

The CEDRA Corporation's COMMAND OF THE MONTH

A monthly information bulletin

August 2010

FEATURED COMMAND
Echoing the Area of
an Implied Polygon



Application Description

Have you ever been working on a map and you wanted to know the area of a piece of property, but you didn't have a polygon feature that represented that property. Sure you could use native ArcMap functionality to pick points and display an area, but that value would only be approximate. What you really want is an exact area value.

So that, the problem becomes, is there a tool that will compute the area of an implied polygon given existing features or random points.

The CEDRA Solution

To address this issue, the [Echo Area],  tool within the CEDRA-Echo-Tools toolbar, shown in Figure 1, can be employed. This tool is the second from the right tool in the CEDRA-Echo-Tools toolbar.

Echo Area Tool Overview

The [Echo Area],  tool enables the user to create an implied polygon, from which, a perimeter and area is computed. An implied polygon denotes that an actual polygon features is not created nor required. Rather, the tool creates an internal polygon geometry which is used in the perimeter and area computations.

Since conditions may vary from case to case, this tool offers three modes of operation for establishing the implied polygon geometry.

The **first** is by using an auto-search technique to trace existing features. The **second** is by picking features individually to form a closed figure, while the **third** mode of operation involves picking random points within the map area.

Once the geometry of the implied polygon has been established, the tool displays in a message box the perimeter and area in terms of square feet (sm) and acres (ha).

Command Of The Month bulletin

This month's issue addresses how a user can display or echo the area of an implied polygon in terms of square feet (sm) and acres (ha).

Echo Area Tool Operation

To use this tool, the user should:

➤ **1** Click at the  Echo area and perimeter of a string of features tool.



Figure 1
The CEDRA-Echo-Tools Toolbar

- **2** Click in the ArcMap display at a line, polyline or curve feature to display the choice list dialog box of Figure 2.
- **3** Scroll down in the *Define Polygons by:* choice list, and select the:
- *Point & Auto-Search* option to have the program trace the remaining sides of the figure,
 - *Pick Elements* option to have the user select each side individually
 - or
 - *Pick Individual Points* option to have the user make random picks in the map area.
- **4** Click at the **OK** button to confirm the selection and continue, or click at the **Cancel** button to abort the command

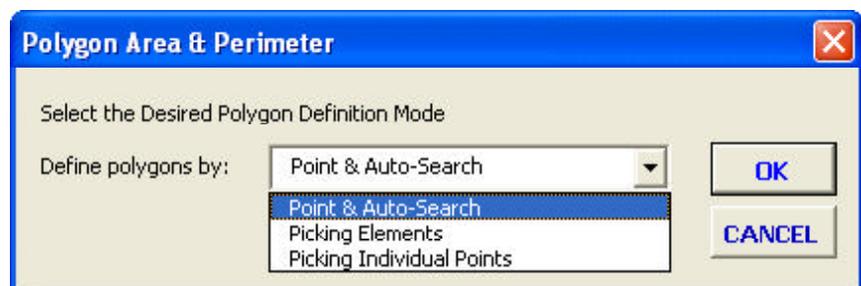
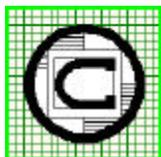


Figure 2 - Available Modes of Operation for Creating an Implied Polygon



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Having selected one of the three options, and clicked at the OK button, the operation of the tool will vary.

To demonstrate, shown in Figure 3 is a sample polygon whose perimeter and area is to be displayed. For the Point and & Auto-Search and Picking Elements options, the pick made in Step 2 should be between points A and B. That is, a point somewhere on the line between the end points of the line. For the Picking Individual Points options, the pick made in Step 2 should be on top of point A.

Presented below are the steps that should be performed to display the perimeter and area for the above referenced sample for each of the available options.

Point & Auto-Search

- **5a** Click at the **Yes** button to confirm the seed element selection and continue with the auto-search process (see Figure 4), or
- click at the **No** button to indicate that the highlighted feature is not the desired feature and that the search for the seed feature should continue,
- or
- click at the **Cancel** button to abort the command.



Figure 4
Seed Element Confirmation Query

Once the seed feature has been identified, the tool will search for connecting features. At junctions where more than one fea-

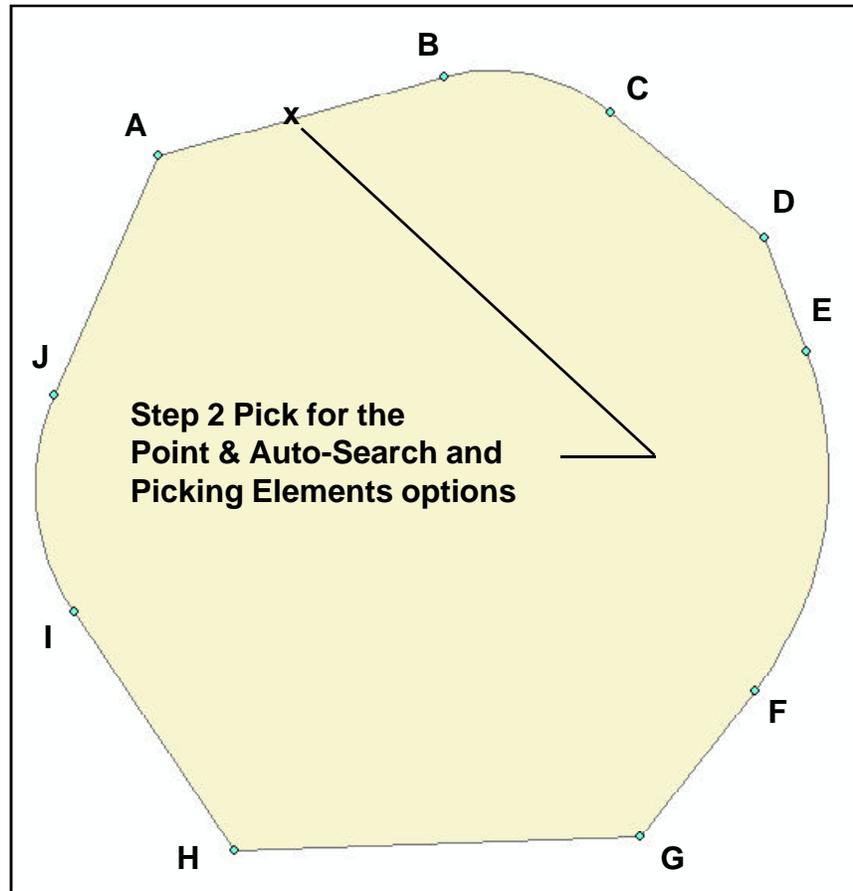


Figure 3 - Sample Polygon Geometry to be Displayed



Figure 5
Implied Polygon Confirmation Query

ture is connected, the user will be prompted as to the desired feature to be processed. This process repeats until a closed figure is formed.

Once a closed figure is formed:

- **6a** Click at the **Yes** button to confirm the implied polygon that was established (see Figure 5), or
- click at the **No** button to abort the command.

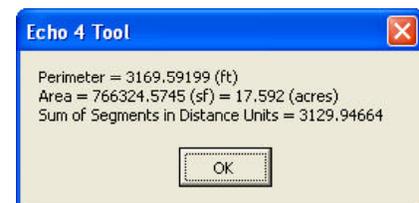


Figure 6
Perimeter and Area Results Display

Upon confirmation of the implied geometry, the tool computes and displays the perimeter and area of the polygon, see Figure 6.

- **7a** Peruse the information.
- **8a** Click at the **OK** button to close the window.

The command remains active to repeat from Step 2.

Picking Elements

- **5b Click** in the ArcMap display at a line, polyline or curve feature that is connected to the seed feature selected by the pick made in Step 2.

In the case of the sample polygon shown in Figure 3, this would be a pick on the curve between points B and C.

- **6b Repeat** Step 5b until a closed figure is formed. **Select** the last feature in the closed figure a second time to terminate the definition of the implied polygon.

In the case of the sample polygon shown in Figure 3, this would be picks on the following segments:

- C and D
- D and E
- E and F
- F and G
- G and H
- H and I
- I and J
- J and A, and again,
- J and A

- **7b Click** at the **Yes** button to confirm the implied polygon that was established (see Figure 5), or **click** at the **No** button to abort the command.

Upon confirmation of the implied geometry, the tool computes and displays the perimeter and area of the polygon, see Figure 6.

- **8b Peruse** the information.
- **9b Click** at the **OK** button to close the window.

The command remains active to repeat from Step 2.

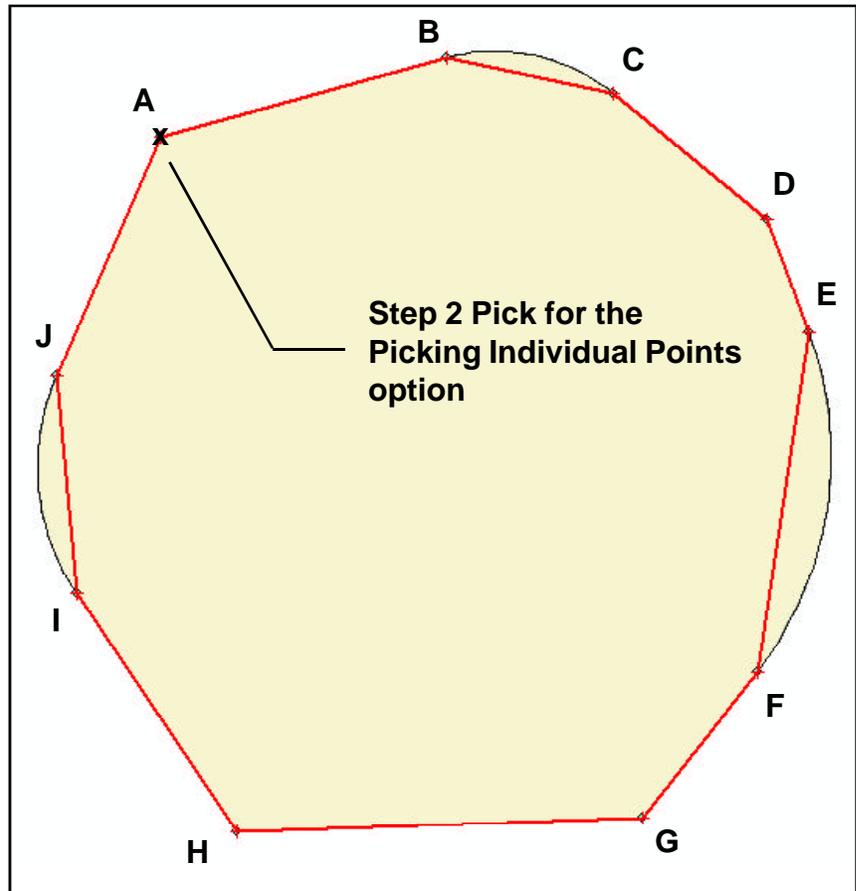


Figure 7 - Implied Polygon Defined with Picking Individual Points option

Picking Individual Points

- **5c Click** in the ArcMap display at the next vertex comprising the implied polygon.

In the case of the sample polygon shown in Figure 7, this would be point B.

- **6c Repeat** Step 5c until a closed figure is formed. **Select** the last point in the closed figure a second time to terminate the definition of the implied polygon.

In the case of the sample polygon shown in Figure 7, this entails making picks on top of the following points: C, D, E, F, G, H, I and J. Note a second pick on point J is not made at this point of time because we need to intro-

duce curve information for the segments between B and C, E and F and I and J.

Under this option of implied polygon definition, the user is able to use the **A**, **D**, **I** and **M** keys on the keyboard to manipulate the vertices of the implied polygon.

The **A** key on the keyboard can be used to convert a polygon side into a circular arc. To do so, the user moves the cursor to a location between two polygon vertices and depresses the **A** key. The dialog box shown in Figure 8 will appear.

Using this dialog box, the user is able to specify: (a) a radius value, (b) an arc length and central angle or (c) a radius and central angle. Once the information has been specified, the **OK** button can be selected to generate the circular arc.

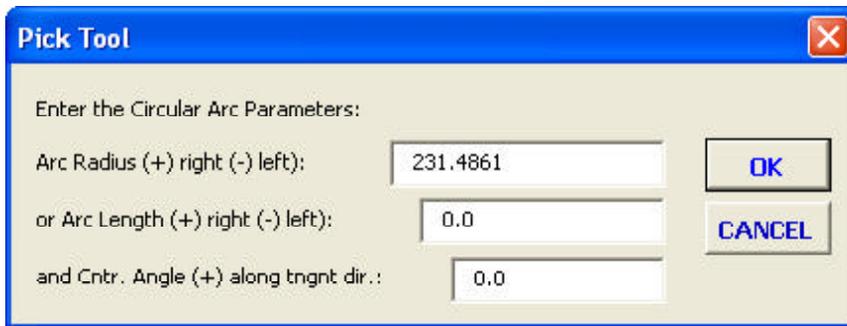


Figure 8 - Define Circular Arc Parameters for a Polygon side

The dialog box will remain active until the Cancel button is selected. In so doing, various values can be specified until the desired result is attained.

The **D** key on the keyboard can be used to delete a polygon vertex. To do so, the user moves the cursor on top of a polygon vertex and depresses the **D** key.

The **I** key on the keyboard can be used to insert a vertex along a side of the polygon. To do so, the user moves the cursor to a location between two polygon vertices and depresses the **I** key.

The **M** key on the keyboard can be used to move a polygon vertex. To do so, the user moves the cursor on top of a polygon vertex and depresses the **M** key. A prompt will appear in the status bar area of the application prompting the user to pick the new location for the vertex. At this point, the user moves the cursor to the desired new location and makes a "pick" in the map area using the left mouse button.

Continuing with the sample polygon shown in Figure 7, the user should do the following to: (a) introduce the curve information and (b) terminate the definition of the implied polygon.

- **7c** Move the cursor to a location between points B and C in the ArcMap display and depress the **A** key on the keyboard.

Enter the appropriate circular arc data and click the **OK** button.

Click the **Cancel** button to abort the circular arc definition.

- **8c** Move the cursor to a location between points E and F in the ArcMap display and depress the **A** key on the keyboard.

Enter the appropriate circular arc data and click the **OK** button.

Click the **Cancel** button to abort the circular arc definition.

- **9c** Move the cursor to a location between points I and J in the ArcMap display and depress the **A** key on the keyboard.

Enter the appropriate circular arc data and click the **OK** button.

Click the **Cancel** button to abort the circular arc definition.

- **10c** Click in the ArcMap display at point J to terminate the implied polygon definition.

Once the implied polygon has been defined the tool computes and displays the perimeter and area, see Figure 9.

- **11c** Peruse the information.

- **12c** Click at the **OK** button to close the window.

The command remains active to repeat from Step 2.

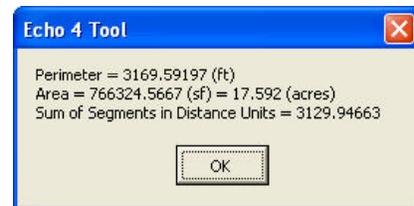


Figure 9
Perimeter and Area Results Display

Summary

The [EchoArea],  tool is accurate and easy to use tool for displaying the perimeter and area of an implied polygon.

Note that the Picking Individual Points option is a recent addition to the choice list dialog box which is presented by this tool.

Users with a software support agreement should check with The CEDRA Corporation on how to obtain a software update so as to be able to utilize this new option.

As always, users who have a need for functionality that is not presently available in CEDRA software should feel free to forward these requests to CEDRA, as well as, any other comments or suggestion you may have.

If you have a request for Command Of The Month, feel free to phone, fax or e-mail your request to The CEDRA Corporation.