



GIS Utilities: GIS Analysis

Using the BARC for BAER Support



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This exercise demonstrates the reporting phase of burn severity mapping. Most reports will ask for acres of burn severity as well as acres of burn severity broken down by ownership, watershed, or other delimiters.



*Polygons in Shapefiles store their area in the **Shape** field. This VBA code extracts that information into a new field for you.*

*The code above will return area in map units. Assuming your map units are meters, divide **dbfArea** by **4046.8** to return acres.*

Exercise Objectives

- Perform GIS Analysis using the Burn Severity Map

Required Data

- Fire perimeter, Soil Burn Severity, and Ownership layers

Introduction and Overview of Procedure Steps

In this exercise you will perform several GIS analysis techniques using BARC data. Subsequent analysis of BARC data is necessary to derive additional information from your data. In this exercise you will:

1. Determine Acres of Soil Burn Severity Classes Within the Perimeter
2. Determine Acres of Burn Severity by Ownership Using a Pivot Table in Excel

I. Determine Acres of Soil Burn Severity Classes Within the Perimeter

1. Add the following files to a new ArcMap document:
 - **hayman_per_062302.shp**
 - **hayman_final_soil_bs.shp**
 - **pike_sanisabel_ownership.shp**
2. Open the **Attribute Table** for hayman_final_soil_bs.shp.
3. Click **Options | Add Field**.
4. Configure the following in the Add Field dialog:
 - **Name:** ACRES_GIS
 - **Type:** *Double*
 - **Precision:** 12
 - **Scale:** 1
5. Click **OK**.
6. Click **Help** from ArcMap's main menu.
7. Choose **ArcGIS Desktop Help**.
8. Click the **Index** tab.
9. Type "**calculating**" and then double click on "**fields in attribute tables.**" In the Topics Found window that pops up, select **Making field calculations**.
10. Click **Display**.
11. Select **Making field calculations** under **Title**.
12. Click **Display**.
13. Locate and expand the **Updating area for a shapefile** topic under **How to make field calcula-**



5. Type the following VBA statement

```
Dim dblArea as double  
Dim pArea as IArea  
Set pArea = [shape]  
dblArea = pArea.area
```

6. Type the variable dblArea in the

Fig. 1 Highlighting the text for the VBA statement will allow you to quickly insert the VBA statement into the Field Calculator. This method will also help you to avoid syntax errors.

tions.

14. Locate step **5. Type the following...** under **Updating area for a shapefile**.
15. Click-and-drag over the VBA statement to highlight it (see figure 1).
16. Press **Ctrl-c** on the keyboard to copy the text.
17. Minimize the **Help** dialog.
18. Return to the Attribute Table dialog and right-click on the **ACRES_GIS** column heading.
19. Choose **Calculate Values**.
20. Check **Advanced**.
21. Click in the empty **Pre-Logic VBA Script Code** field.
22. Press **Ctrl-v** to paste the copied text.
23. In the empty predefined action field (named "ACRES_GIS=") type: **dblArea/4046.8**.
24. Click **OK**.
25. Inspect the results.
26. Right-click the **SOIL_BS** column heading.
27. Choose **Summarize**.
28. Ensure that the **1. Select a field to summarize** pull-down menu has **SOIL_BS** selected.
29. Ensure that **ACRES_GIS** is expanded under **Choose one or more...**
30. Place a checkmark next to **Sum**.
31. Click the folder icon next to **Specify output table**.
32. Navigate to your outputs directory.
33. Type: **acres_bs** as the filename.
34. Click **Save**.
35. Click **OK**.
36. Click **Yes** to add the table to ArcMap's Table of Contents.
37. Right-click **acres_bs** in ArcMap's Table of Contents.
38. Choose **Open**.
39. Inspect the results.

II. Determine Acres of Soil Burn Severity by Ownership

1. In ArcToolbox, navigate to **Analysis Tools | Overlay | Intersect**.
2. Configure the following:
 - **Select the input layers to intersect:** *hayman_final_soil_bs.shp* and *pike_sanisabel_ownership.shp*
 - **Specify the output shapefile of feature class:** Click the folder icon, navigate to your output directory and type: **soilbs_ownership.shp** as the filename.
 - Click **Save**
 - Leave the other options to the **defaults**.



3. Click **OK**.

Because Shapefiles don't automatically update area or length attributes on features you edit, you'll need to re-calculate the ACRES_GIS field

4. Open the attribute table for **soilbs_ownership.shp**
5. Locate and right-click the **ACRES_GIS** column heading.
6. Choose **Calculate Values**.
7. Check **Advanced**.
8. Maximize the **ArcGIS Help** dialog from your taskbar.
9. Locate step **5**.
10. As before, highlight, copy-and-paste the VBA statement to the **Field Calculator**.
11. Type **dblArea/4046.8** for the predefined action.
12. Click **OK**.
13. Inspect the results (see critical note at left).
14. Leave the **soilbs_ownership.shp** attribute table open.



ALWAYS REMEMBER to recalculate the necessary area fields after any spatial changes (e.g., clip, union, intersect, etc.). The area field is not dynamic and will not update with the correct values until you perform a recalculation.

IV. Determine Acres of Burn Severity by Ownership Using a Pivot Table in Excel

1. In the attribute table, click on **Options | Export....**
2. Name the output table **soilbs_ownership_table.dbf**, press OK, and press Save.
3. Do not add the table to the current ArcMap document because the next step will be done in Microsoft Excel.
4. On your computer desktop, click on **Start | Programs | Excel**.
5. Go to **File | Open** and navigate to the folder where you saved **soilbs_ownership_table.dbf**. Remember to change the file type to All Files (*.*) Load **soilbs_ownership_table.dbf**.
6. With your table loaded, go to **Data | PivotTable and PivotChart Report...**
7. In Step 1 of 3, leave the defaults (Microsoft Excel list or database and PivotTable) and press **Next**.
8. In Step 2 of 3, check to see that all your data is selected and then press **Next**
9. In Step 3 of 3, choose New worksheet for the location for your report. Click **Finish**.
10. From the PivotTable Field list, click and drag **STATUS** to the "Drop Row Fields Here" location.
11. Click and drag **Soil_BS** to the "Drop Column Fields Here" location.
12. Click and drag **ACRES_GIS** to the "Drop Data Here" location.
13. You now have a quick and easy report showing burn severity by ownership.
14. Explore display and formatting options within PivotTables. **Save** the file as an **Excel spreadsheet (*.xls)**.

You are finished with this exercise!