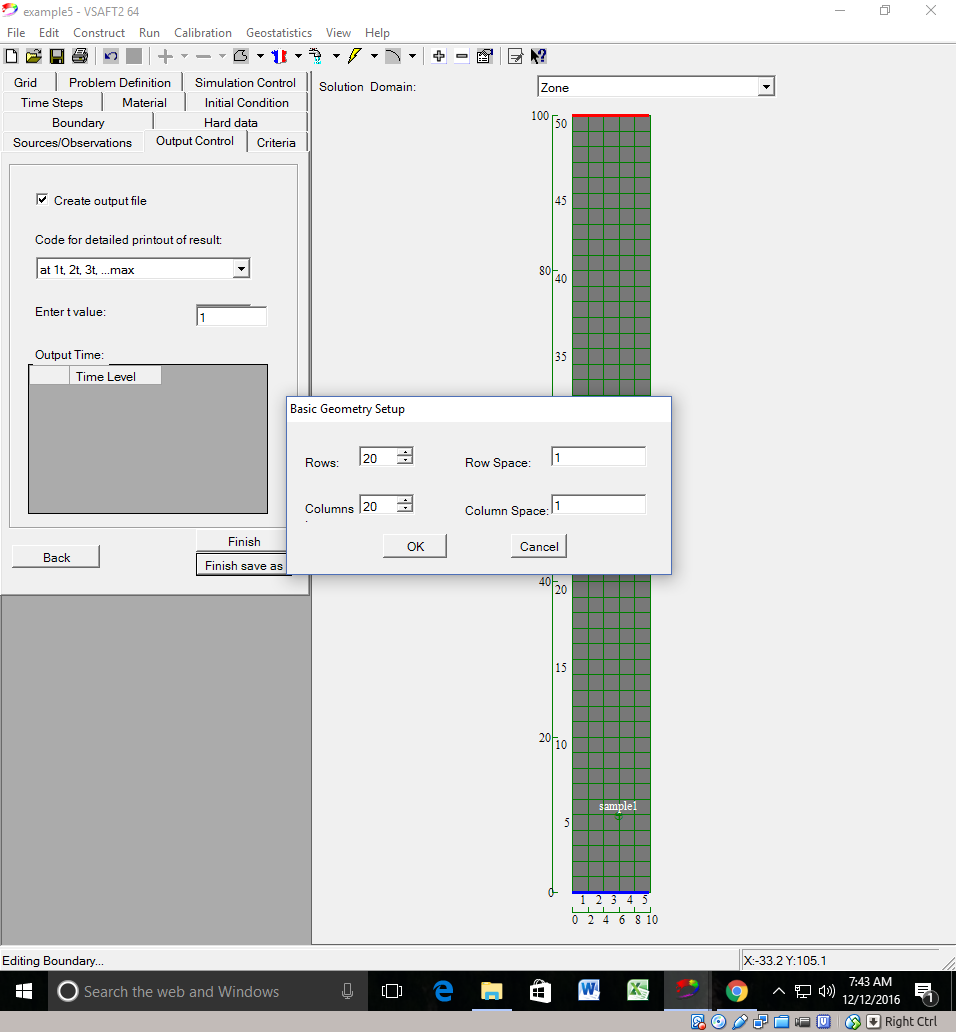
**Example 6: Horizontal Steady State Flow in a Random Heterogeneous Media**

The instructions for this example are provided as a list of steps with accompanying screen captures.

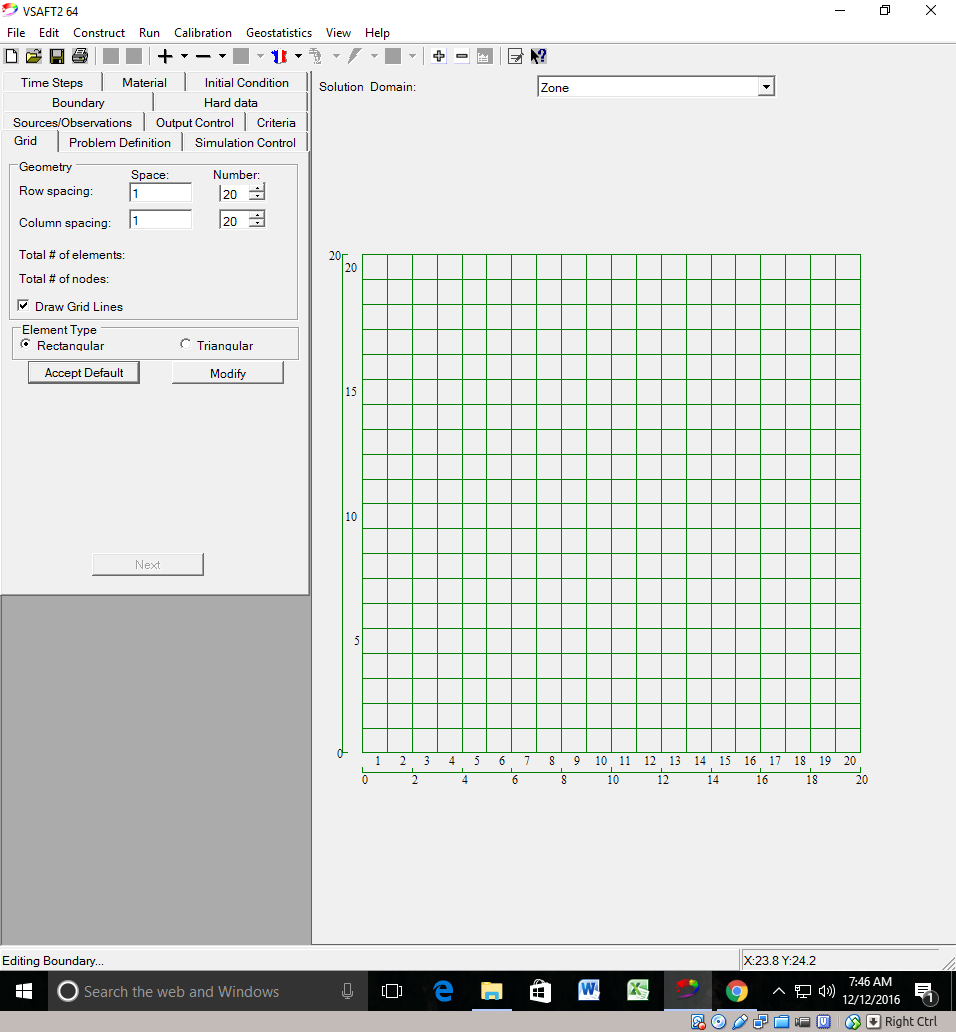
1. New Project

Start a new project.

* Select **File** then **New Project**
* Define the initial grid dimensions (you can edit this later).
* Change the value for the number of rows to **20.**
* Change the value for the number of columns to **20**.
* Change the row and column spacing to **1**.
* Select **OK**



You should have been advanced to the main VSAFT2 window. Your screen should look like the one shown below.

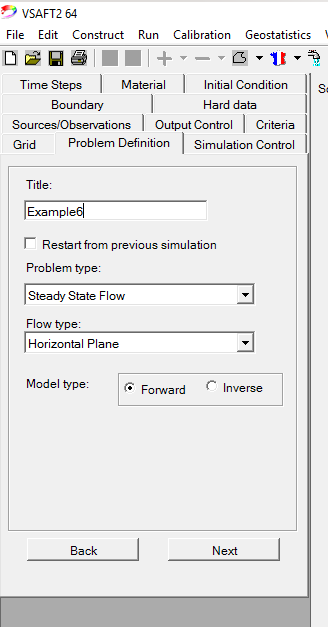


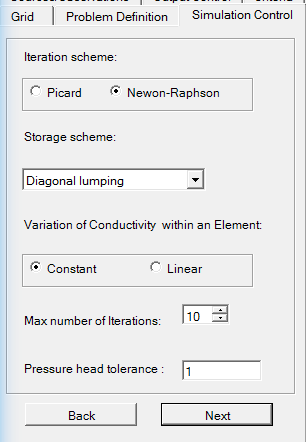
For this example we will accept the grid without editing the row or column spacing or adding additional rows or columns.

* Select **Accept Default** and you will be advanced to the problem definition tab.
* Click **Next** to advance to the Problem Definition tab.

1. Problem Definition

* Enter a **Title** in the “TITLE” box. This is for record keeping purposes and to assist in remembering the details of the model. Use a descriptive title.
* Use the “Problem type” drop down menu to select **Steady State Flow**
* Use the “Flow type” drop-down menu to select **Horizontal Plane**
* The “Model type” is **Forward**
* Select **Next** to continue to the simulation control tab.





1. Simulation Control

We will accept the default simulation control parameters for this example

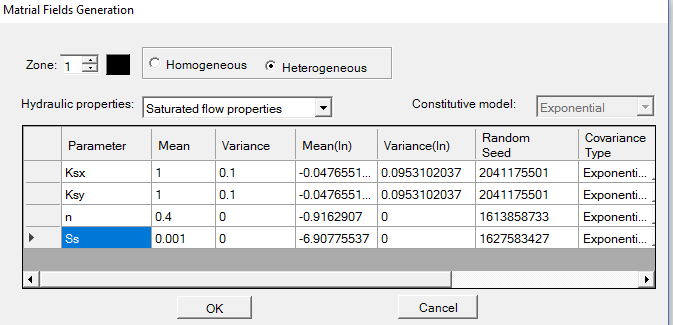
* Select **NEXT** to continue to the materials tab.

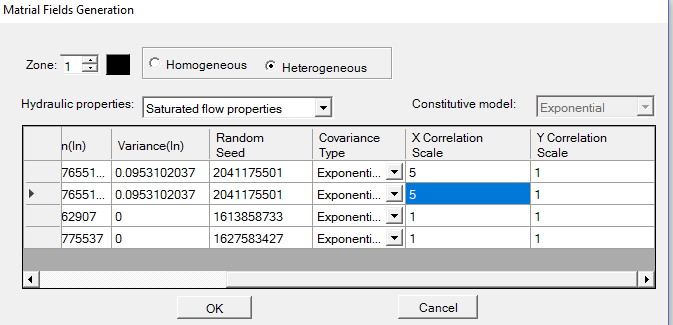
1. Materials

This example uses two different materials.

* Select **Define** under “Zone material properties” section.
* In this example we are setting 1 zone within the model domain, which will have a randomly distributed hydraulic field scale. Set Zone 1 to **heterogeneous**.
* Enter the values for the saturated flow hydraulic conductivity.

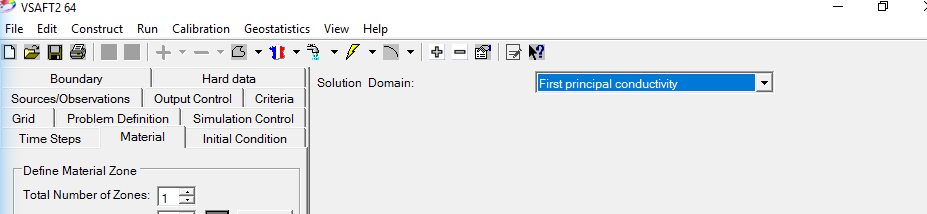
|  |  |
| --- | --- |
| Ksx:  Mean of logK = **1**  Variance of logK= **0.1**  Random Seed**.- enter any number**  n = **0.4**  Ss = **0.001**  ForCovariance Type– Select **exponential**  **X correlation = 5**  **Y correlation = 1** | Ksy:  Mean of logK **= 1**  Variance of logK **= 0.1**  Random Seed**.- enter any number**  n = **0.4**  Ss = **0.001**  ForCovariance Type– Select **exponential**  **X correlation = 5**  **Y correlation = 1** |

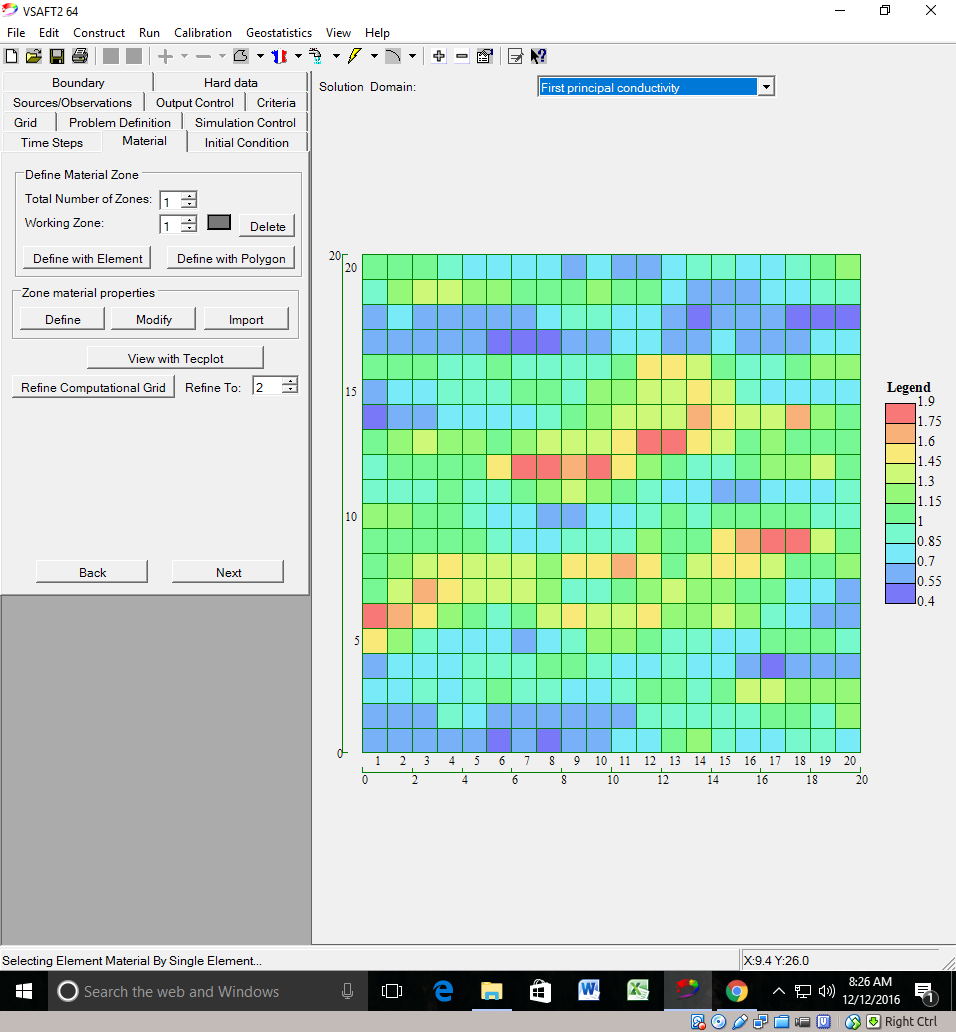




* Now select **OK**

To view the saturated hydraulic conductivity distribution using the dropdown menu in the model display window above the domain grid.

* Select **first principal conductivity**
* Next you should see a multicolored domain as shown below.

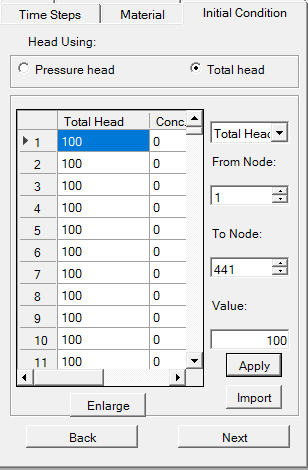


* Select **Next** to continue to the initial condition tab.

1. Initial conditions

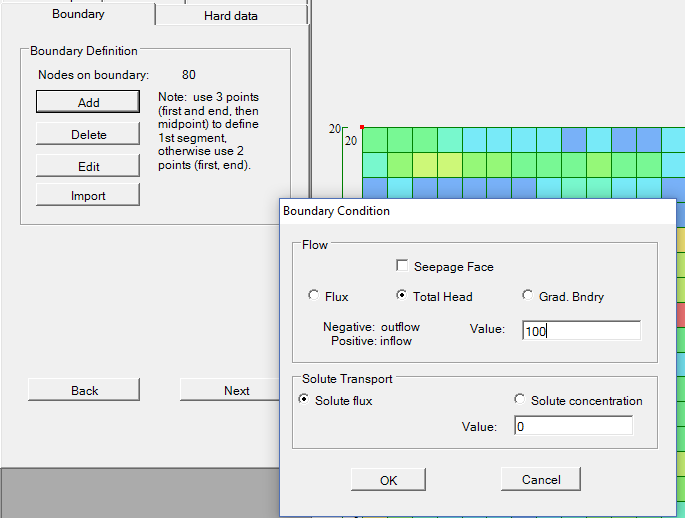
Set the initial hydraulic head and solute concentrations.

* Select **Total Head**
* Enter the initial hydraulic head of **100** in the “value” box.
* Select **Apply.**
* Select **Next** to continue to the “boundary” tab.

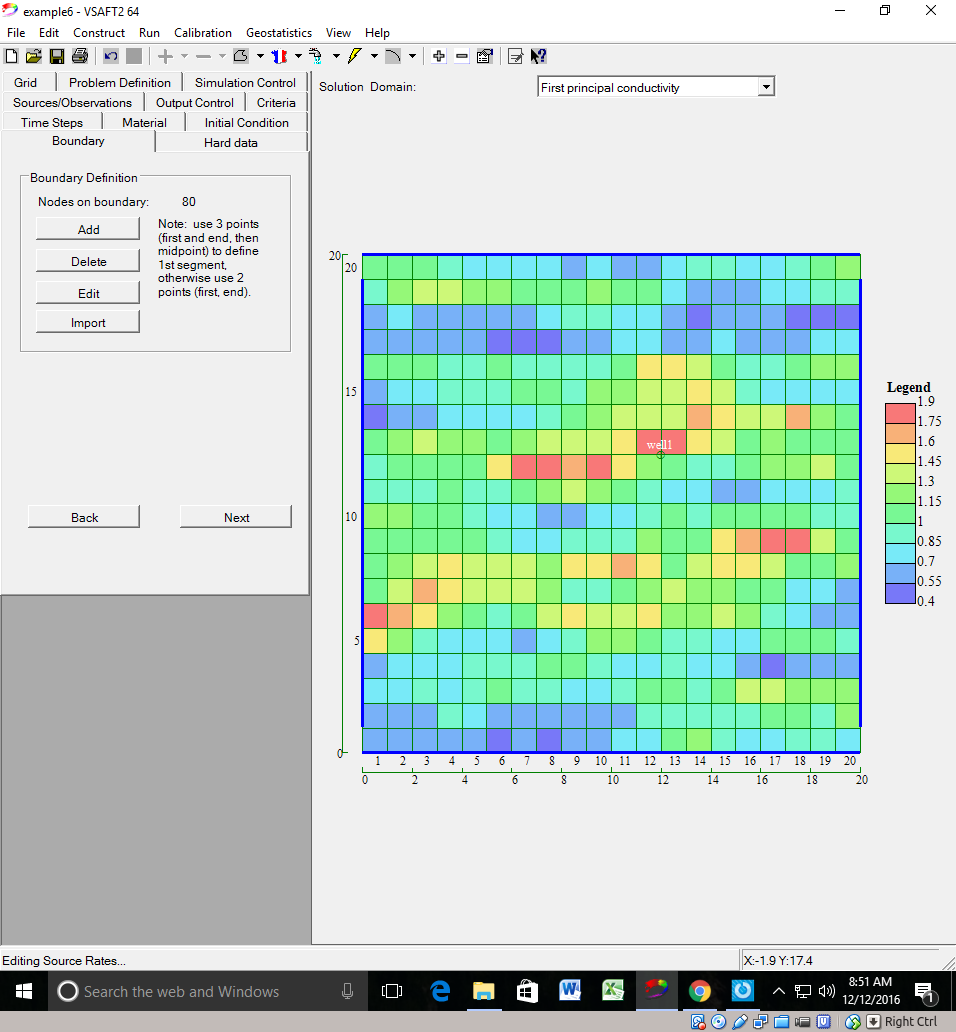


1. Boundary

* Set all of the boundaries to constant head of **100**. See example 1 for detailed instructions on setting boundary conditions.

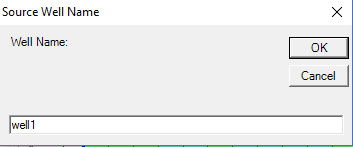


* Select **Next** to continue to the “Source/Observation” tab.

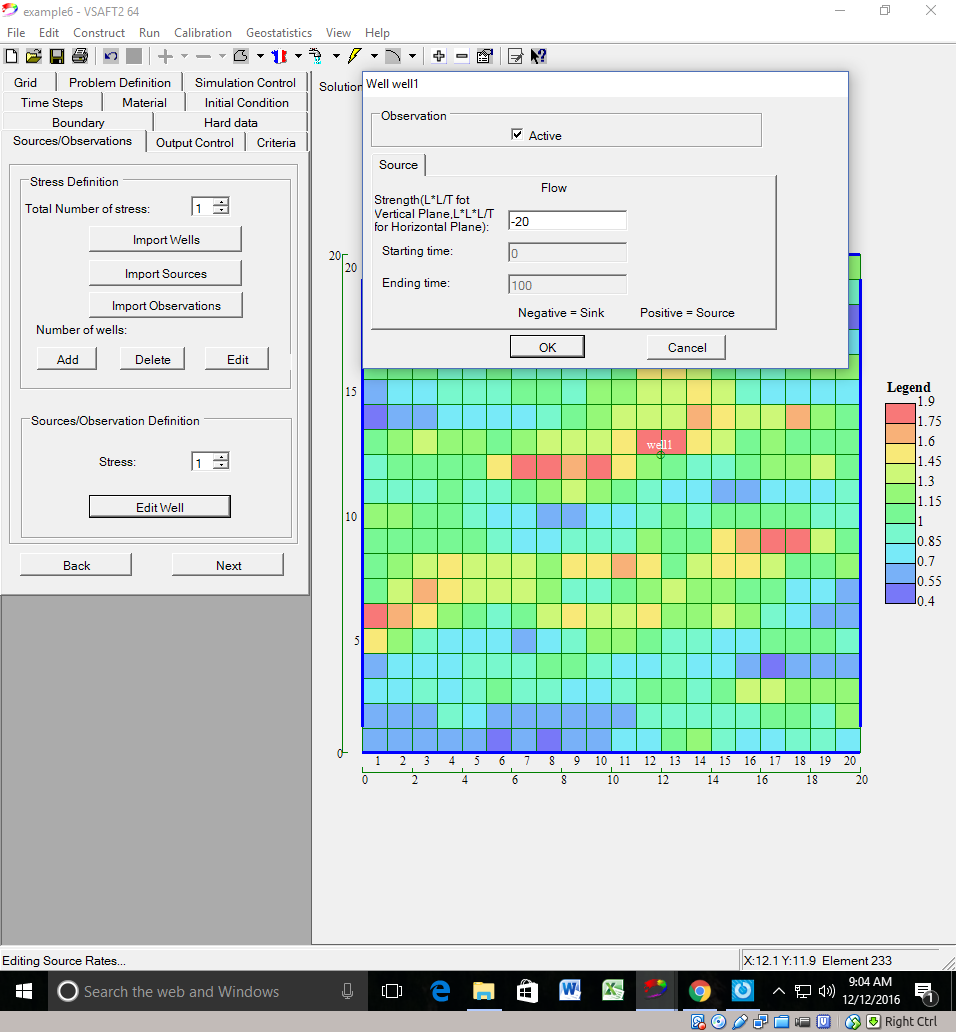


1. Sources/Observation

* Add a pumping well in a location with high hydraulic conductivity owards the center of the model domain. Name the well, **well1**.



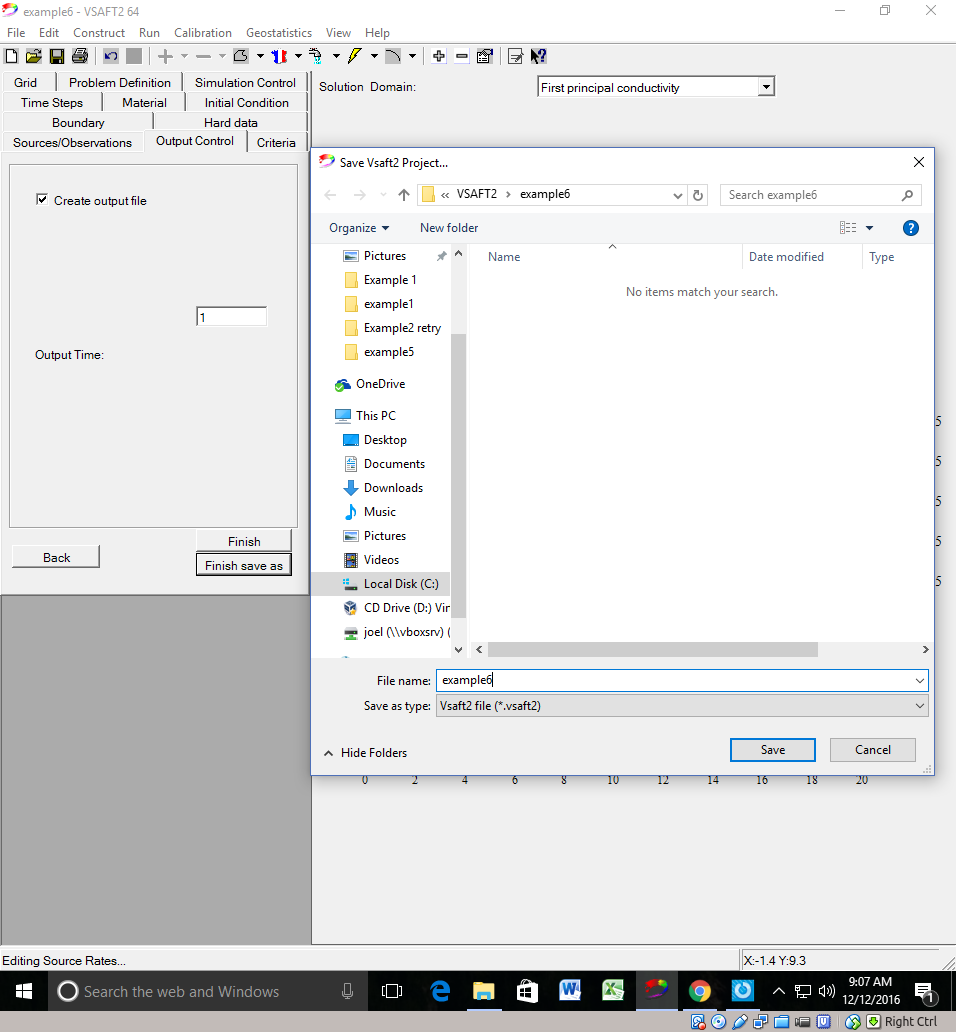
* In the “Sources/Observations Definition” section Click **Edit well** and select **well1**.
* In the pop-up window set the pumping rate to **-20** (the negative sign is to define water leaving the aquifer) under the “sources” tab.



* Select **Next** to continue to the Output Control tab.

1. Output Control

* Make sure to check the **create output file** checkbox to save results to a file.
* Select **Finish save as** to finish the model setup and save the project to a directory.
* Save your project with the name **example7** and select **OK**
* The model is now defined and the input files for VSAFT have been generated.



1. Running VASFT2

* Run VSAFT2 as shown in example 1.

1. Viewing results in TECPLOT

* View the hydraulic head distributions using TECPLOT as explained in example 1.

