

# IMPORTING CAD BATHYMETRY FILES

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This tutorial is designed to assist you with importing Microstation (.dgn) or AutoCAD (.dwg) bathymetry files into MakaiPlan and MakaiLay. Before starting, please verify that GeoMedia has been installed on your system.

## Coordinate System

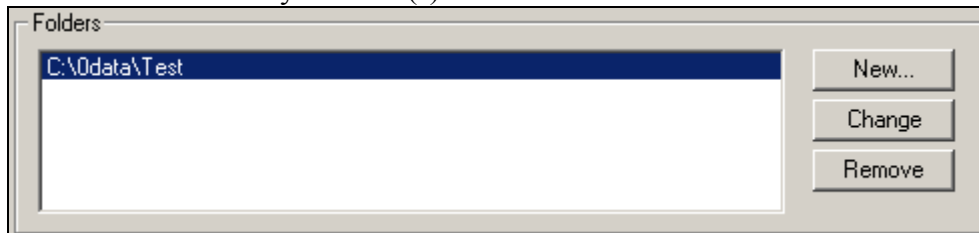
1. Locate the datum and projection information from the drawings. This information is usually referred to as the “Survey Positioning” data and can usually be found in the title bar of the drawing. If you don’t have a way to view AutoCAD files, you may install VoloView Express, a free viewer from Autodesk™.

For this example, we will be using:  
Datum: WGS84  
Mercator Projection: UTM Zone 56S

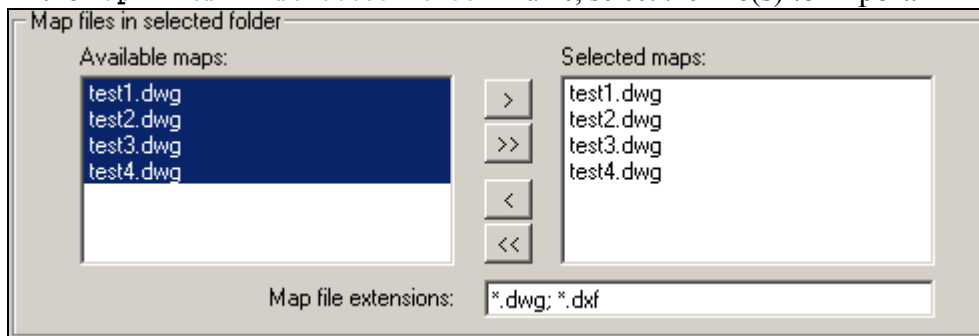
2. Generate a Coordinate System File ([Start](#) → [Programs](#) → [GeoMedia](#) → [Define Coordinate System File](#)) for each unique coordinate system. For example, if there exists a total of 6 drawings, three of which are in Zone 56S and three are in Zone 57S, then two different coordinate system files would need to be generated.
  - a. Select **Projection** (Geographic is used if the data is true lat/long).
  - b. If the drawing is a Microstation file (.dgn), click on the **Advanced Parameters** button and change the **Horizontal resolution** to 1cm. If the drawing is an AutoCAD file, this step is not necessary, please continue.
  - c. Click on the **Projection Space** tab and select the appropriate **Projection algorithm** (in the example above we would use Universal Transverse Mercator).
    - i. Click on the **Projection Parameters** button and add the appropriate information. (in the example above we would change the Hemisphere to Southern and change the Zone to 56).
  - d. Click on the **Geographic Space** tab and change the **Geodetic datum** to match your drawing(s) (in the example above, we would change the datum to WGS84).
  - e. Click **OK** and save the file in the same directory as your bathymetry CAD drawings.

## Schema Definition File

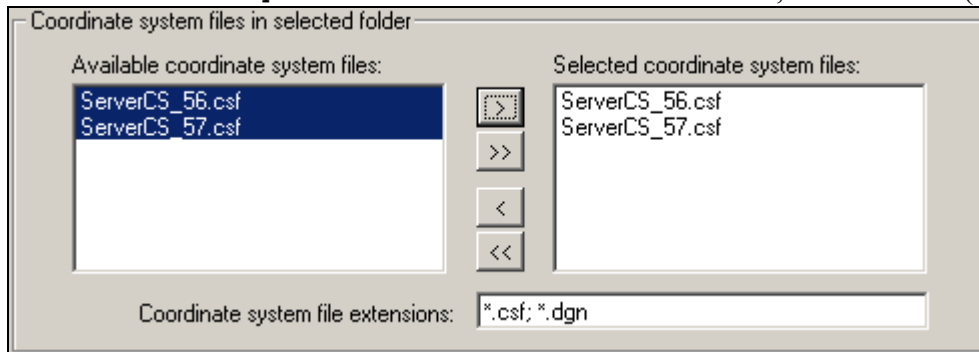
1. Generate a CAD Server Schema File ([Start](#) → [Programs](#) → [GeoMedia](#) → [Define CAD Server Schema File](#)).
2. Select whether you are using **Microstation** OR **AutoCAD** files and click **OK**.
3. **FILES TAB** [specifies what map files and coordinate-system files you want to use]
  - a. Click the **New** button in the **Folders** frame, browse to the directory where your bathymetry files and coordinate system file(s) are located and click **OK**.



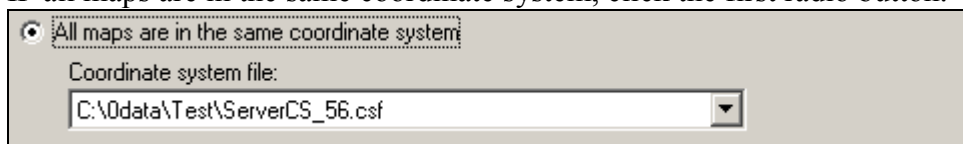
- b. In the **Map files in selected folder** frame, select the file(s) to import.



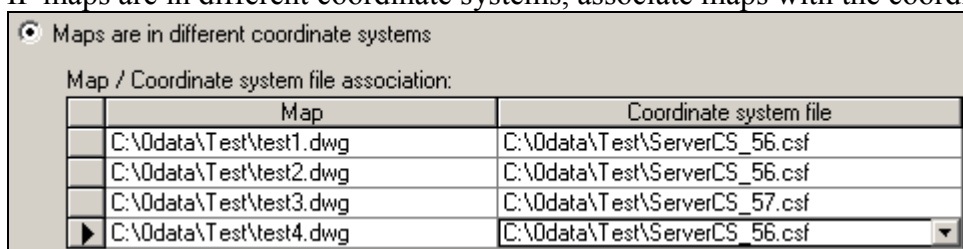
- c. In the **Coordinate system files in selected folder** frame, select the file(s) to import.



4. **COORDINATE SYSTEMS TAB** [specifies which coordinate-system file is to be used with each map file]
  - a. IF all maps are in the same coordinate system, click the first radio button.

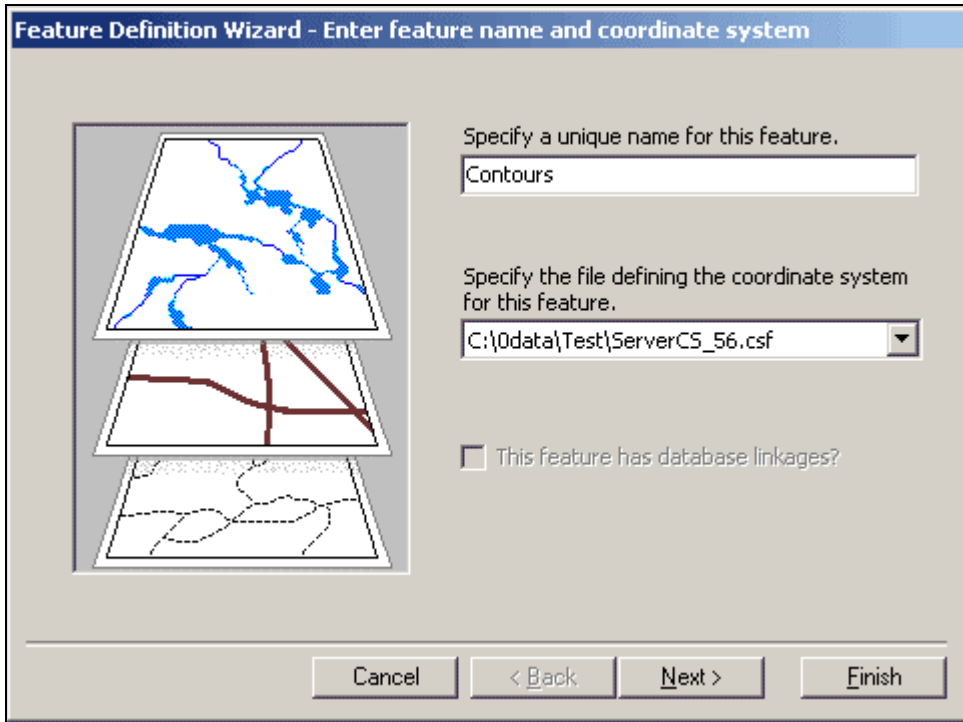


- b. IF maps are in different coordinate systems, associate maps with the coordinate system files.

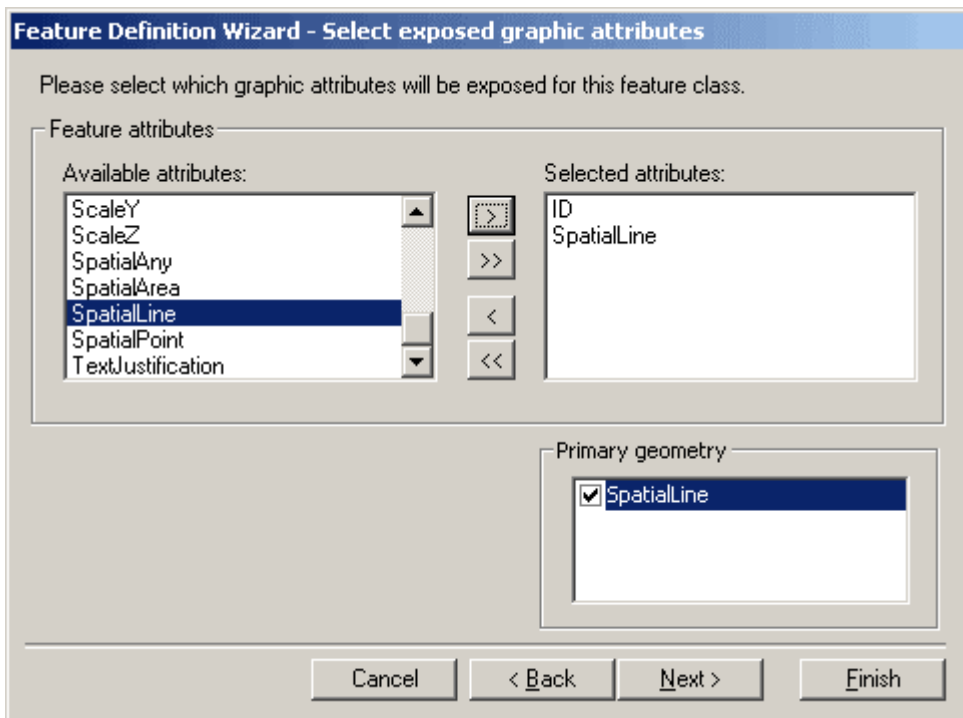


5. **FEATURE DEFINITION TAB** [specifies what elements are to be processed and how the CAD server is to recognize and process each feature]

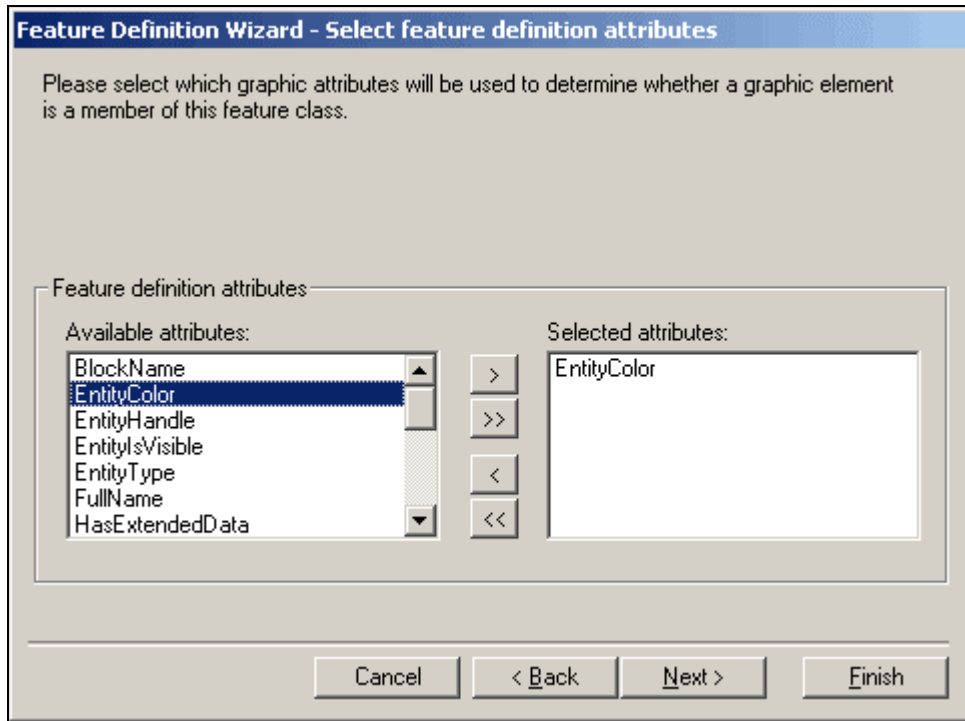
- a. In the **Feature classes** frame, click the **New** button to start the **Feature Definition Wizard** (this is where you define which feature(s) of your drawing(s) contain bathymetry data). Specify a name (i.e., Contours) and the coordinate system file for the new feature. Click **Next >**.



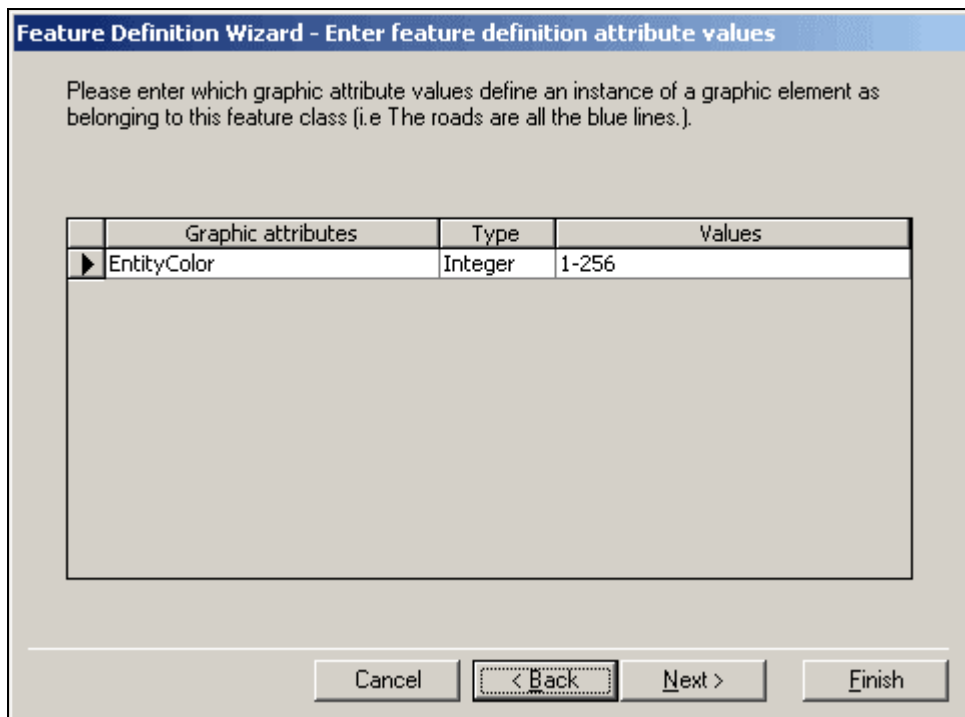
- b. Select the graphic attribute containing your bathymetry data (for bathymetry contours, select **SpatialLine**; for bathymetry text, select **GraphicText**). Click **Next >**.



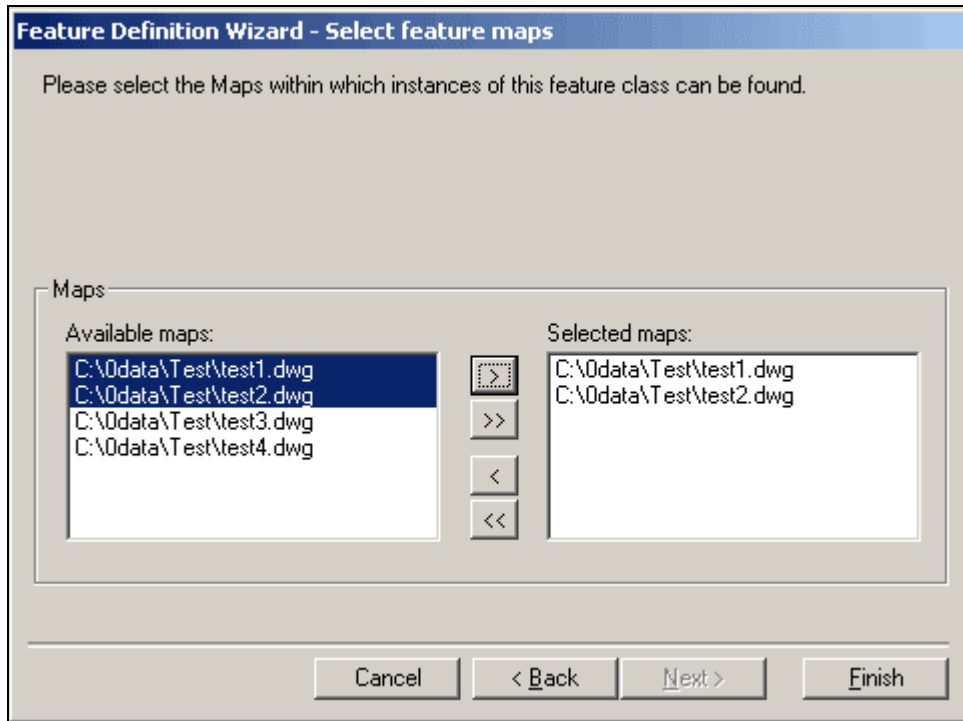
- c. Select the graphic attribute you want the CAD data server to expose for the new feature class. If uncertain, select `EntityColor` for an AutoCAD file or `Level` for a Microstation file. Click `Next >`.



- d. Enter the values for the graphic attribute. If `EntityColor` or `Level` was used in the previous step, entering 1-256 or 1-66, respectively, will result in all the attributes of the file. Of course, you may enter the specific attribute value if you have that data available to you. If `LayerName` was used in the previous step, the layer name must be entered using caps and enclosed in single quotes (i.e., 'CONTOURS'). Click `Next >`.



- e. Select the maps which are using the coordinate system file previously defined in step a. If you have multiple coordinate system files, this process (from step a) will need to be repeated for each file. In this example, we would need to create a second feature (i.e., Contours2) for the test3 and test4 drawings since they are using a different coordinate system file from test1 and test2 drawings. Click **Finish**.



6. **SCANNER OPTIONS TAB** [specifies the information necessary to connect to your ODBC database and read it]
  - a. No changes required.

7. **SAVE FILE**

- a. Click on **File** → **Exit** and you will be prompted to save the file. Click **yes**, and save the file in the directory containing the coordinate system file(s) and drawing(s).

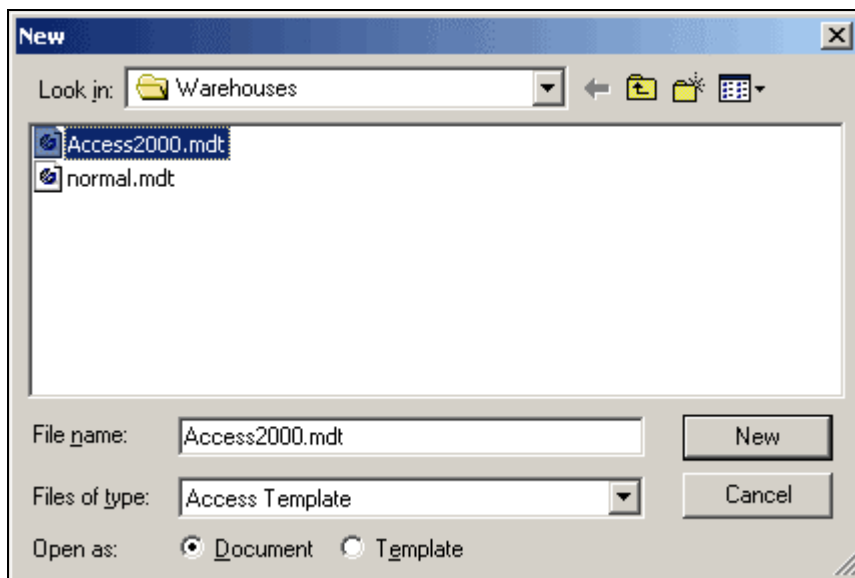
**NOTE**

**THE MOST DIFFICULT ASPECT THIS ENTIRE PROCESS IS STEPS "c" AND "d" ABOVE. IF YOU ARE HAVING DIFFICULTY, FOCUS ON THESE STEPS AND USE THE GEOMEDIA™ HELP MENU FOR ASSISTANCE.**

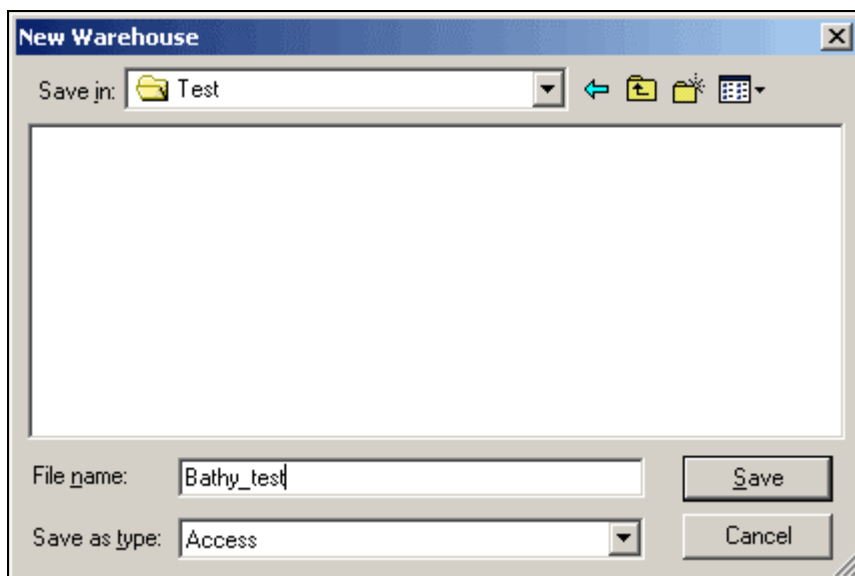
## Microsoft Access Database

This step is not absolutely necessary but is recommended for two reasons. First, all data is kept in a single file (the Access database) which is easily shared among colleagues. Second, you may expect higher performance from MakaiLay and MakaiPlan using the single Access database as opposed to the multiple file system (CAD files, coordinate system files, and the schema definition file).

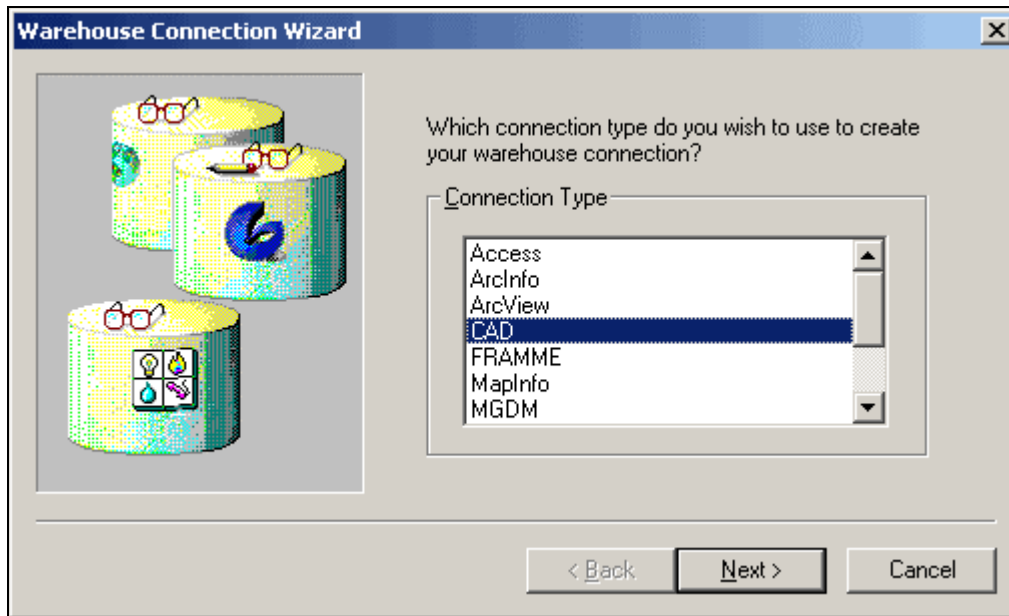
1. Open Geomedia ([Start](#) → [Programs](#) → [Geomedia](#) → [Geomedia](#)).
2. Click on “[Create new GeoWorkspace](#)”.
3. Use the default template name and click [New](#).
4. From the menu, click [Warehouse](#) → [New Warehouse](#).
5. Click the `Access2000.mdt` file and then click [New](#).



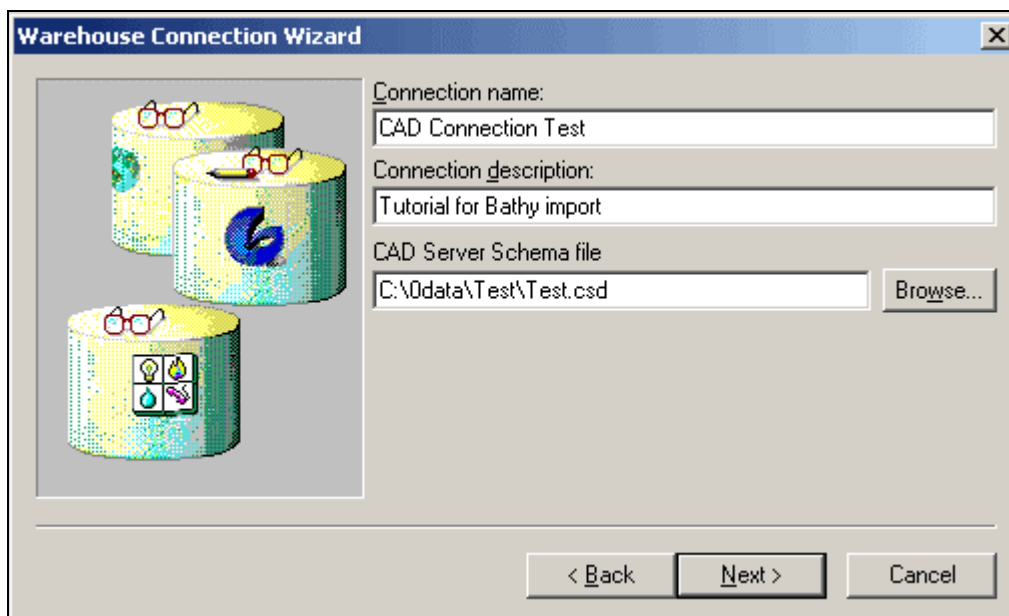
6. Choose a name for the database and store it in the directory containing other bathy-related files.



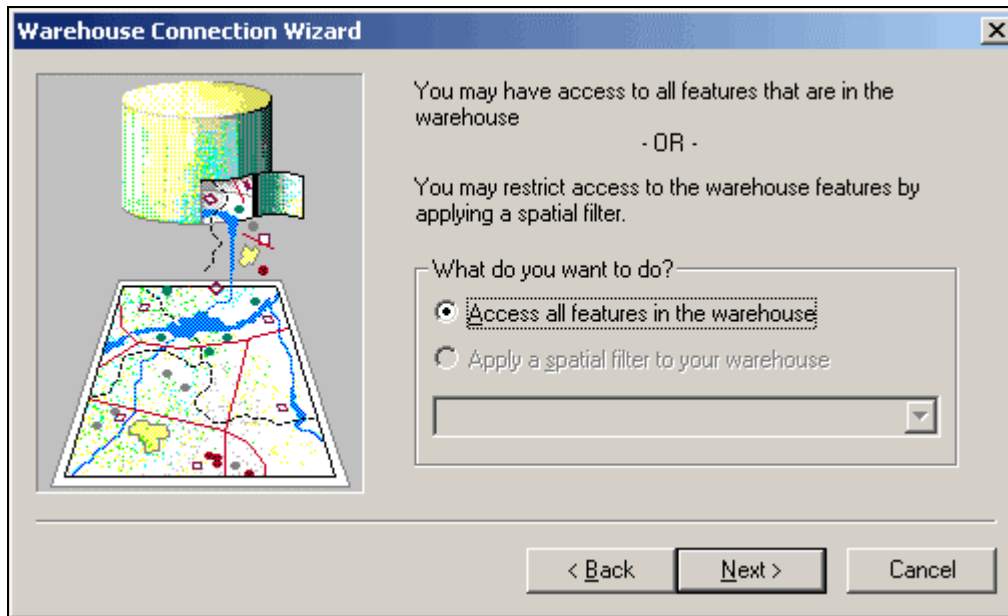
7. From the menu, click **Warehouse → New Connection**. Select **CAD** and click **Next >**.



8. Type a connection name and browse to the previously created CAD Server Schema File. Click **Next >**.



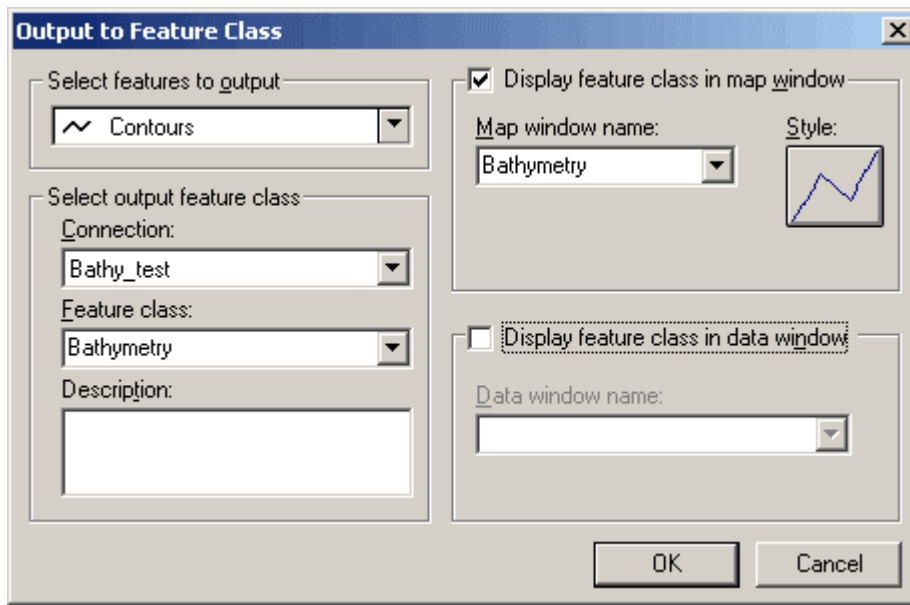
9. Click **Next >**.



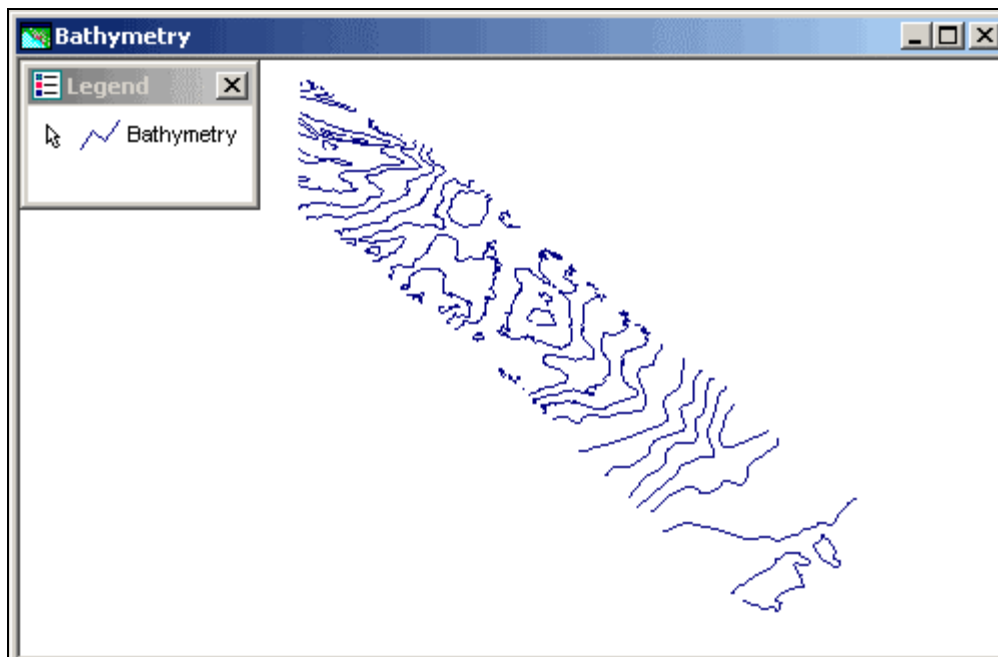
10. Click **Finish**.



11. From the menu, click **Warehouse** → **Output** to Feature Class.
- In the “**select features to output**” frame, browse for the previously created CAD schema file and click on it.
  - In the “**select output feature class**” frame, use the down arrow to select the Connection. Then type a name for the feature class.
  - Place a check in the “**display feature class in map window**” and type a name for the **Map window**.
  - Click **OK**.



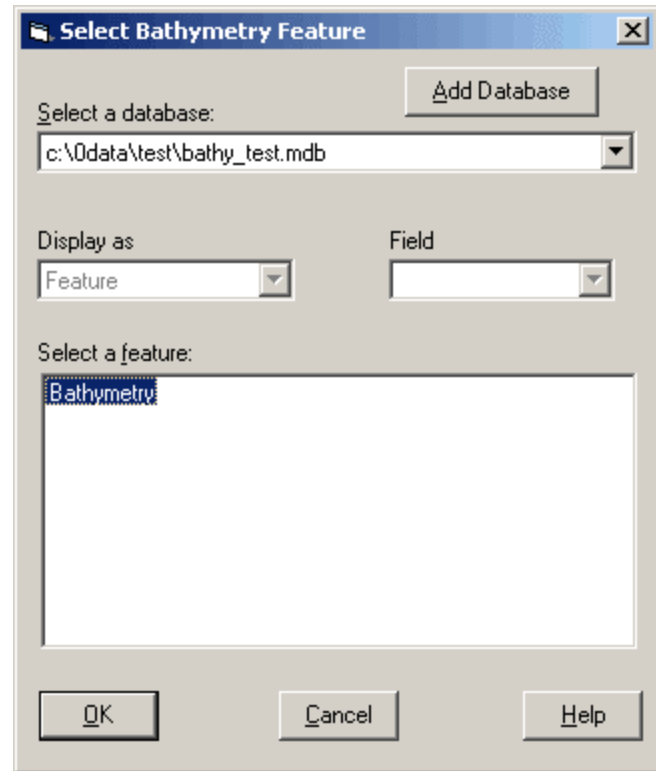
12. Success is indicative of a bathymetry display.



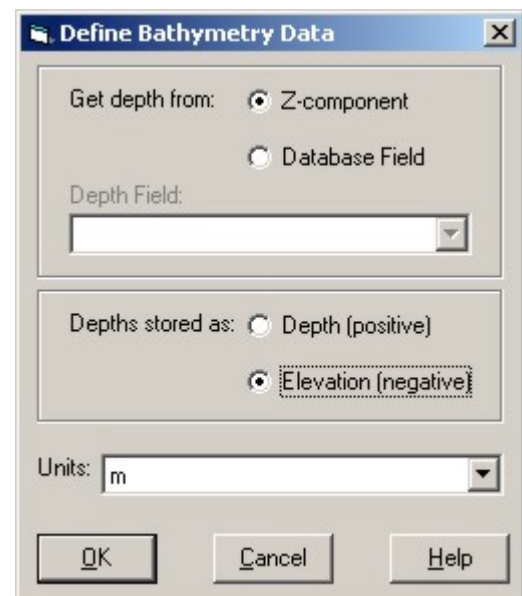
## Import Bathymetry File into MakaiPlan or MakaiLay

1. Open MakaiPlan (Start → Programs → Makai → MakaiPlan).
2. Open a new file (File → New Project) or opening an existing project (File → Open Project).
3. Click on Project → Add Feature → Bathymetry.

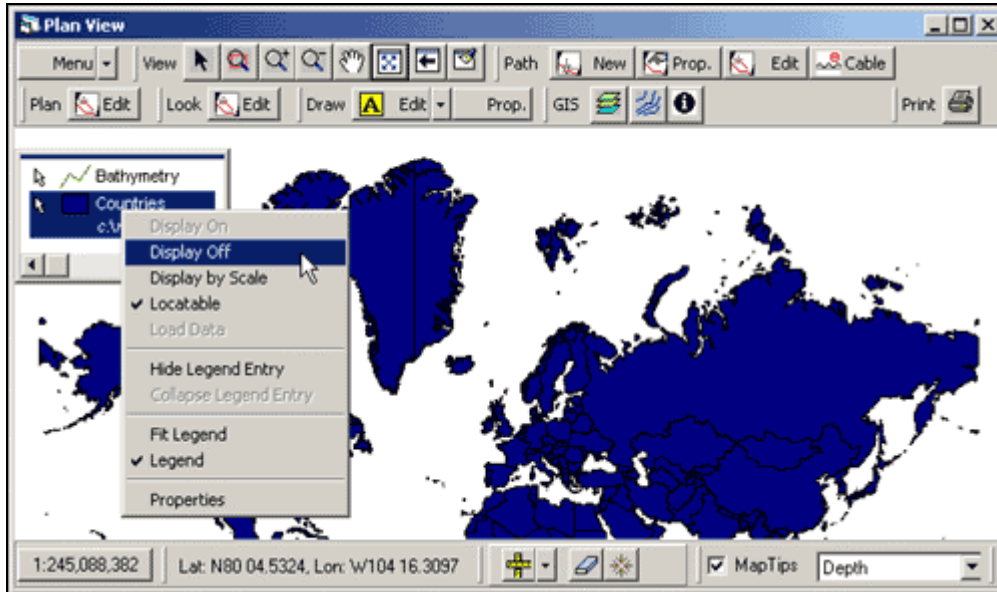
- a. Click on **Add Database**
- b. Browse to the Access Database (.mdb) file from the previous steps and click **open**. If you chose not to create a database, you may instead browse to the schema definition (.csd) file.
- c. Highlight the feature desired (Bathymetry) and click **ok**.  
  
→ If no features are present, troubleshoot your schema definition file created earlier.



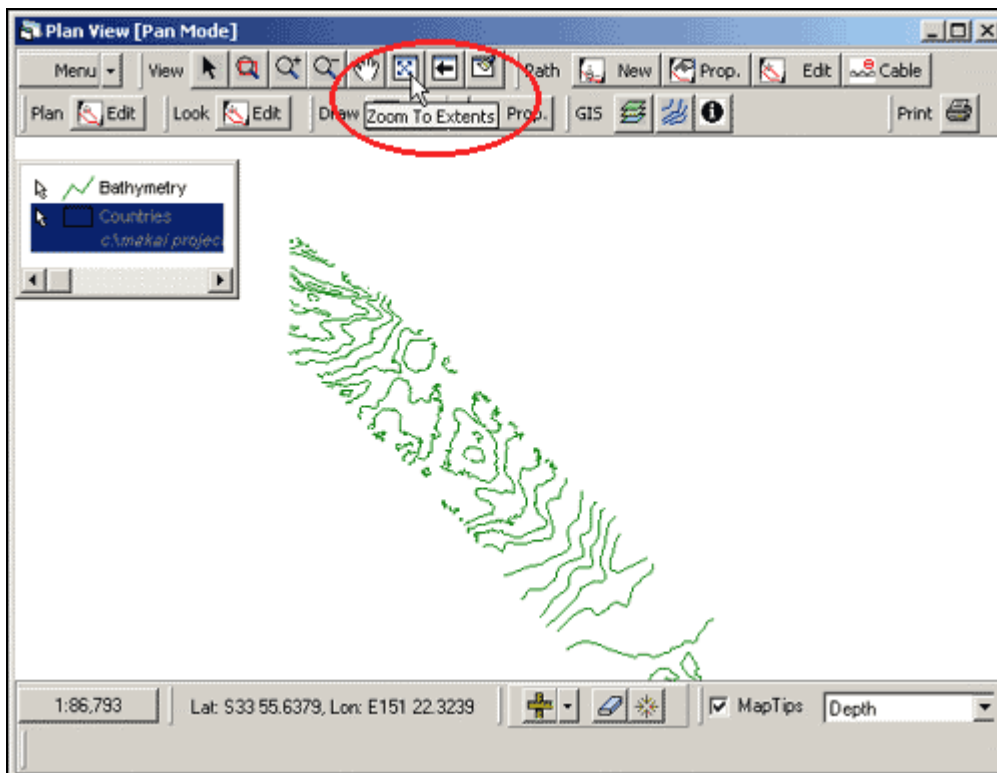
- d. Get depth from the **z-component**. Depths usually stored as **Elevation (negative)**. However, you may have to return to this step and change the radio button to **Depth (positive)** if your bathymetry data imports as negative numbers. The units should be changed to **cm** for Microstation drawings. Click **ok**.



- To locate and view the imported bathymetry, use your right mouse button to click on the `Countries` label in the features frame, and click `Display off`. Repeat this for all features, except Bathymetry, located in the legend.



- After clicking on the “Zoom To Extents” tool shown below, the bathymetry contours should appear in the window. Right clicking the feature name in the legend and clicking `Display on` will reactivate the feature(s) that were turned off in the previous step.



6. For a graphical representation of specific bathymetry values, click on the **Map Tips** located at the bottom of the **Plan View** window and highlight **Depth**. As you move your cursor over the contour lines, bathymetry values should be shown as illustrated below. The depth should be represented as positive integers. If the integers are negative, then you will need to first remove the bathymetry data followed by a redefinition of the data paying particular attention to step “3d” above. Selecting the **Depth stored as radio** button that was not used during the last bathymetry import process should yield positive results.

