9 Lesson 9: Channel Wizard

WELCOME!

This lesson is about designing a Channel. Now that you have designed the roadways and ponds, PowerCivil has a multitude of tools that allow you to automatically design channels. In this lesson you will learn how to grade and contour the channel and how to analyze different aspects of the channel.

LESSON OBJECTIVES

In this lesson, the topics covered include:

- Topic 1 PowerCivil Channel Tool – create the channel grading
- Topic 2 PowerCivil DTM Analysis – analyze the channel grading and slopes

Be sure to have a look at the context sensitive help for PowerCivil. Either while using the tutorial or in general practice with the software, you will find the help system not only includes program documentation but it also is equipped with links to online video clips (internet connection is required). Access the help from the menu bar under *Help>Civil Help*.

INTRODUCTION

This Lesson will show you how to grade the channel with the PowerCivil Channel tools. With the Channel tools you can automatically design channels based on various design constraints, you can design to achieve selected slopes, berms, and much more. You will also learn how to use numerous Analysis tools to assist with interrogation of the channel design.

To view this portion of the lesson, press the play button.

CHANNEL TOOL

With the GSF model created, the Channel Tool options provide you with many ways to design and automatically grade the channels.

From the desktop launch PowerCivil using the program icon, navigate to the folder for Lesson 9 and open the file “LAYOUT.DGN”. The “LAYOUT.DGN” file contains the base planimetrics required for the channel design initiation.

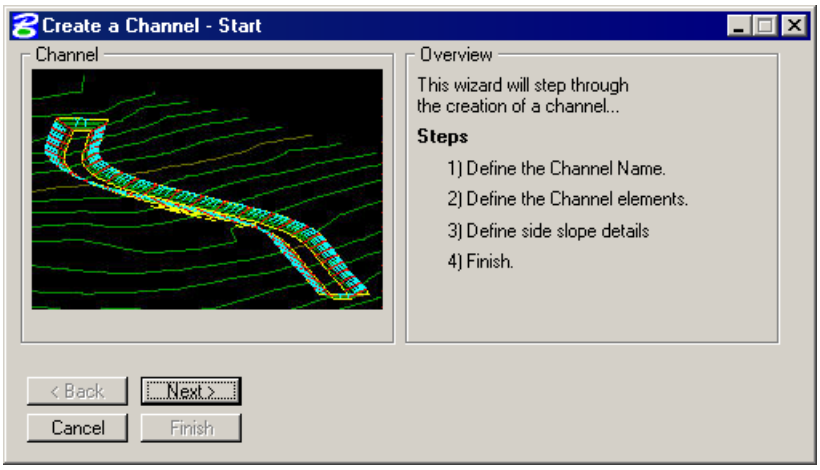
Once in the file, you will want to follow these steps:

1. Open the Civil Tools *(Civil>Civil Tools)*.

2. Invoke the Site Modeler Tool *(Civil>Modeler)*.

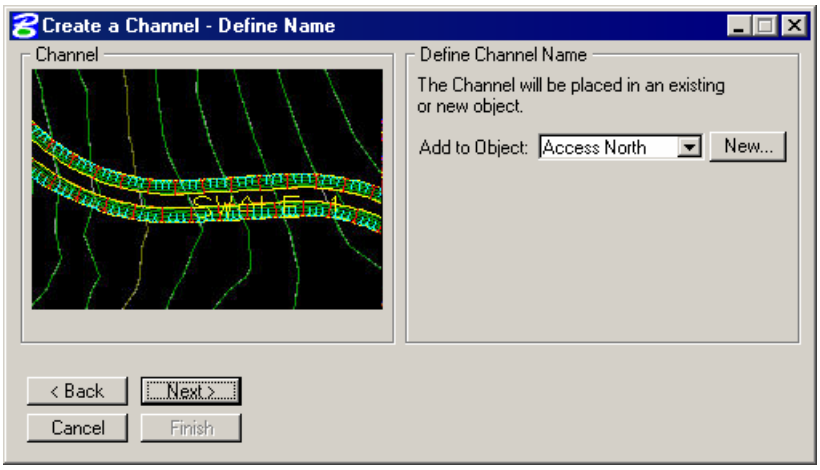
3. Select the “GSF” File from the Lesson 9 folder “LAYOUT.GSF”.
4. Select the “Channel Design” tool from the main Site toolbox *(Modeler>Tools > Channel Design)*.

The “Channel Design” tool opens as shown below:

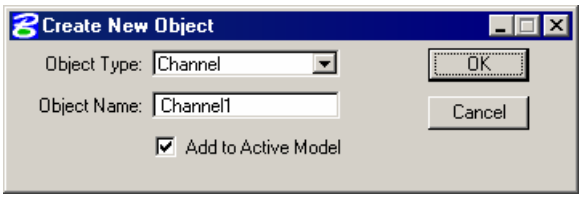


5. Click “Next>”

Note Focus on the “Define Channel Name” group box

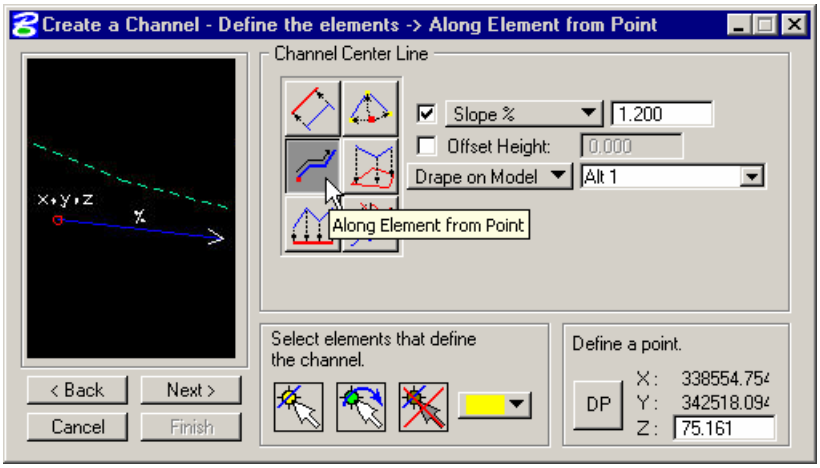


6. Click “New” (to create a new Object).
7. Select the Object type “Channel” and leave the new Object name as “Channel1”; click “OK”.



8. Return to the “Channel” tool, Click “Next>” to move to the “Define the Elements” dialog.

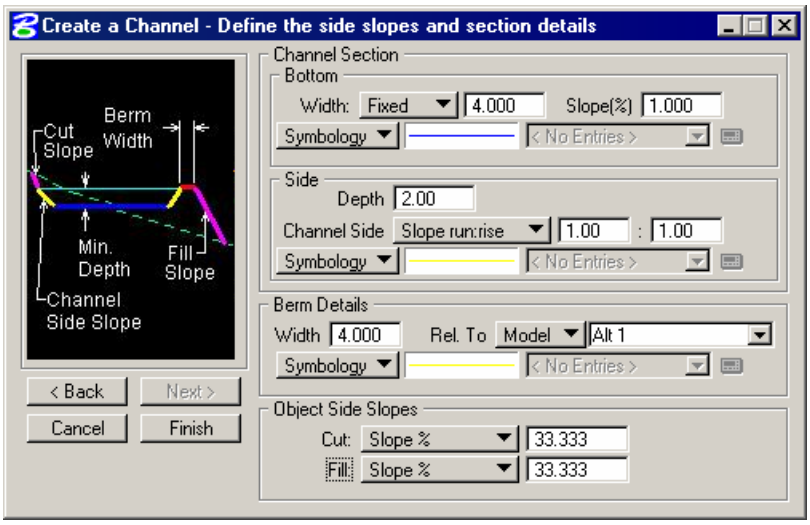
Note Set the dialog as shown below



Along Element from Point:	
Slope:	1.2%
Drape on Model:	Alt1

9. Click the Select button from “Select elements that define the channel” and select the channel Centerline element.
10. Define a Point> Click “DP” and data point the leftmost vertice of the line comprising the ditch centerline in the previous step.
11. Click “Next>”

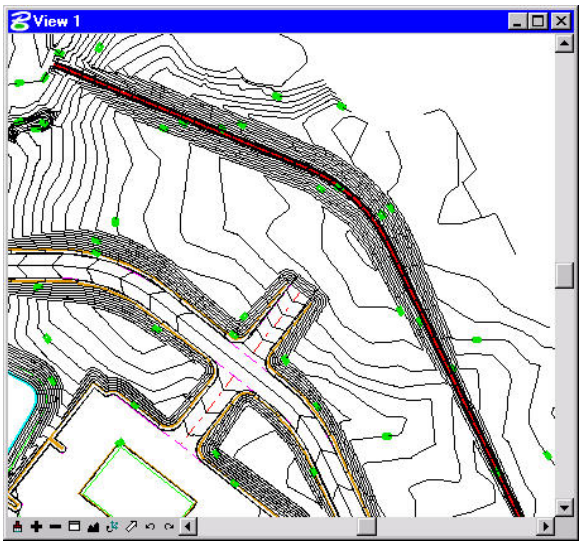
12. Define the side slopes and section details as follows:



Width	4.0 ft
Slope	1%
Side Depth	2.0 ft
Channel Side Slopes	1:1
Berm Width	4’ Rel. to Model Alt 1
Object Side Slopes	33%

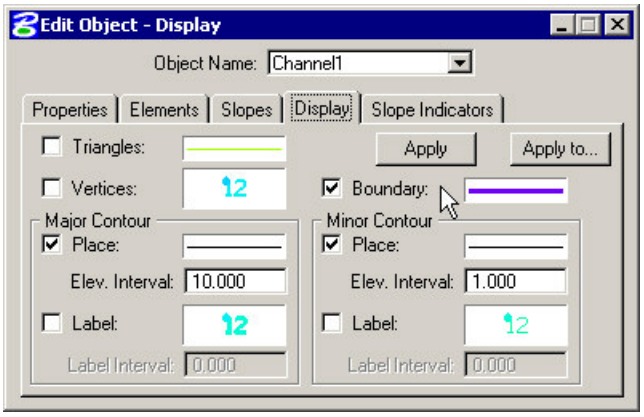
13. Click “Finish”.

The finished Channel should appear as below:



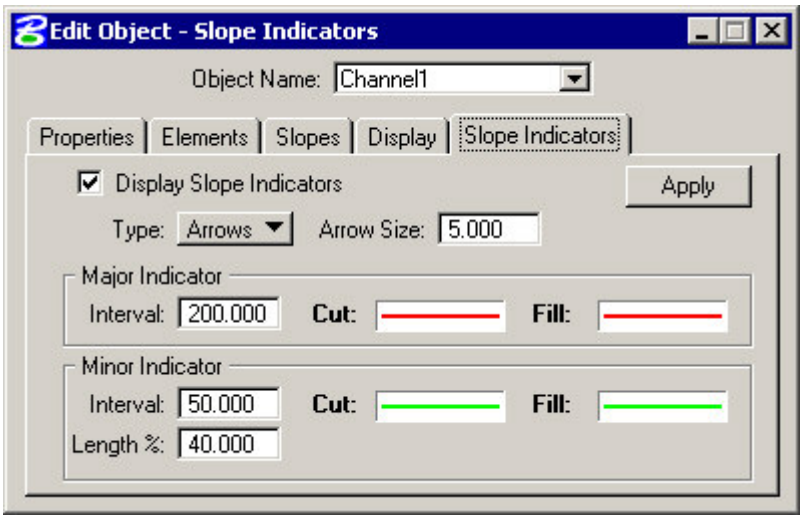
14. Add slope indicators using the Edit Object tool *(Modeler>Object > Edit).*

15. Select the “Channel1” Object, Click the “Display” tab:



16. Toggle “ON” the “Boundary” option and set the symbology.
17. Click “Apply”.

18. Click the “Slope Indicator” tab.



19. Toggle “ON” the “Display Slope Indicators” option.

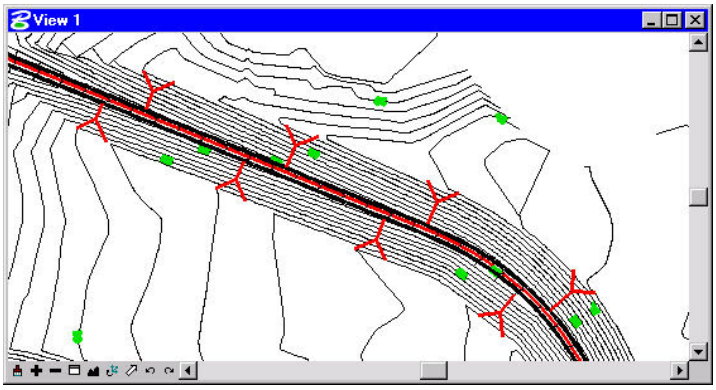
    Arrow Size = 5

    Major Interval = 200

    Minor Interval = 50

    Length = 40%

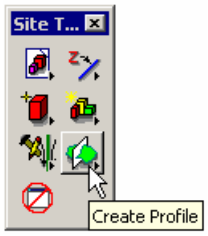
20. Click “Apply”. The finished Channel should appear as below:



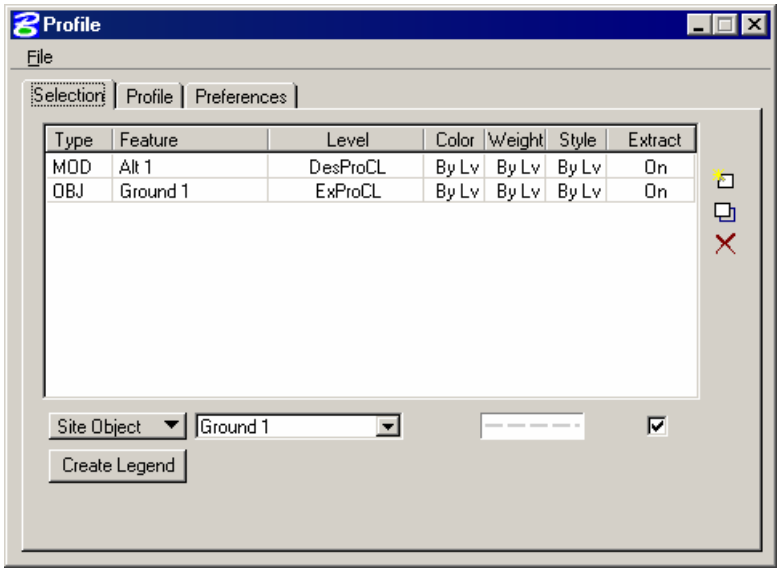
21. Save the Model *(Modeler>Project>Save).*

DTM ANALYSIS

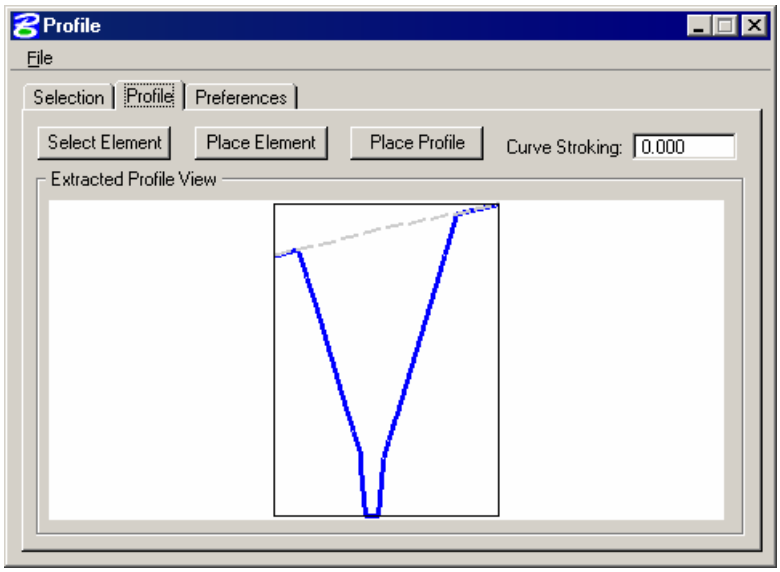
1. Analyze the Channel: Select “Create Profile” from the main Site toolbar *(Modeler>Analysis>Profiles)*.



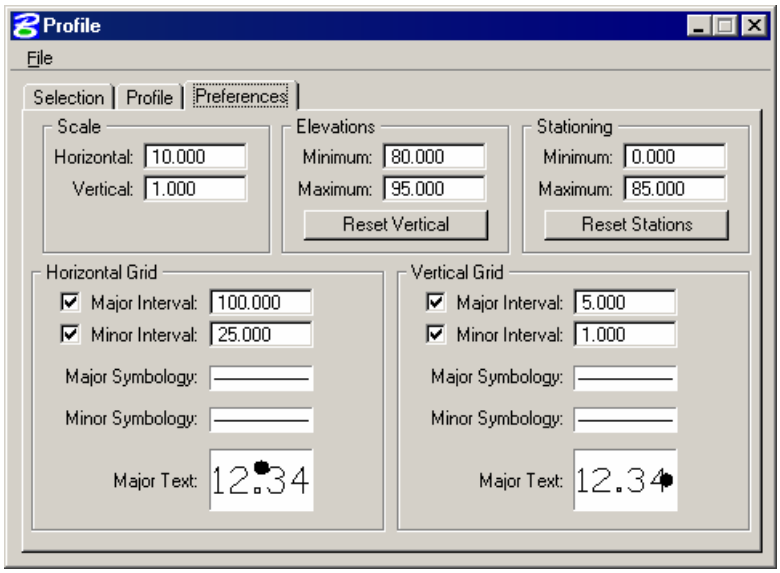
2. Add the Model “Alt 1” and the “Existing Ground” Object to the selection:



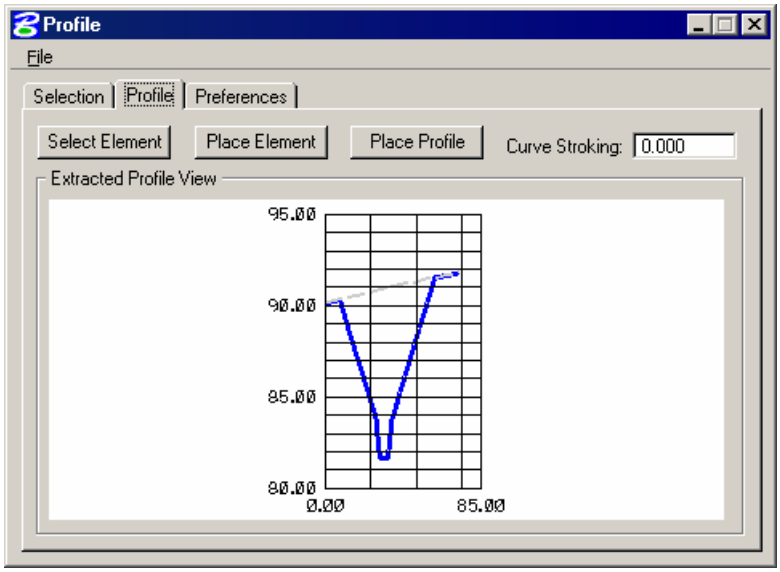
3. Select the “Profile” tab. Click the “Place Element” button. Strike two data points across the channel:



4. Select the “Preferences” tab and set the grid preferences:



5. Move back to the “Profile” tab and use the “Place Profile” button to place the profile in the design plane:



SUMMARY

The main points to remember are:

- PowerCivil allows you to interactively design channels using the Channel Tool. You can edit and revise the grading with a variety of tools.
- Surface interrogation is done using the DTM Analysis tools.
- You can create profiles, thematic maps, site line analysis and analyze drainage features with this flexible set of tools.

For more video instruction please visit the following web page…
http://65.217.17.142/downloads/sitemodeler/GEOPAK%20Site%20Modeler%20Training%20Videos.htm