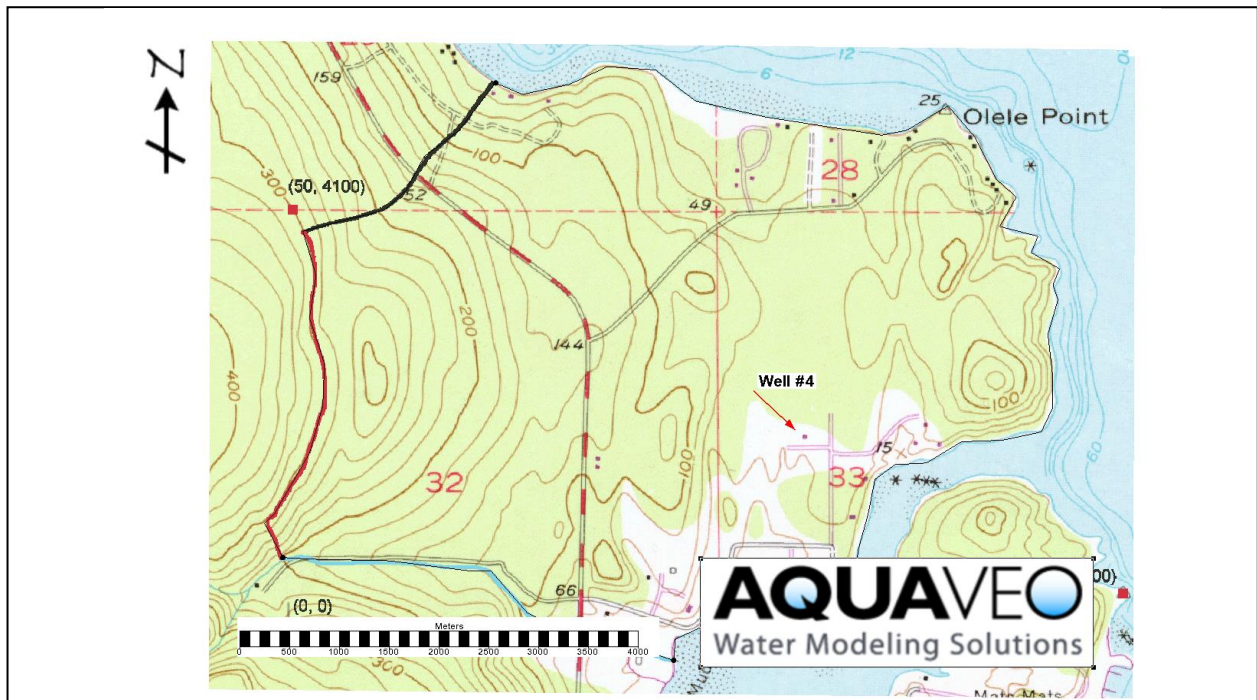*GMS 10.3 Tutorial*

Annotation Tools

Use scale bars, North arrows, floating images, text boxes, lines, arrows, circles/ovals, and rectangles.

Objectives

GMS includes a number of annotation tools that can be used to visually enhance a project. These are often used to help prepare images and print copies for reports. This tutorial introduces the tools and shows how they work.

Prerequisite Tutorials
- Getting Started

Required Components
- Annotation module
- Map module

Time
- 10–20 minutes

1   Introduction

The annotation tools in GMS facilitate the creation and display of annotation objects, which can be used to document, highlight, and assist with the presentation of data. Available annotation objects include screen space images, north arrows, scale bars, text, and shapes.

This tutorial demonstrates how the various annotation objects can be used in a project:

- Use an annotation image to add a logo to the Graphics Window.

- Add a north arrow to the Graphics Window.

- Add a scale bar to the Graphics Window.

- Add text, lines, arrows, and shapes to the Graphics Window.

- Create a project file with annotations and then import the annotations into another project.

1.1   Getting Started

To get started, do the following:

1. If necessary, launch GMS.

2. If GMS is already running, select *File* / **New…** to ensure that the program settings are restored to their default state.

3. If a dialog appears asking to save the current project and settings, click **No** to close the dialog.

4. Select *File* | **Open…** to bring up the *Open* dialog.

5. Select "Project Files (*.gpr)" from the *Files of type* drop-down.

6. Browse to the *Tutorials\Basics\annotations* directory.

7. Select "start.gpr" and click **Open** to import the file and close the *Open* dialog. A map showing Olele Point will appear in the Graphics Window.

2   Working with Annotations

There are a variety of annotation objects which can be added, including images, north arrows, scale bars, text, and shapes. Annotation data is contained within a unique folder in the Project Explorer. Annotation data are further organized into layers. Every annotation object belongs to a layer. There are two types of annotation layers: screen space and world space.

Objects created in a **Screen Space** 🔲 layer are anchored to certain locations in the main graphics window. When zoom, pan, or rotate operations are performed, objects in screen space layers do not move.

In **World Space** 🔲 layers, objects are anchored to world space locations. These objects are always drawn based at their world space locations when panning or zooming the display.

2.1   Images

An annotation image is an image that is anchored in screen space. This is useful for adding various images to a project, such as a company logo. Multiple annotation images can be added, and common image file formats (BMP, JPG, TIF, PNG) are supported.

Add an annotation image for a company logo at the top right of the graphic by doing the following:

1. Right-click in the Project Explorer and select *New* / **Annotation Layer – Screen Space**.

Notice that an 🗔 Annotation Data folder appears in the Project Explorer, with "Layer #1" listed underneath it. A screen space layer was created because annotation images are only anchored in screen space and thus not available in world space layers.

2. Using the **Add Annotation Image** 🖼 tool, drag a box anywhere in the main graphics window. An *Open* dialog will appear.

3. Make sure *Files of type* is set to "Images" or "PNG File."

4. Select "Aquaveo.png" from the *Tutorials\Basics\annotations* folder, and click **Open** to import the image and close the *Open* dialog.

The imported image appears and is anchored to the screen coordinates where the box was created. The image can be moved, stretched, and resized by selecting the image and editing the properties. Since the annotation is a company logo, it may look best anchored to the lower right corner of the screen.

To move and adjust the image, do the following:

5. Using the **Select Annotation Objects** 🖼 tool, select the Aquaveo logo and drag it to the lower right corner of the graphics window.

6. Resize the image by dragging a corner.

7. With the image selected, right-click on it and select **Properties…** to bring up the *Image Properties* dialog.

By default, the aspect ratio for an annotation image is fixed. The aspect ratio can be unlocked and modified by turning off the *Fixed aspect ratio* option. This allows the image to be stretched in a single direction. Transparency options can also be set for the image. This is useful if the background color of the image doesn't match the background color of the main graphics window.

8. In the *Transparency options* section, turn on *Use transparency* and *Specify color*.

9. Click on the *Specify color* drop-down menu (the down arrow next to the wide color button) beside the option to reveal the color palette of the logo image.

The palette is dynamic and populated with colors from the selected annotation image. In this case, a range of colors is shown: from white and light blue to black.

10. Select the first dark black color.

Notice that the black letters in the logo are now transparent and the graphics window background color shows through. Since the background color of our logo already matches well with the Graphics Window background color, the transparency options are not necessary in this case.

11. Click the **Cancel** button to close the *Image Properties* dialog without making any changes.

2.2   North Arrow

North arrows are used to orient data displayed in the graphics window. As the display is rotated, the north arrow will always align with the Y-axis. To add a north arrow as seen in Figure 1, do the following:

1. Using the **Create Annotation North Arrow** tool, drag a box in the upper left-hand corner. An *Open* dialog will appear.

2. Select "north-arrow.jpg" from the *Tutorials\Basics\annotations* folder, and click **Open** to import the image and close the *Open* dialog.

3. Use the **Rotate** tool to rotate the display. Notice that the north arrow is fixed to the Y-axis and does not rotate with the image.

4. Click the **Plan View** macro to return the display to its original orientation. The Graphics Window should appear as in Figure 1.
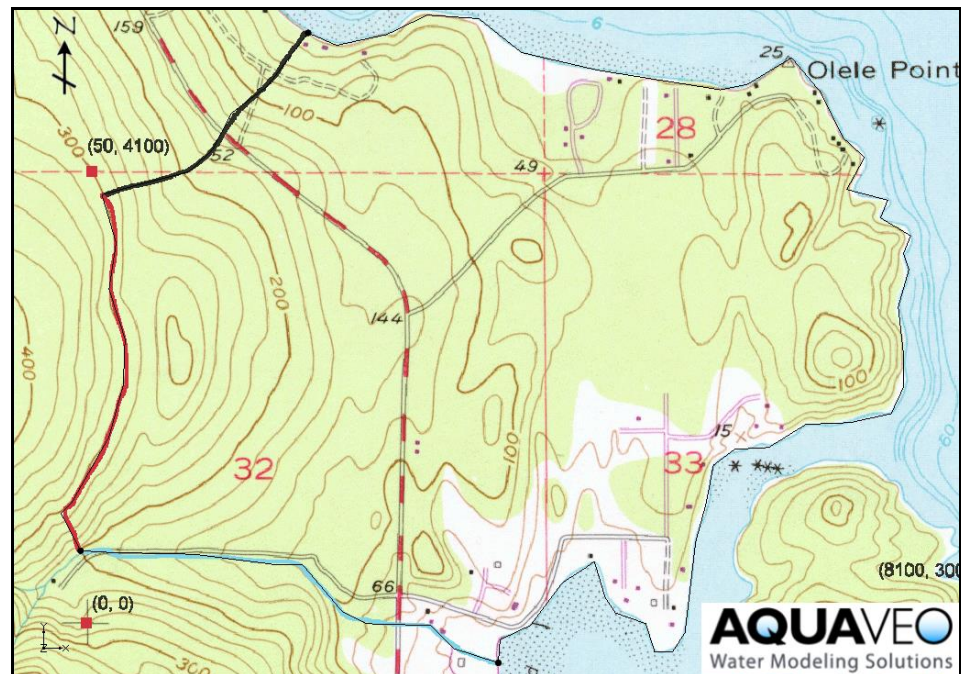
Figure 1   Inserting a logo and a north arrow

2.3   Scale Bar

Scale bars are used to provide context for world space in the graphics window. The units will automatically correspond with the current project units (meters). To create a scale bar, follow these steps:

1. Using the **Create Annotation Scale Bar** ⬛ tool, drag a box near the lower left corner of the screen to bring up the *Scale Bar Properties* dialog. Various settings can be adjusted that affect the appearance of the scale bar, font type, division widths, and background fills.

2. Click **OK** to accept the default settings and close the *Scale Bar Properties* dialog. A scale bar will appear in the space where the box was drawn.

As with other annotation objects, scale bars can be moved and resized as needed.

2.4   Text and Shapes

Annotation text and shapes are created to add labels and descriptions to a project. They can be created in screen or world space layers. Since these objects will be used to label certain locations in the view, a world space layer is used for this example. As with other annotation objects, shapes can be moved and edited with the **Select Annotations Object** 🟩 tool.

To create a line object, do the following:

1. Right-click on "Annotation Data" in the Project Explorer and select **Create world space layer** from the menu.

2. Select the new "Layer #2" to make it active.

3. Using the **Create Line Object** ╱ tool, click once to begin and double-click to end a line that points to any location in the image (if desired, use Figure 2 as reference). The *Line Properties* dialog will appear.

4. On the *Line* tab in the *Line* section, enter "3" in the *Width* field.

5. Click on the drop-down arrow to the right of the wide *Line color* button and select "Red".

6. In the *Arrowheads* section, select "End" from the drop-down to place an arrowhead at the end of the line.

7. Click **OK** to exit the *Line Properties* dialog.

To create a circle or oval, follow these steps:

1. Using on the **Create Oval Object** 🟢 tool, hold down the left-click button and drag the cursor over an area where the circle is desired to bring up the *Rectangle/Oval Properties* dialog.

2. On the *Rectangle/Oval* tab in the *Line* section, select the *Dashed* radio button.

3. Enter "3" as the *Width*.

4. Click on the drop-down arrow to the right of the wide *Line color* button and select "Blue".

5. In the *Fill* section, select the *Fill* radio button.

6. Click on the drop-down arrow to the right of the wide *Line color* button and select "Green".

7. Click **OK** to close the *Rectangle/Oval Properties* dialog.

To create a rectangle, do the following:

1. Using the **Create Rectangle Object** 🟦 tool, hold down the left-click button and drag the cursor over an area where the rectangle is desired to bring up the *Rectangle/Oval Properties* dialog.

2. The *Rectangle/Oval Properties* dialog will appear.

3. On the *Rectangle/Oval* tab in the *Line* section, select the *Dashed* radio button.

4. Enter "3" as the *Width*.

5. Click on the drop-down arrow to the right of the wide *Line color* button and select "Blue".

6. In the *Fill* section, select the *No fill* radio button.

7.   Click **OK** to close the *Rectangle/Oval Properties* dialog.

To add annotation text to the project as seen in Figure 2, do the following:

1.   Using the **Create Text Object** T tool, click near the line arrow created previously to bring up the *Text Properties* dialog.

2.   Enter "Location A" in the *Text* field.

3.   Click on the wide *Font* button (the one with letters) to bring up the *Font* dialog. The font, font style, and font size can be changed here.

4.   Select "14" in the *Size* field and "Bold" in the *Font style* field.

5.   Click **OK** to close the *Font* dialog**.**

6.   Click on the drop-down arrow to the right of the wide *Color* button and select "Green".

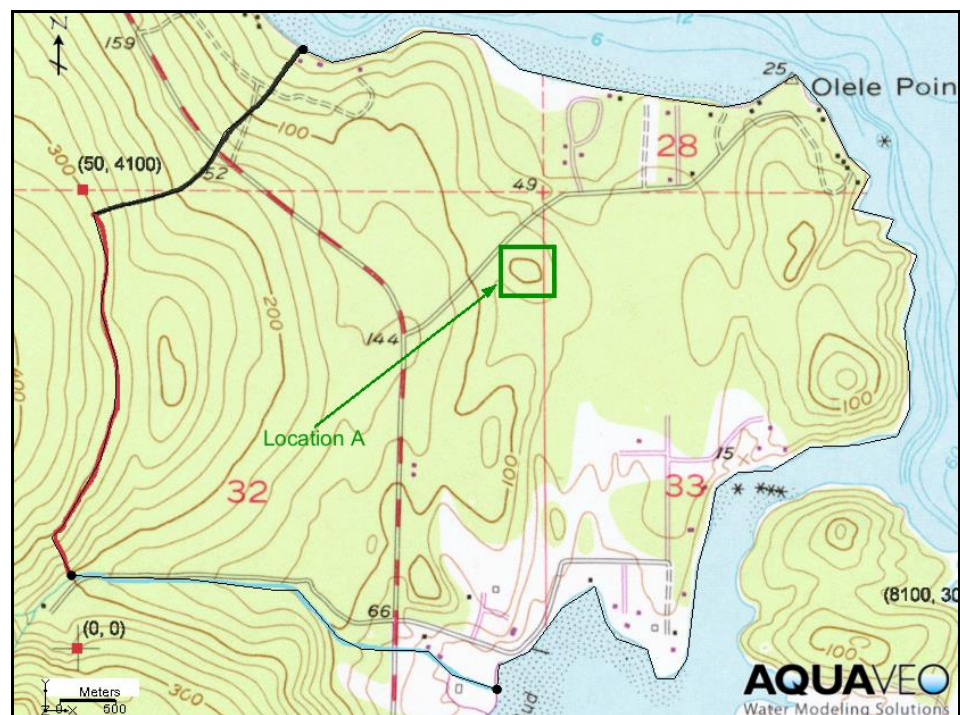7.   Click **OK** to exit the *Text Properties* dialog. The Graphics Window will appear similar to Figure 2.

Figure 2   Project with annotation objects

3   Importing and Exporting Annotations

Once annotations are set up in one project, they can be imported into any other project. This can be accomplished by saving a project file containing only the annotations and then importing the project's annotation(s) into the other project. The steps below

illustrate how to create a project file containing only the newly added annotations and then how to import the new annotations into an existing project file.

1. Select *File* | **Save As…** to bring up the *Save As* dialog.

2. Enter "annoImport.gpr" for the *File name*.

3. Select "Project Files (*.gpr)" from the *Save as type* drop-down.

4. Click **Save** to save the new project file and close the *Save As* dialog.

5. Remove the "Map Data" and "GIS Layers" folders from the Project Explorer by right-clicking each and selecting **Delete**.

6. Save the project file by clicking the **Save** 💾 macro.

Now this project file's annotations can be imported into other projects. The next step is to open another project file into which the annotations can be imported.

1. Click **New** 📄 to close the project.

2. Click **Open** 📂 to bring up the *Open* dialog.

3. Select "start.gpr" from the *Tutorials\Basics\annotations* directory and click **Open** to open the project and close the *Open* dialog.

4. Click **Open** 📂 to bring up the *Open* dialog again.

5. Select "Project Files (*.gpr)" from the *Files of type* drop-down.

6. Select "annoImport.gpr" and turn on *Import into current project*.

7. Click **Open** to import the annotations project file and close the *Open* dialog. All the previously created annotations will now appear on the image.

4   Conclusion

This concludes the *Annotation Tools* tutorial. Key concepts in this tutorial included creating both types of annotation layers, learning the difference between them, using annotation objects to document points of interest in the Graphics Window, editing using the Annotation toolbar, and exporting the annotation layers for use in other projects.