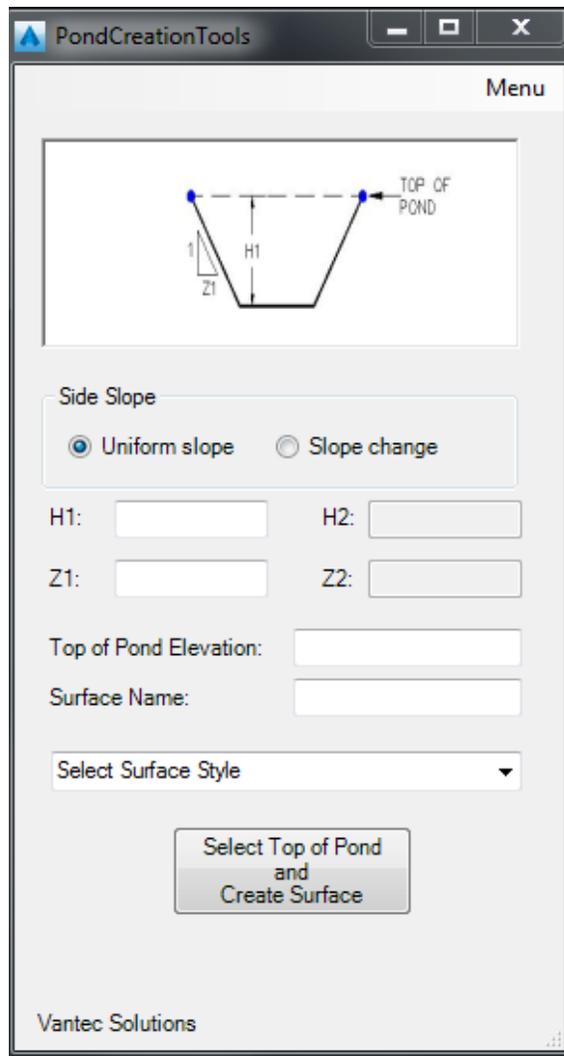


Figure 4



In this window, the user must indicate the depth of the pond (H_1), the side slope ($1:Z_1$), the top of pond elevation and the surface name and style. The user has the option of creating a pond with a side slope change, as shown in *Figure 5*. If this option is selected, H_2 and Z_2 must also be provided.

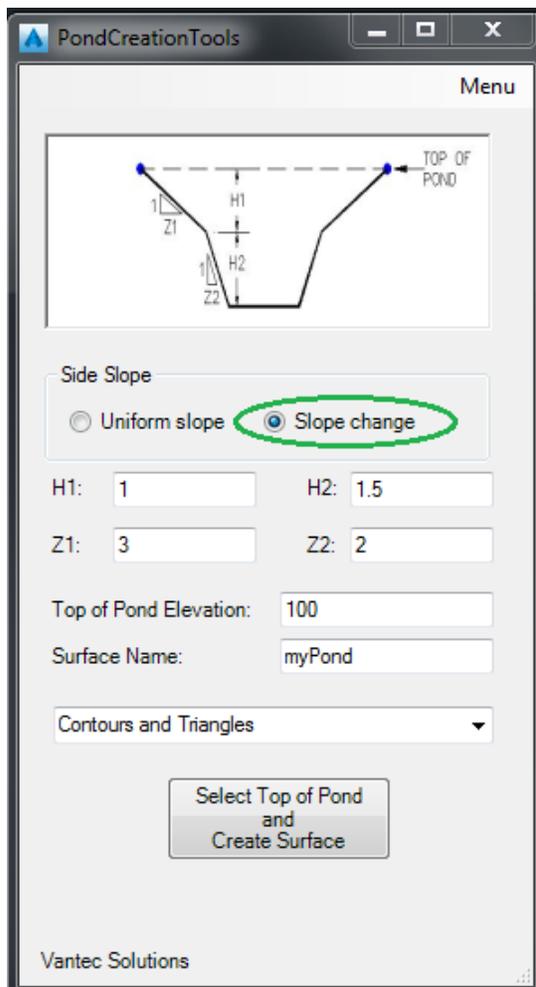




Figure 5

Next, the user must click the *Select Top of Pond and Create Surface* button, and select the polyline that was previously defined. The program will create the surface and show a message box with the maximum storage capacity of the pond. *Figure 6* shows an example of a surface created with the program using the polyline to the left and the geometric parameters shown in *Figure 5*.

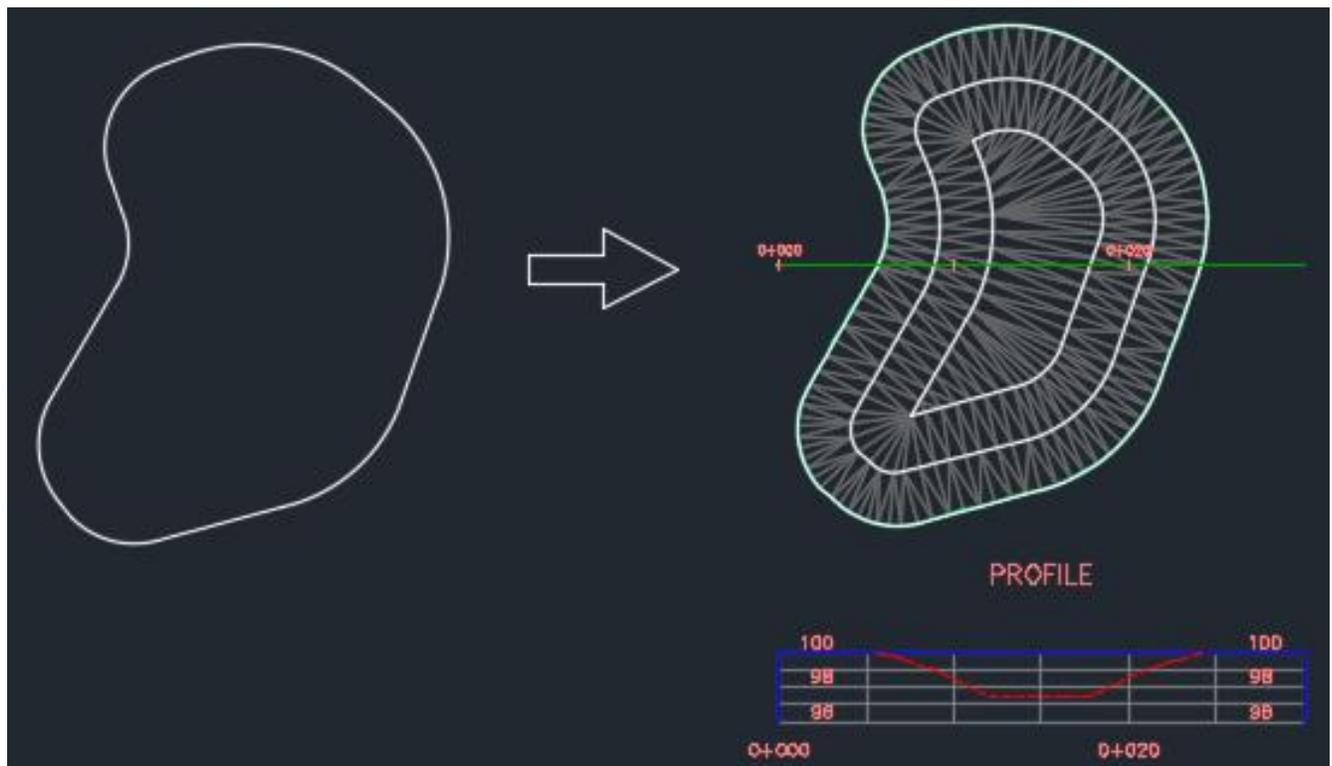


Figure 6



An example of the message box that is displayed with the maximum pond storage capacity is shown in *Figure 7*. An isometric view of the surface created is shown in *Figure 8*.

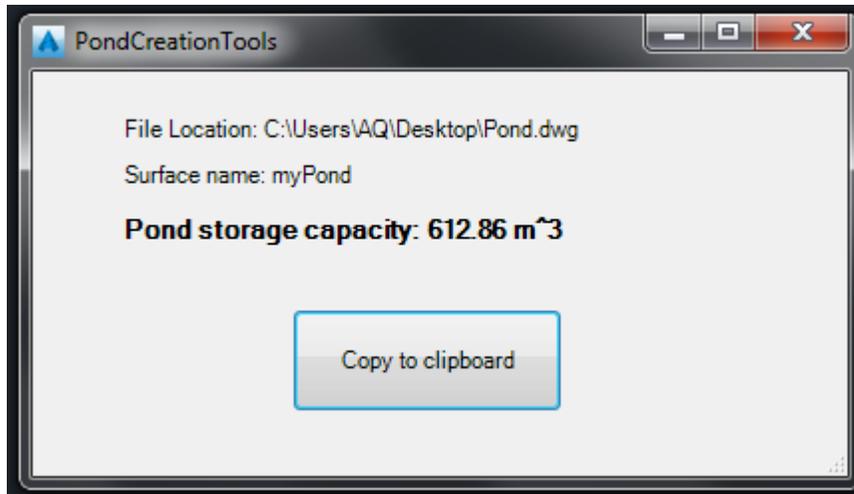


Figure 7

In some circumstances, the program may not be able to create the pond surface. See [section 7](#) for possible source of error.

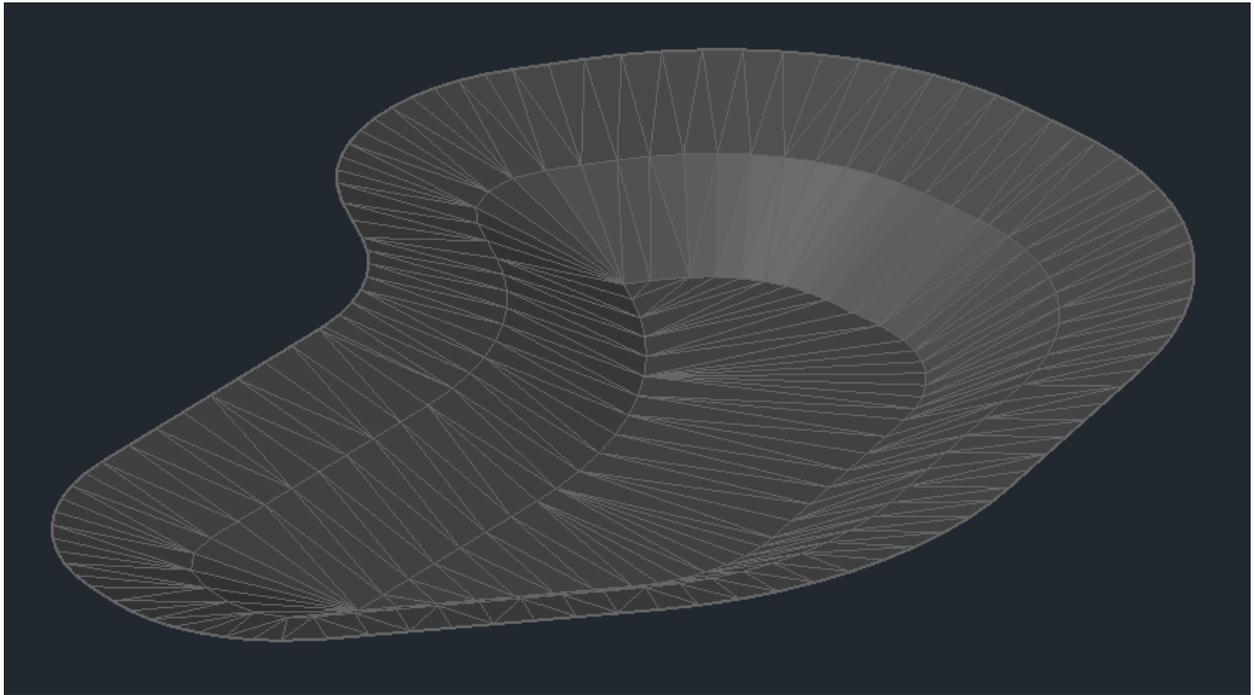


Figure 8

5. Get Pond Volume

The second button of the main window (*Figure 3*) gives access to the *Get Pond Volume* tool, which can be used to create a table and a chart of volume capacity versus pond depth and elevation.

The window shown in *Figure 9* is displayed after pressing the button. The user must click in the *Select Surface* button and select the pond surface that was created with the *Create Pond Surface* tool.

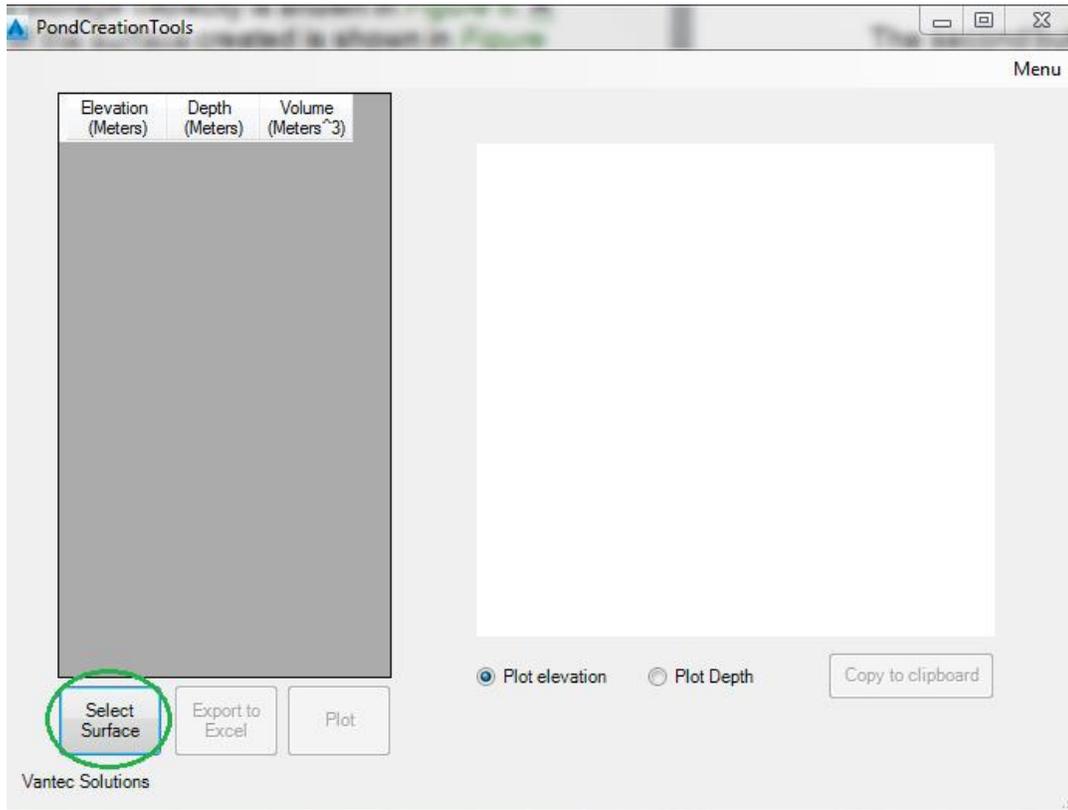


Figure 9

The program creates a table like the one shown in *Figure 10*. It can be observed that the storage capacity at maximum elevation coincides with the volume reported when the surface was created (*Figure 7*).

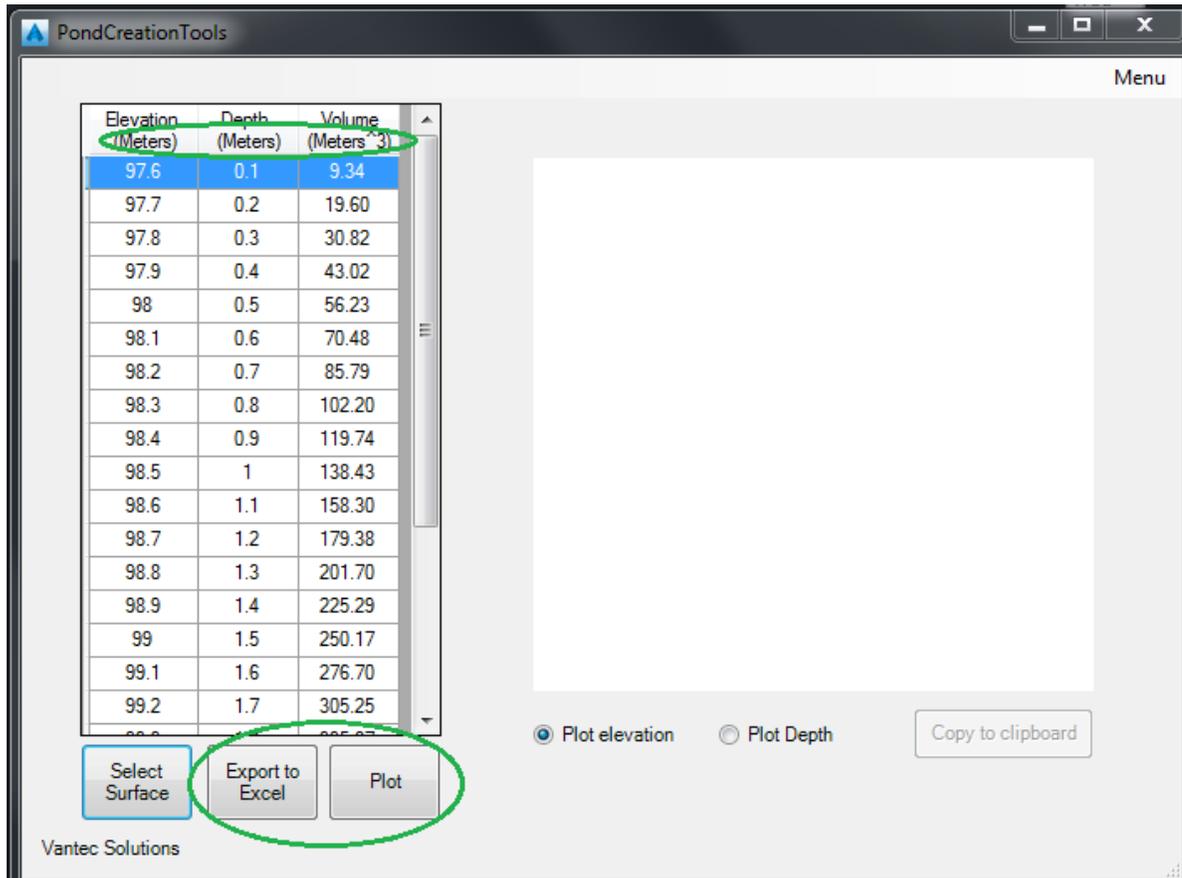


Figure 10

The units shown in the header cells of the table are consistent with the drawing units, which can be modified by typing *units* in the command line.

The user also has the options of exporting the table to a Microsoft Excel file or creating a plot.

After pressing the *Export to Excel* button, the user will be prompted to select the location where the file will be



saved. A new file with the name “*StorageCurve.xlsx*” will be created.

The *Plot* button will create a chart as the one shown in *Figure 11*. The user can decide between plotting the Elevation vs Volume curve or the Depth vs. Volume curve.

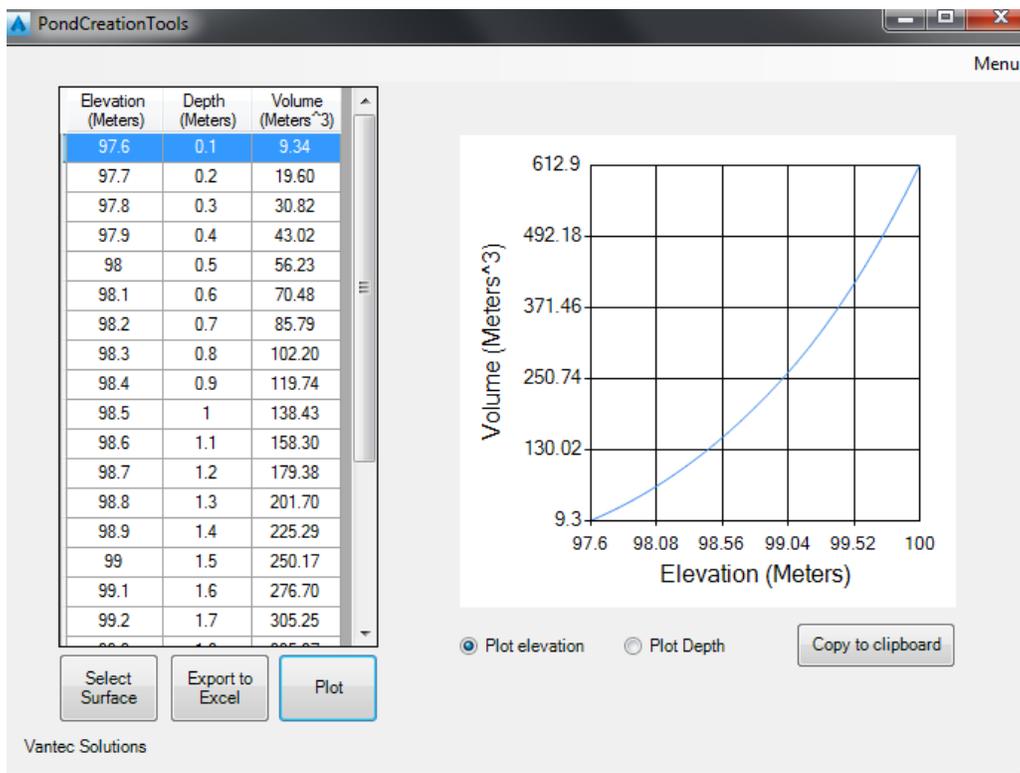


Figure 11

The chart can be copied to the clipboard by pressing the *Copy to Clipboard* button and then pasted into Word or any other program using the Ctrl + V keys.



6. Export Storage Curve

The modelling of stormwater ponds in most hydraulic modeling software requires the definition of a depth-area tabular curve. The third tool of this program creates and exports this curve to a text file. The window shown in *Figure 12* is shown after pressing the *Export Depth-Area Curve* button in the main window.

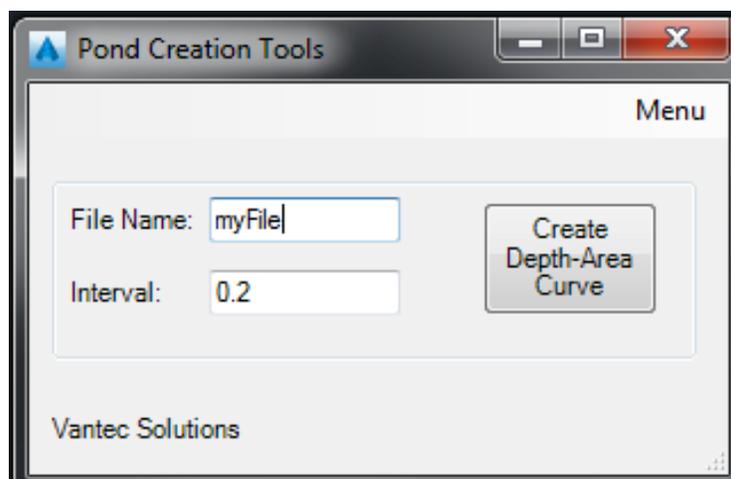


Figure 12

In this window the user must indicate the name of the file and the depth interval for the curve. The *Create Depth-Area Curve* button asks the user to select the pond surface, and to browse and select the file location.

The program creates a text file similar to the one shown in *Figure 13*. This file can be uploaded directly into the



hydraulic modeling software or copied using the Ctrl + C and Ctrl + V keys.

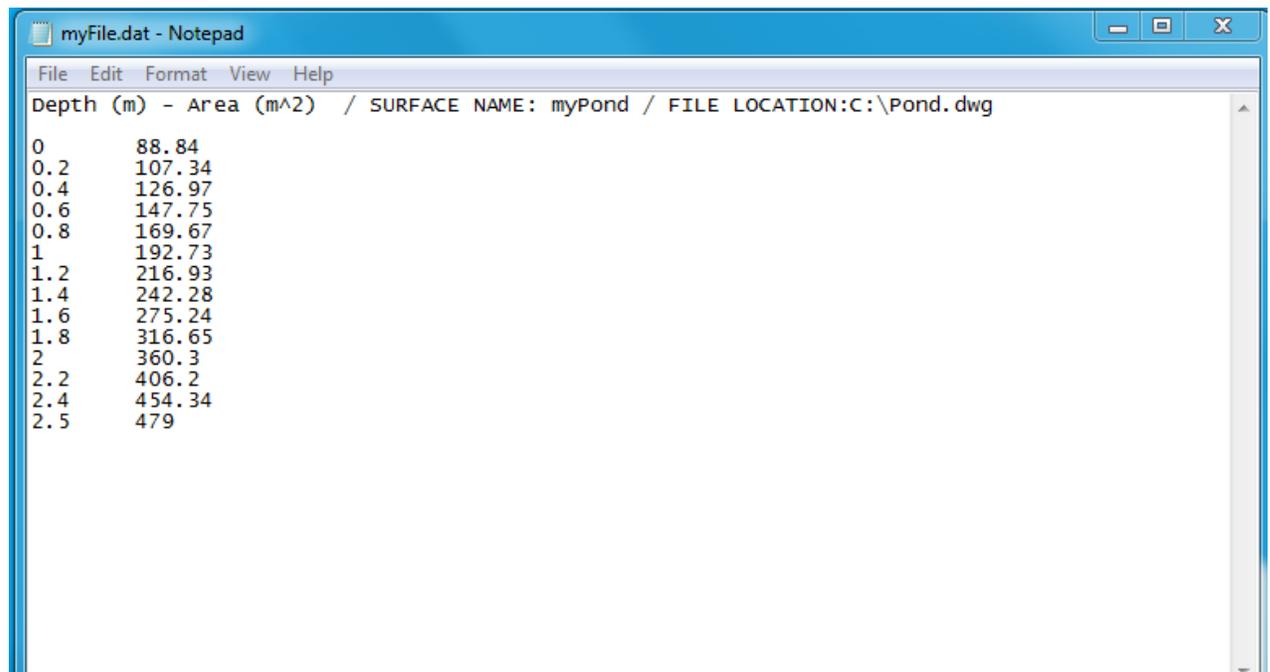


Figure 13



7. Troubleshooting

The app may fail to create the pond surface due to the following reasons:

- Geometric constraints: the specified pond depth may be too high or the side slope too small.
- There are zero-length segments in the selected top-of-pond polyline.
- Other reasons that prevent the selected polyline to be offset.

If this occurs, the following error message will be shown to the user.

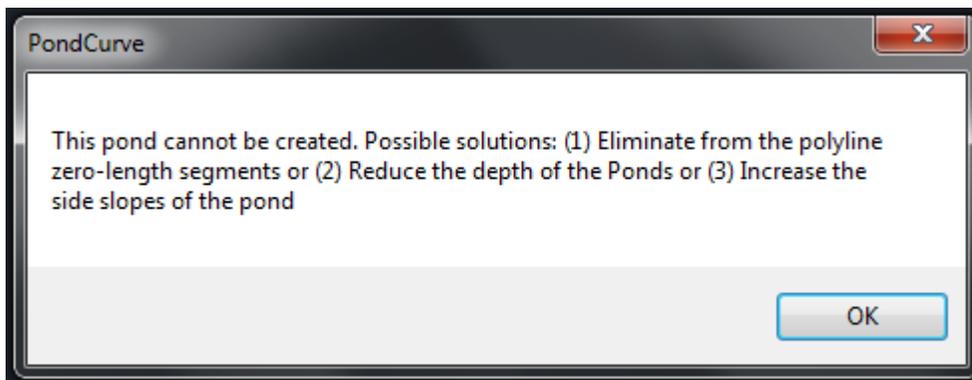


Figure 14

Use a different pond depth/side slope or fix the problems with the polyline, making sure that performing an offset is possible.



8. Support

Please let us know if you have further questions. Our contact email is support@vantecsolutions.com.