

## Creating Random Points

ArcGIS 10.4+

Welcome to the Essential ArcGIS Task Sheet Series. This series supplements the Iowa State University Geospatial Technology Training Program short course series. The task sheets are designed to provide quick, easy instructions for performing mapping tasks.

In ArcMap, the Create Random Points tool creates a specified number of random point features. Random points can be generated in an extent window, inside polygon features, on point features, or along line features. For information on creating random values in an attribute table, reference *Field Calculations: Creating Random Values* **PM2082-17e**. This task sheet will demonstrate using the Create Random Points tool in ArcMap to create random points within a selected watershed, that could be used for sampling, modeling or analysis.

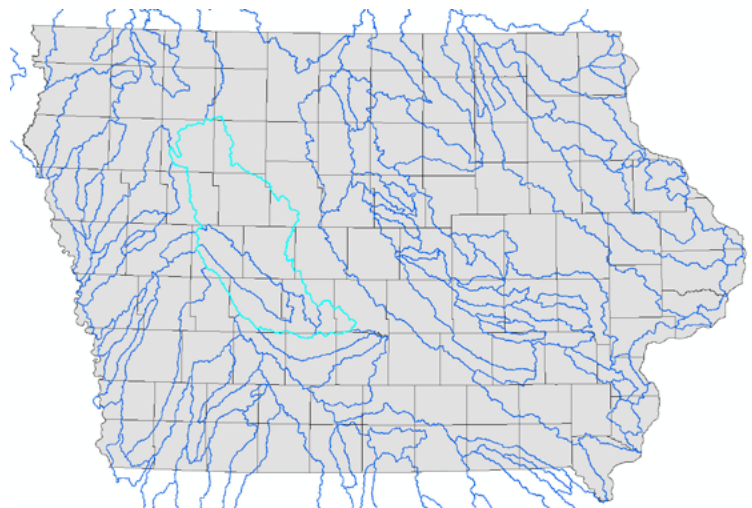
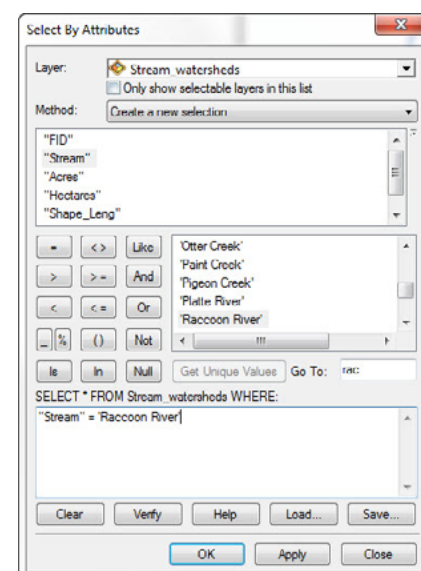
### 1. Getting Started

- To download the data used in this task sheet, navigate to [www.extension.iastate.edu/communities/gis/quicktasksheets/data](http://www.extension.iastate.edu/communities/gis/quicktasksheets/data) and click on the publication number: **PM2082-17e**. All files originate from the Iowa DNR NRGIS Library (<https://programs.iowadnr.gov/nrgislibx/>).
- When the download is complete, unzip the folder and move the files to a directory you can access in ArcMap. Open the **Stream\_watersheds.shp** in a new blank ArcMap document.



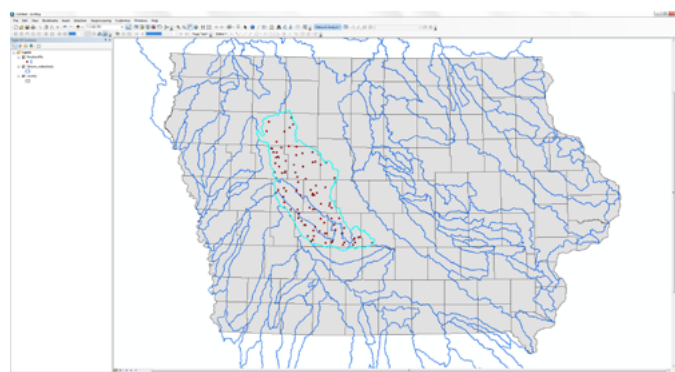
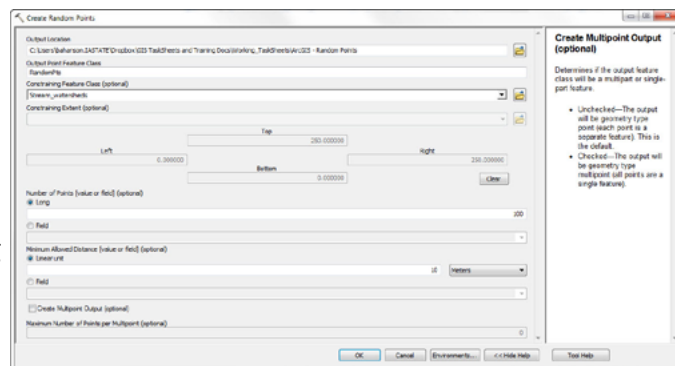
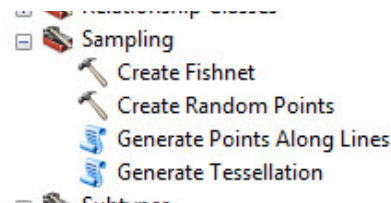
### 2. Selecting a Feature

- For this tutorial we are interested in creating random points within the boundary of the Raccoon River watershed. To generate random points within one selected feature of the **Stream\_watersheds.shp** shapefile (or any selected polygon area) that area of interest first needs to be selected before running the tool.
- Select the feature you are interested in by using the **Select by Attribute** tool. Alternatively, you can select the feature from the attribute table, or use the in the **Select Element** tool from the **Standard Toolbar** and click on the map feature to select it.
- To use the **Select by Attribute** tool, click **Selection > Select by Attribute**. Double click on **"Stream"**, the equals symbol (**=**), and **"Raccoon River"**. Make sure your query looks like this: **"Stream" = 'Raccoon River'**.



### 3. Creating Random Points Tool

- In **ArcToolbox**, open the **Create Random Points** tool by expanding the **Data Management Tools** toolbox, then opening the **Sampling** toolbox.
- Within the **Create Random Points** tool, set the **Output Location** folder to the location of your choice. Under **Output Point Feature Class**, type in the name of **RandomPts**.
- Set the **Constraining Feature Class** to **Streams\_watershed.shp**. *Note: because we have a feature selected from this shapefile, the tool will use the selected feature instead of the extent of the entire shapefile. Also, keep in mind that random points can be created within a constraining extent, on point features, or along line features.*
- Optionally, you can set the number of points you would like randomly generated, as well as the minimum distance allowed between points. In this case, I set the **Number of Points** to **100**, and the **Minimum Allowed Distance** to **10 meters**. Meaning none of the random points generated can be closer than 10 meters apart. Click **OK** to run the tool.
- When the tool is complete, the random points will be added to your map document. Open the attribute table for **RandomPts.shp**. You can see there are 100 features in the attribute table.
- Refer to the task sheet - *Field Calculations: Creating Random Values* **PM2082-17e** for information on adding additional fields and calculating random values within the **RandomPts.shp** file. Or use the **RandomPts.shp** file in other geoprocessing tools for hypothetical analysis or modeling.



RandomPts		
FID	Shape	CID
0	Point	7
1	Point	7
2	Point	7
3	Point	7
4	Point	7
5	Point	7
6	Point	7
7	Point	7
8	Point	7
9	Point	7
10	Point	7
11	Point	7
12	Point	7
13	Point	7
14	Point	7
15	Point	7
16	Point	7

(0 out of 100 Selected)

### Contact:

Bailey Hanson bahanson@iastate.edu, 515-520-1436 or Professor Christopher J. Seeger, ASLA, GISP cjsseeger@iastate.edu, 515-509-0651 for more information about the Geospatial Technology Program. This task sheet and more are available at [www.extension.iastate.edu/communities/gis](http://www.extension.iastate.edu/communities/gis)

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