

Technology Technical Note MO-4

Using Missouri NRCS Developed ArcPad Tools



Prepared by:

United States Department of Agriculture
Natural Resources Conservation Service
Missouri State Office
601 Business Loop 70 West, Suite 250
Columbia, Missouri 65203

www.nrcs.mo.usda.gov

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Introduction

The intent of this document is to provide instructions for using various ArcPad tools developed by Missouri NRCS. The tools include:

- Creation of shapefiles to use in collecting data for various tasks.
- Deleting multiple features.
- Exporting point features to a text file.
- Navigating to polyline vertices.
- Determining station and offset along a line.
- Reversing a line.

For help in using the standard features of ArcPad with a ProXYZ unit, you should refer to Missouri Technology Technical Note MO-2.

Required Software

In order to use the procedures contained in this document, the following software is needed:

On the device:

- ArcPad 8.0 SP2
- Microsoft Windows Mobile 5.0 or 6.1

NOTE: The mention and/or use of any software contained in this document should not in any way be considered as an endorsement by USDA-NRCS. Newer versions of the software may work, however, there is no guarantee since they have not been tested.

Equipment

These tools were tested on the 3-D ProXYZ Mobile Mapping System. This is comprised of an Archer Juniper PDA with an attached Hemisphere XF101 GPS receiver running Windows Mobile 6.1 and ArcPad 8 SP2. They were also tested on a Trimble GeoXT running Windows Mobile 5 and ArcPad 8 SP2. These tools should run on any device running ArcPad 8 although no guarantee is made.

Installation of Tools

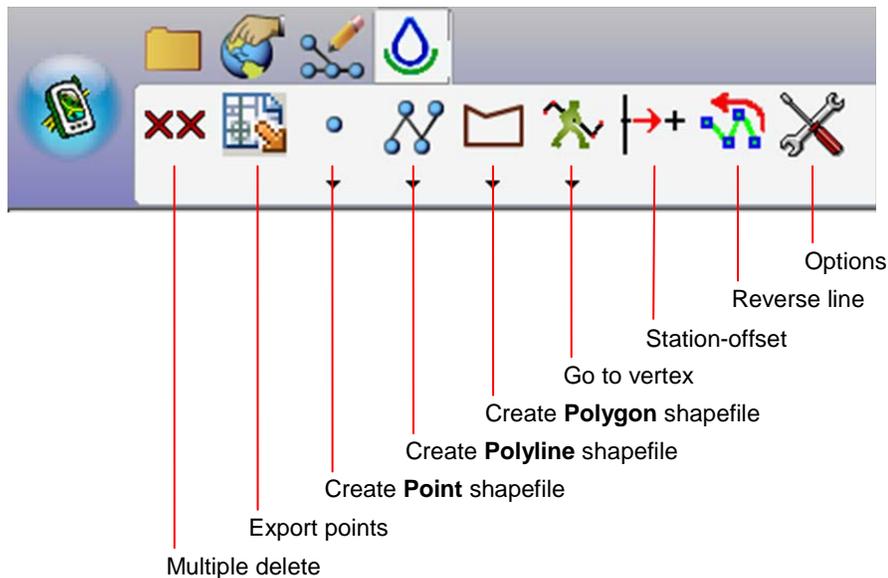
These tools first need to be installed on your mobile device. Refer to *Appendix A – Downloading and Installing the Tools* for instructions on obtaining and installing the these tools.

Overview of the Tools

Once installed, the user should see an additional toolbar (NRCS raindrop) when opening ArcPad. This section gives a brief overview of this NRCS toolbar and the tools available on it.

NRCS Toolbar

A screenshot of the NRCS toolbar (raindrop) is shown below with each of the tools labeled. The icons with the small black triangle underneath provide a drop-down menu with more choices. Each tool is described in more detail in the following section.



Tools

XX Multiple delete

This tool will allow you to delete multiple features at once rather than having to delete one feature at a time. You will first need to make sure you have placed the desired shapefile in edit mode. You can then **TAP on this tool's icon** to make it the active tool (i.e., the icon background will turn orange). Draw a window around the features to delete. The selected features will be highlighted. You will then be asked to confirm the deletion.

Export points

You can export points to a text file from a point shapefile. This text file can then be used to import points into various software programs (e.g., AutoCAD Civil 3D, etc.). The format of the file created is a comma-delimited text file with "Point number, Northing, Easting, elevation(Z), Description" (or PNEZD).

Each of the values is determined as follows

<i>Value</i>	<i>Attribute used</i>	<i>If Attribute not found</i>
Point number	PointNo	Sequential # starting at 1
Northing	GPS_Y	Point's Y coordinate
Easting	GPS_X	Point's X coordinate
Elevation	Elevation	0
Description	Comment, or Description	blank

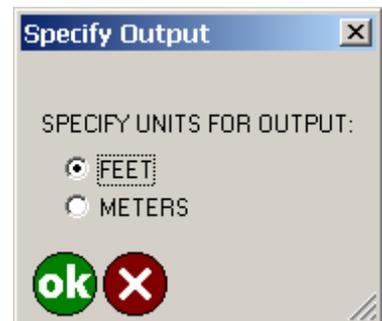
To use the tool,

1. First make sure the desired point shapefile is in edit mode.

2. **TAP on the export icon.** 
The form at right should be displayed.

3. Select "Feet" or "Meters".

If "Feet" is selected the program converts the map coordinates from metric units (if applicable) to English units. The elevations are not converted.



If "Meters" is selected the program converts the map coordinates from English units (if applicable) to metric units. The program will also convert the elevations from English to metric.

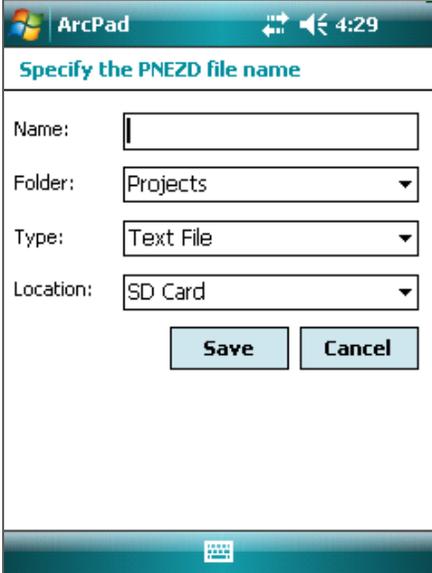
A form will then be displayed asking for the name and location of the point file.

4. Select "Location" first (e.g., SD Card) and then you can select "Folder" (e.g., Projects). You can then enter a file name.

5. **TAP** [Save].

A window should appear informing you that the text file was successfully created.

6. **TAP** ok .



The screenshot shows the ArcPad application interface. At the top, the status bar displays 'ArcPad', signal strength, and the time '4:29'. Below the status bar is a title bar for the dialog box that reads 'Specify the PNEZD file name'. The dialog box contains four input fields: 'Name:' with an empty text box, 'Folder:' with a dropdown menu showing 'Projects', 'Type:' with a dropdown menu showing 'Text File', and 'Location:' with a dropdown menu showing 'SD Card'. At the bottom of the dialog box are two buttons: 'Save' and 'Cancel'. A keyboard icon is visible at the bottom of the screen.



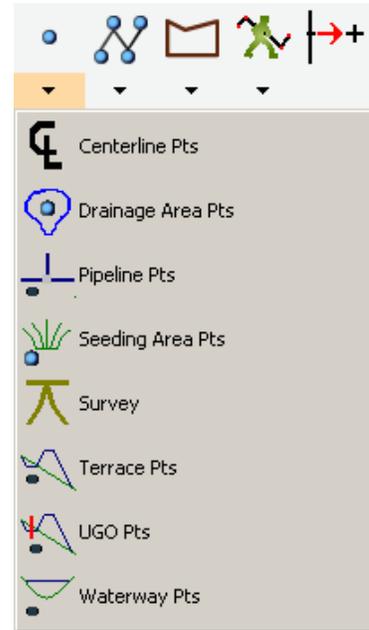
Note: For all the create shapefile tools below, the shapefile will be created with the projection set to the current projection of the map. See the "Options" tool below for changing the projection.

• **Create Point shapefile**

Use this tool to create a new point shapefile.

1. **TAP** the down arrow below the point icon to drop-down the menu of choices as shown at right.
2. **TAP** the desired type of points you will be collecting.

This will determine the input form used to collect the attribute data specific to the point type. See *Appendix B – Shapefile Attributes and Forms* for details on the attribute data collected for each shapefile as well as a screen shot of the input form.

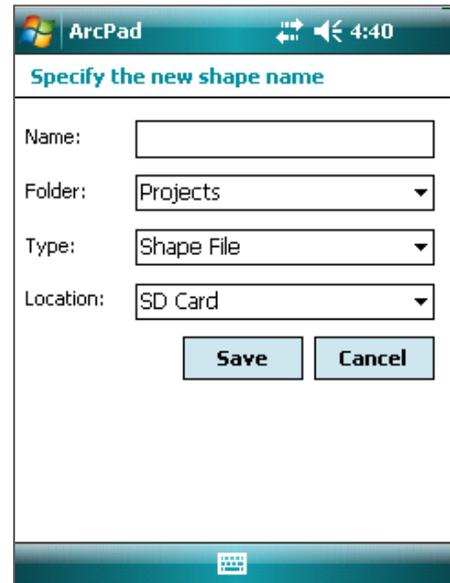


The window at right should appear.

3. Specify the desired file name and folder location.
4. **TAP** [Save].

It will take a couple seconds and then the window below should be displayed informing you that the shapefile was created.

5. **TAP** ok.



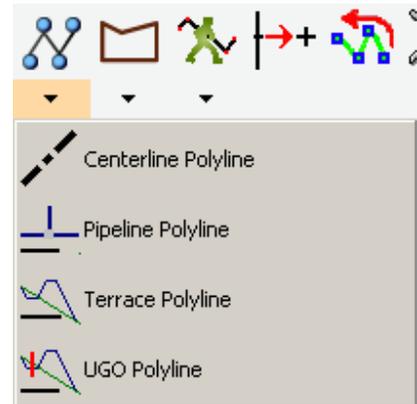
Once the shapefile is created, it will automatically be put in edit mode and the point feature made the active tool on the Edit toolbar. Note: It may not be highlighted on the toolbar. If you select the drop-down menu on the third icon, you will see that the point icon is selected. If you tap on it, it will move up to the toolbar.

See the "Collecting Data" section for instructions on actually recording the points.

Create Polyline shapefile

Use this tool to create a new polyline shapefile.

1. **TAP** the down arrow below the polyline icon to drop-down the menu of choices as shown at right.
2. **TAP** the desired type of polylines you will be collecting.

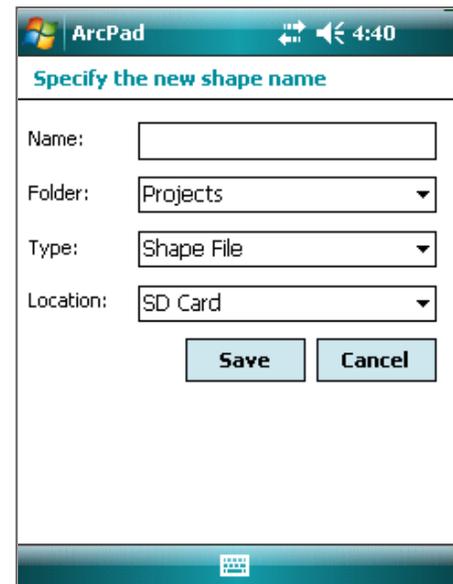


This will determine the input form used to collect the attribute data specific to the polyline type. See *Appendix B – Shapefile Attributes and Forms* for details on the attribute data collected for each shapefile as well as a screen shot of the input form.

The window at right should appear.

3. Specify the desired file name and folder location.
4. **TAP** [Save].

It will take a couple seconds and then the window below should be displayed informing you that the shapefile was created.



5. **TAP** ok.



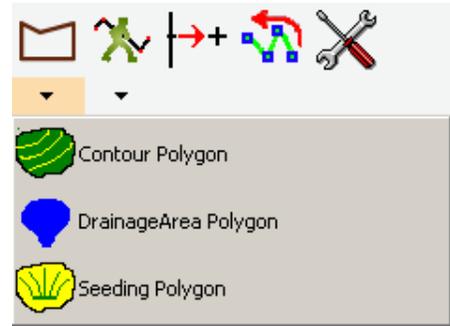
Once the shapefile is created, it will automatically be put in edit mode and the polyline feature made the active tool on the Edit toolbar. Note: It may not be highlighted on the toolbar. If you select the drop-down menu on the third icon, you will see that the polyline icon is selected. If you tap on it, it will move up to the toolbar.

See the "Collecting Data" section for instructions on actually recording the polylines.

 **Create Polygon shapefile**

Use this tool to create a new polygon shapefile.

1. **TAP** the down arrow below the polygon icon to drop-down the menu of choices as shown at right.
2. **TAP** the desired type of polygon you will be collecting.



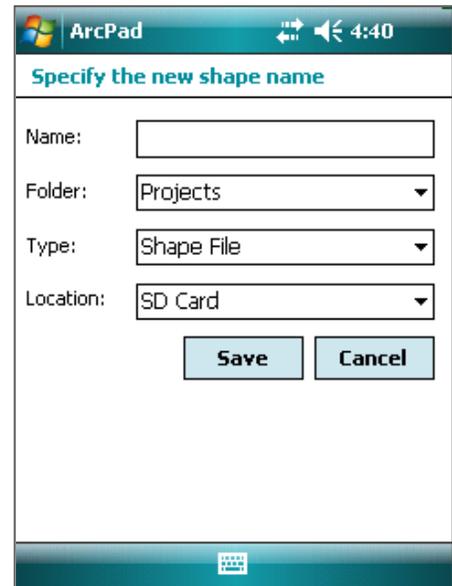
This will determine the input form used to collect the attribute data specific to the polygon type.

See *Appendix B – Shapefile Attributes and Forms* for details on the attribute data collected for each shapefile as well as a screen shot of the input form.

The window at right should appear.

3. Specify the desired file name and folder location.
4. **TAP** [Save].

At this point, be patient. It will take a few seconds and then the window below should be displayed informing you that the shapefile was created.



5. **TAP** ok.



Once the shapefile is created, it will automatically be put in edit mode and the polygon feature made the active tool on the Edit toolbar. Note: It may not be highlighted on the toolbar. If you select the drop-down menu on the third icon, you will see that the polygon icon is selected. If you tap on it, it will move up to the toolbar.

See the "Collecting Data" section for instructions on actually recording the polygons.

Go to Vertex

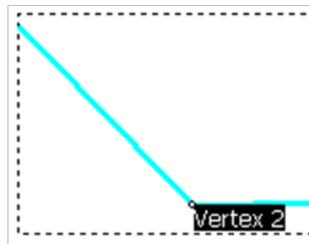
This tool will assist you in navigating to each vertex in a polyline.

1. The first thing you need to do is make sure the desired shapefile is in Edit mode. **TAP** the pencil icon on "Drawing Tools" toolbar. Shapefile should have a red box around the icon. If not, **TAP** it. Then, select the desired line using the "Select" tool (blue arrow) on the "Drawing Tools" toolbar.



Keep in mind that, when selecting the line, the vertex closest to your selection point will be used as the initial "go to" vertex.

2. On the NRCS Toolbar, **TAP** the "Go to Vertex" icon or **TAP** the down arrow below the icon to drop-down the menu and select "Start/Go to selected feature". The active vertex will be labeled as shown below. To switch to another vertex, select the appropriate action (go to first/previous/next/last vertex) from the drop-down menu.



3. Once the desired vertex is highlighted, you can use the standard tools (e.g., Data or Compass pages in the GPS Position window) to navigate to that point.
4. Once you are done navigating, you can select "Clear selected object" from the "Go to Vertex" drop-down menu to end navigation mode.

To return to collecting data, make sure to follow the steps in the "Collecting Data" section.

 **Station-offset**

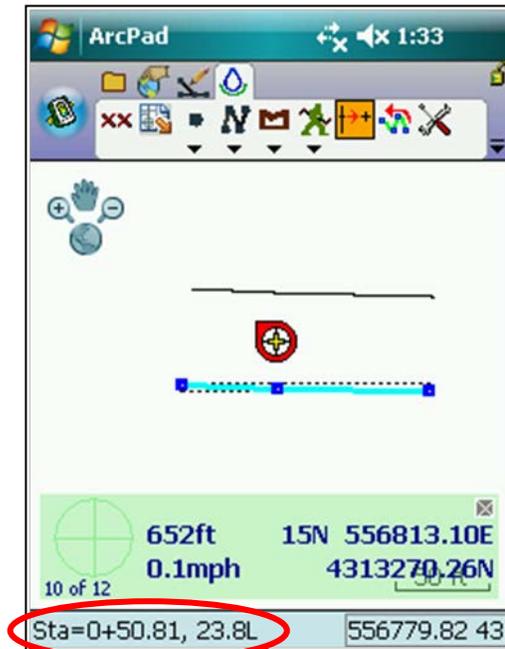
This tool will provide station-offset information from a selected line. The units of the station-offset values provided are based on the Display Units specified in ArcPad options.

1. Select desired line (see step 1 above in "Go to Vertex" section).
2. On the NRCS Toolbar, **TAP** the "Station-offset" icon. It will turn orange to indicate it is the active tool.

If GPS is active, the status bar at the bottom of the screen will display the station and offset values of your current GPS location from the selected line. These are determined based on viewing the line in the direction it was originally drawn with station 0+00 being the first vertex of the line. The offset value will include an "L" or an "R" to indicate left or right of the line.

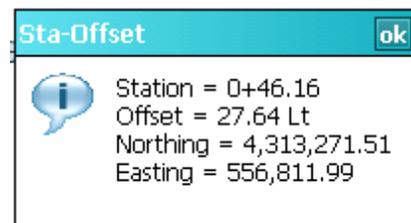
Note: If your current GPS location is beyond the limits of the line the 'Sta. - Offset' display will read 'Station Beyond Line':

Station Beyond Line



Note: The values are updated once per second, so you will need to travel slowly and pause at a position to allow the correct station and offset to be computed and displayed.

If you **TAP** on the screen, a window similar to that at right will provide the station and offset values as well as the northing and easting coordinates of the location where you tapped.



3. To turn off the tool, simply **TAP** the "Station-offset" icon again (the orange background will disappear) or pick a different tool.

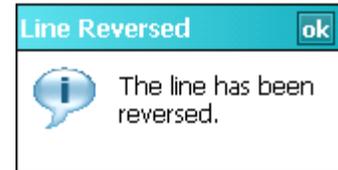


Reverse Line

This tool will allow you to reverse the order of vertices on a polyline. This is useful if you want the stationing for the line to be the opposite of how the line was drawn.

1. Select desired line (see step 1 above in "Go to Vertex" section).
2. On the NRCS Toolbar, **TAP** the "Reverse line" icon.

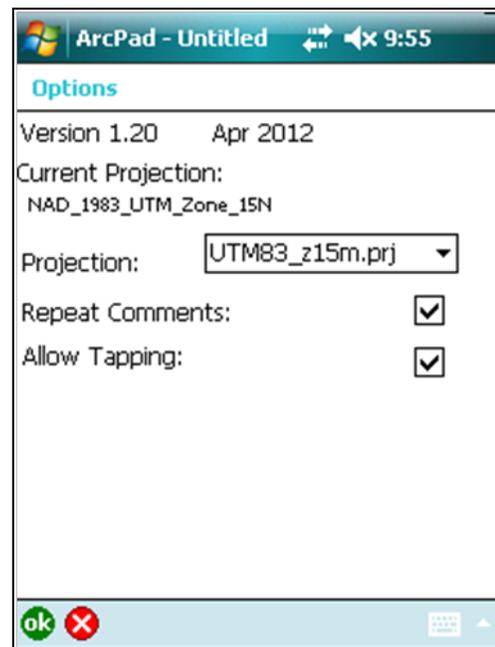
You should receive the message that the line was reversed.



Options

This is where you can view the current version of the tools, the current projection of your map and configure a couple settings used by the tools.

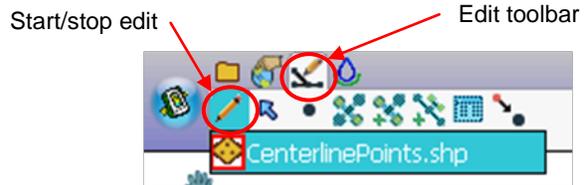
1. **Projection:** Select the desired projection from the drop-down list. This will set the default projection to use for new maps (e.g., when starting ArcPad with a new empty map). If there are no shapefiles loaded in the current map, the projection of the current map will be changed to the selected projection. If there are shapefiles loaded, the current projection will NOT be changed. You will need to create a new map for the new projection to take effect.
2. **Repeat Comments:** When creating a new feature and you wish to have the "comment" attribute value repeated from the previously recorded feature, you can check the "Repeat Comments" option.
3. **Allow Tapping:** If you would like to record features by tapping on the screen rather than using the GPS record feature, check the "Allow Tapping" option. Normally, this should be un-checked when collecting GPS data to avoid inadvertently recording features.



Collecting Data

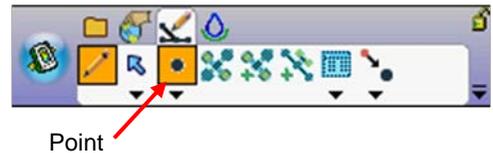
Once you have created the shapefile(s) you need as described above, you are ready to start collecting data. It is assumed here that your unit is all set up and ready to collect data, GPS is activated, and you are getting acceptable readings. Instructions for doing this are described in detail in Technology Technical Note MO-2

1. To begin collecting data, you need to make sure the shapefile is open for editing. To do this, select the "Edit" toolbar.

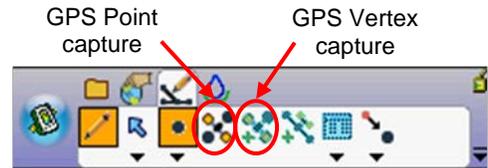


2. **TAP** the "Start/stop edit" pencil icon. **TAP** the desired layer to start or stop editing. A red box around the icon indicates it is in edit mode.

3. Select on the Edit toolbar the feature type (e.g., point, polyline, polygon, etc.) you will be adding from the drop-down menu under the third icon. Point is selected at right.

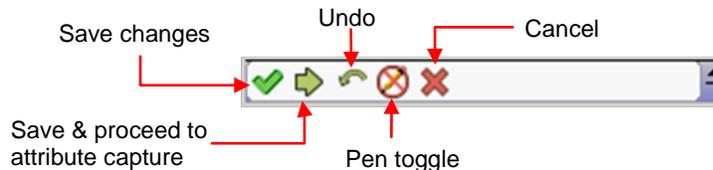


4. **TAP** on either the GPS point capture icon (for points) or the GPS vertex capture icon (for polylines and polygons).



Command toolbar for polylines and polygons

For a feature with multiple vertices (e.g., polyline, polygon, etc.), a "Command toolbar" will be displayed on the bottom of the screen. The toolbar along with each icon's function is shown below.



The green arrow (second icon) is used to complete and save the polyline or polygon feature.

5. Once the feature is captured (using either the GPS point capture icon on the Edit toolbar or the "Save and proceed" icon on the Command toolbar), a form will display to enter the associated attribute data.

Attribute data forms

All the forms will not be described individually here (a screen shot of each can be seen in *Appendix B – Shapefile Attributes and Forms*). Most of them are self-explanatory. The one exception is the Survey form which is described in more detail below. Also, a few attribute items on the forms need more explanation and are described in detail below. A sample form is shown at right. This is for the centerline point shapefile.

Three different types of input fields are used: type an entry, select from a drop-down list of choices, or check/uncheck a box. If a field is shaded or greyed out, it is filled in automatically and cannot be changed (e.g., point #, date, etc.).

Fill in the data as appropriate and **TAP** the OK at the bottom of the screen.

The screenshot shows a dialog box titled "Centerline". It contains the following fields and controls:

- Point #: 2
- Elev.: 100
- Station: 4+02.99
- Calc.:
- Rev.:
- Feature: Channel (dropdown menu)
- Comment: (empty text box)
- By: DLH
- Date: 4/13/12, 10:00:00 AM (local)

At the bottom of the dialog, there are buttons for "Fields", "Attributes", and "Symbolog", along with "ok" and "cancel" buttons.

Elev.

This field on the forms is for the user to record an elevation obtained by some other means (i.e., this tool does not provide an elevation).

NOTE: The units used for the stationing, length, and area fields mentioned below are determined by the Display Units setting under ArcPad options. There are attribute fields not shown on the form (see *Appendix B – Shapefile Attributes and Forms*) that are populated with the units used for these fields.

Station/Calc/Rev

Several forms contain a field for station. You can enter your own station value here. Or, if you check the "Calc." box, the station will be determined by computing the distance from the last point with a station value and then adding that distance to the station value or subtracting the distance if the "Rev." (i.e., reverse) box is checked.

Length

For polyline features, a length is computed and entered into this field.

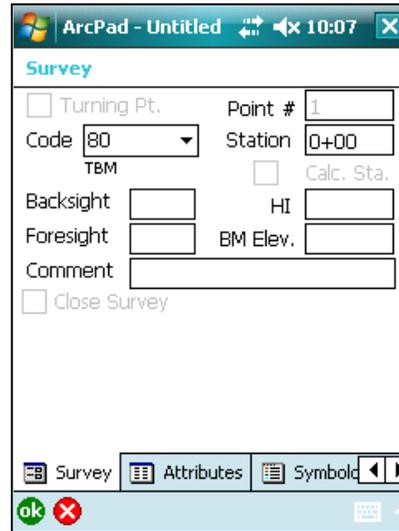
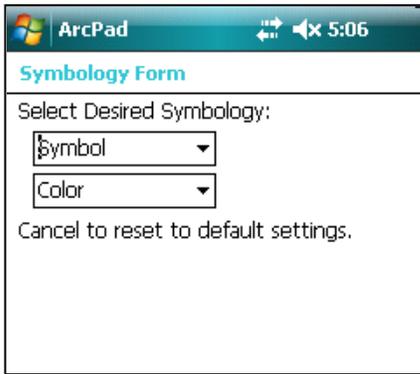
Area

For polygon features, an area is computed and entered into this field.

Survey Form

Since this form is somewhat unique and more complex than the rest of the forms, we will explain it in more detail here. The first noticeable difference is that when you select "Survey" to create a new shapefile, you will be presented with the left window below. This allows you to select the symbology and color to use for the display of the points. Note: The benchmark and turning point have a predefined symbol and cannot be changed. However, all other survey codes can have a user-defined symbol.

When you capture a point, the survey form will appear as shown below right.



The following is a description for each field on the survey form:

Turning Pt.: The "Turning Point" checkbox is active after the first shot and after a valid foresight value has been entered. When the "Turning Point" checkbox is checked both the foresight and backsight fields require a valid entry.

Point #: The point number is not editable and begins with point number 1 and is automatically incremented by 1.

Code: The survey code can be either typed into the pull-down field or the arrow button can be clicked to display the list of survey codes. The desired survey code can then be selected. A text box immediately below the pull-down field displays the survey styles for each survey code.

Station: The station can be based on a manual method, an automatic method or a combination of the two. A "+" is not required but may be entered into the field.

Manual: Uncheck the "Calc. Sta." checkbox and insert the desired station.

Automatic: Check the "Calc. Sta." checkbox and the program will automatically add the distance from the last point that has a station value. This field is read-only when the checkbox is checked.

Combination: Check or uncheck the checkbox depending upon which point has a user defined station.

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- Backsight:** The "Backsight" field is read-only except for the beginning of the survey and during turning points. This field has a minimum value of 0 and a maximum value of 25.
- Foresight:** The "Foresight" field is enabled except for the beginning of the survey. This field has a minimum value of 0 and a maximum value of 25.
- HI:** The "HI" is calculated by the program and is read-only.
- BM Elev.:** For the first point, this field is called BM Elev. and is where you enter the elevation of your benchmark.
- Elevation:** This is calculated by the program and is read-only, except for the first point.
- Comment:** The "Comment" field can contain up to 100 characters.

Close Survey: The "Close Survey" checkbox is available after the first shot. When this is checked, a "closure error" message will be displayed. The closure error is based on the first and last points. **TAP** OK to close this message. See step 4 below in the Survey Procedure for additional information on ending a survey.



Survey Procedure

To properly utilize the Survey tool, the following procedure should be followed

1. Capture your first point, which should be your benchmark.
 - a. Enter BM Elev, Code, Station, Backsight and Comment.
 - b. HI is computed and displayed. Foresight cannot be entered at this time.
 - c. **TAP** OK to store the point.
2. Capture your next point.
 - a. Enter Foresight, Code, Station (or check "Calc.Sta." box to have station computed for you), and Comment.
 - b. Elevation is computed and displayed. Backsight cannot be entered at this time.
 - c. **TAP** OK to store the point.
 - d. Continue recording points until you have a turning point or are finished with the survey.

3. If you are capturing a turning point:
 - a. Enter Foresight, Station (or check "Calc.Sta." box to have station computed for you), and Comment.
 - b. Elevation is computed and displayed.
 - c. Check "Turning Pt." box. Code will change to TP*.
 - d. With GPS remaining at this turning point, move the instrument (e.g., level) you are using to measure foresight to a new instrument point and then measure backsight reading on this turning point. Enter the backsight reading on this form.
 - e. **TAP** OK to store the point. A new HI will be computed and will be shown on the next point recorded.
 - f. Continue recording points as described in step 2.

4. If you are finished with the survey:
 - a. Return to your first point recorded (i.e., benchmark).
 - b. Capture the point and enter Foresight, Station (or check "Calc.Sta." box to have station computed for you), and Comment.
 - c. Elevation is computed and displayed.
 - d. Check the "Close Survey" box.
 - e. The "Closure Error" message should display informing you of the coordinate and elevation closure errors. **TAP** OK to close this message.
 - f. If you are satisfied with the closure error, **TAP** OK to store the point.

Note: Once this point is stored with the Close Survey box checked, you will not be able to add more points to this shapefile. You will need to start a new survey shapefile.

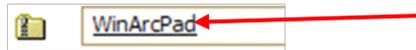
If you are not satisfied, you can **TAP** the cancel button (white X in red circle) to discard the point.

Appendix A – Downloading and Installing the Tools

NRCS users can find these tools at the Missouri NRCS Engineering Sharepoint site at <https://nrcs.sc.egov.usda.gov/central/mo/engineering/> . Once there, go to "Tools & Resources > Software > ArcPad Applications". If viewing this electronically, you can use this link - [MO NRCS ArcPad Tools](#) to go directly there. Other users will need to request the software from the Missouri NRCS State Office.

Downloading the Tools

1. Click on [WinArcPad](#).

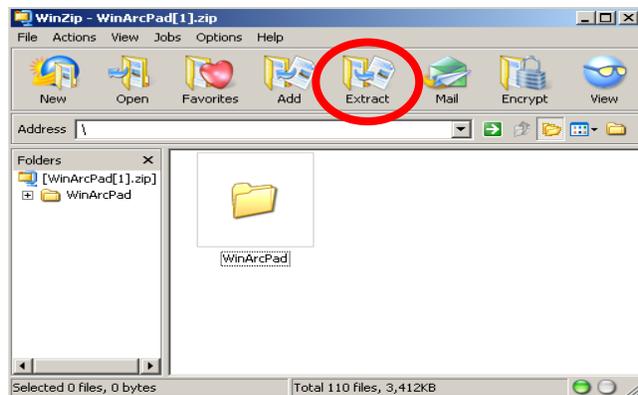


2. Note: If you get a Security Warning window, click [**Allow**].

In the "File Download" window, click [**Open**].



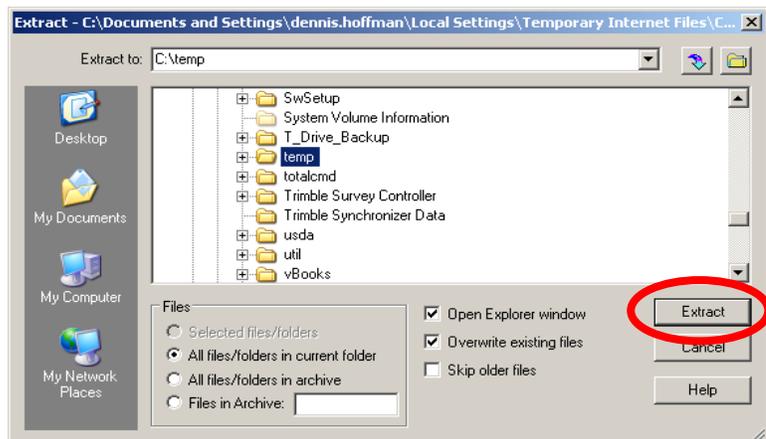
3. In the "WinZip" window, click "Extract" icon.



4. In "Extract" window, browse to C:\Temp. (or a folder of your choosing). Make sure other settings are as shown at right.

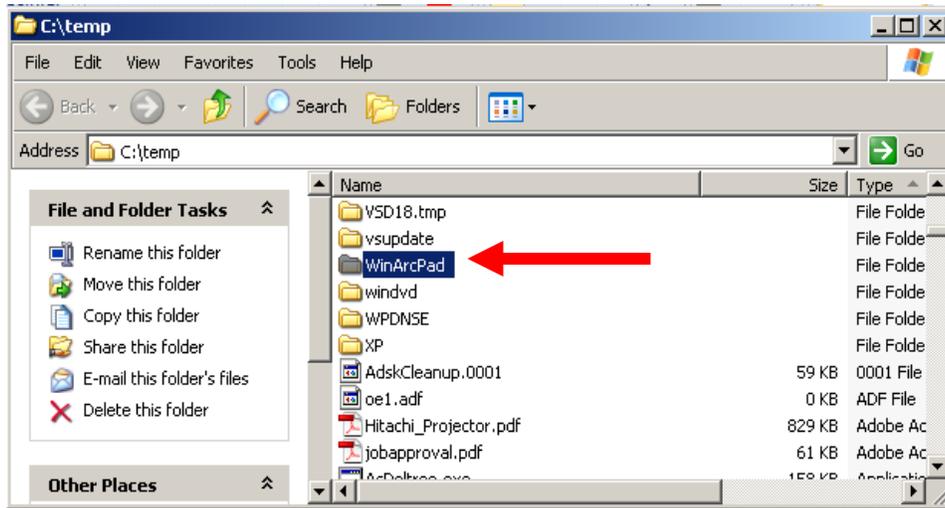
Click [**Extract**].

This should download the needed files.

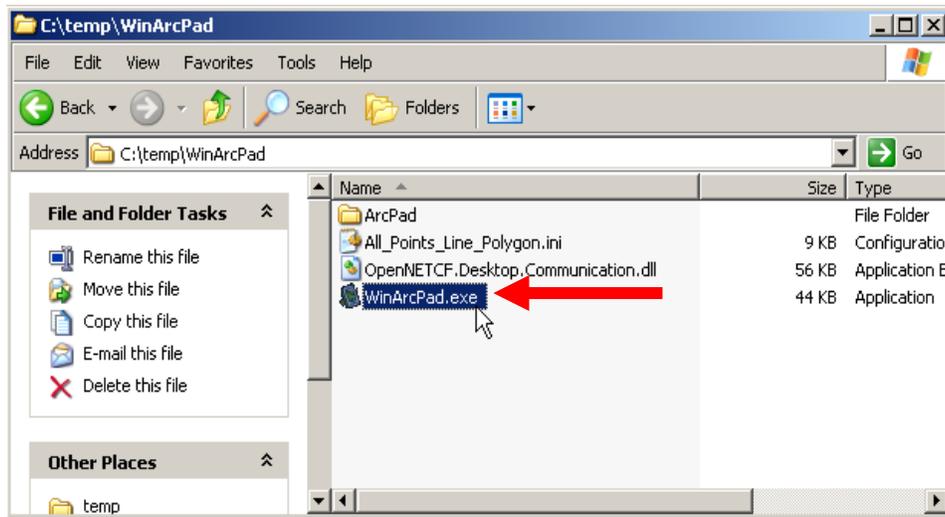


Installing the Tools

5. You should make sure your ArcPad device is connected with ActiveSync before performing the following steps.
6. Once the files are extracted, a windows explorer window should open. If not, you should open a windows explorer window and browse to where the file was unzipped. Double-click the WinArcPad folder.

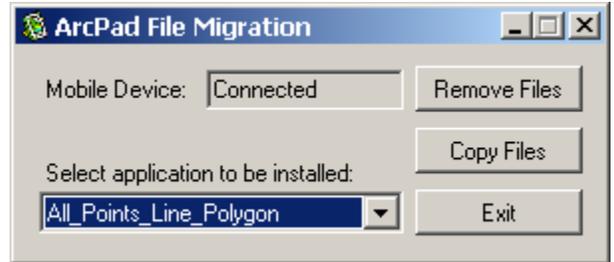


7. Double-click on **WinArcPad.exe**

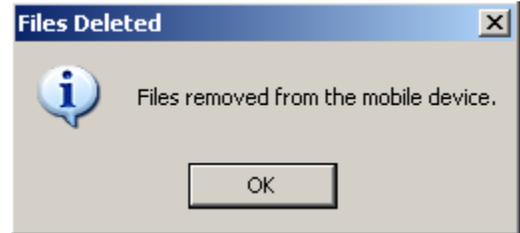


8. It should say "Connected" for the Mobile Device.

Select "All_Points_Line_Polygon" from the drop-down menu.



If you are updating the tools on a device, you should first click [**Remove Files**]. You should received a message that the files were removed from the device.



To install the files, click [**Copy Files**]. Be patient, it may take several seconds. You should eventually get a message that files were copied to the device.



9. Click [**Exit**]. You are done.

Note: You can then close the WinZip and windows explorer windows if still open.

Appendix B – Shapefile Attributes and Forms

This appendix provides the attributes stored in each of the shapefiles created by these tools, including attributes that are not part of the data entry forms. This information would be useful for users interested in importing this data into software supporting the shapefile format. Also shown is a screenshot of the input form for each shapefile. NOTE: These shapefiles include a DateTime attribute field. For this field to be populated with the GPS Date and Time, a GPS setting needs to be changed as outlined in *Appendix C – GPS Configuration for Recording Date/Time*. Otherwise, the date and time recorded will be the current date and time that is set on your device.

Point Shapefiles

Centerline Pts

Field	Data Type	Text Field Width	Description
PointNo	Short Integer		Auto generated point #
GPS_Y	Double		Y coordinate (in shapefile projection)
GPS_X	Double		X coordinate (in shapefile projection)
Elevation	Double		User entered elevation
Comment	Text	100	Any additional Information about point
By_	Text	25	Who recorded point?
DateTime	Text	30	Date and time point was recorded
PDOP	Double		GPS PDOP value at time shot was taken
Notes	Text	50	Not used currently
Station	Text	25	User entered or computed station
Feature	Text	15	User selected feature
Sta_Unit	Text	10	Units used for station field

Drainage Area Pts

Field	Data Type	Text Field Width	Description
PointNo	Short Integer		Auto generated point #
GPS_Y	Double		Y coordinate (in shapefile projection)
GPS_X	Double		X coordinate (in shapefile projection)
Elevation	Double		Not currently used in this shapefile
Comment	Text	100	Any additional Information about point
By_	Text	25	Who recorded point?
DateTime	Text	30	Date and time point was recorded
PDOP	Double		GPS PDOP value at time shot was taken
Notes	Text	50	Not used currently
Practice	Text	25	User selected practice
Symbol	Text	25	User selected symbol

Pipeline Pts

Field	Data Type	Text Field Width	Description
PointNo	Short Integer		Auto generated point #
GPS_Y	Double		Y coordinate (in shapefile projection)
GPS_X	Double		X coordinate (in shapefile projection)
Elevation	Double		User entered elevation
Comment	Text	100	Any additional Information about point
By_	Text	25	Who recorded point?
DateTime	Text	30	Date and time point was recorded
PDOP	Double		GPS PDOP value at time shot was taken
Notes	Text	50	Not used currently
Station	Text	25	User entered or computed station
Feature	Text	15	User selected feature
Size	Double		Size of pipeline
Unit	Text	10	Units used for size (e.g., in.)
Sta_Unit	Text	10	Units used for station field

Pipeline

Point # Elev.

Station Calc. Rev.

Feature

Size Unit

Comment

By Date

Fields Attributes Symbol

Seeding Area Pts

Field	Data Type	Text Field Width	Description
PointNo	Short Integer		Auto generated point #
GPS_X	Double		X coordinate (in shapefile projection)
GPS_Y	Double		Y coordinate (in shapefile projection)
Elevation	Double		Not currently used in this shapefile
Comment	Text	100	Any additional Information about point
By_	String	25	Who recorded point?
DateTime	Text	30	Date and time point was recorded
PDOP	Double		GPS PDOP value at time shot was taken
Notes	Text	50	Not used currently
Practice	Text	25	User selected practice
Symbol	Text	25	User selected symbol

Seeding

Point #

Practice

Symbol

Comment

By

Date

Fields Attributes Symbol

Survey

Field	Data Type	Text Field Width	Description
PointNo	Short Integer		Auto generated point #
GPS_Y	Double		Y coordinate (in shapefile projection)
GPS_X	Double		X coordinate (in shapefile projection)
Elevation	Double		Computed elevation
Comment	Text	100	Any additional Information about point
By_	Text	25	Who recorded point?
DateTime	Text	30	Date and time point was recorded
PDOP	Double		GPS PDOP value at time shot was taken
Notes	Text	50	Used by Survey tool for various purposes
Station	Text	25	User entered or computed station
Backsight	Double		Backsight rod reading
HI	Double		Height of instrument
Foresight	Double		Foresight rod reading
SurveyCode	Text	50	Survey code
SymCode	Short Integer	4	Symbol code
Sta_Unit	Text	10	Units used for station field

Survey

Turning Pt. Point #

Code Station

TBM Calc. Sta.

Backsight HI

Foresight BM Elev.

Comment

Close Survey

Survey Attributes Symbol

Terrace Pts

Field	Data Type	Text Field Width	Description
PointNo	Short Integer		Auto generated point #
GPS_Y	Double		Y coordinate (in shapefile projection)
GPS_X	Double		X coordinate (in shapefile projection)
Elevation	Double		User entered elevation
Comment	Text	100	Any additional Information about point
By_	Text	25	Who recorded point?
DateTime	Text	30	Date and time point was recorded
PDOP	Double		GPS PDOP value at time shot was taken
Notes	Text	50	Not used currently
Station	Text	25	User entered or computed station
Feature	Text	15	User selected feature
Sta_Unit	Text	10	Units used for station field

Terrace

Point # Elev.

Station Calc Rev.

Feature

Comment

By

Date

Fields Attributes Symbolog

UGO Pts

Field	Data Type	Text Field Width	Description
PointNo	Short Integer		Auto generated point #
GPS_Y	Double		Y coordinate (in shapefile projection)
GPS_X	Double		X coordinate (in shapefile projection)
Elevation	Double		User entered elevation
Comment	Text	100	Any additional Information about point
By_	Text	25	Who recorded point?
DateTime	Text	30	Date and time point was recorded
PDOP	Double		GPS PDOP value at time shot was taken
Notes	Text	50	Not used currently
Station	Text	25	User entered or computed station
Feature	Text	15	User selected feature
Size	Double		Size of UGO
Unit	Text	10	Units used for size (e.g., in.)
Sta_Unit	Text	10	Units used for station field

UGO

Point # Elev.

Station Calc Rev.

Feature

Size Unit

Comment

By Date

Fields Attributes Symbolog

Waterway Pts

Field	Data Type	Text Field Width	Description
PointNo	Short Integer		Auto generated point #
GPS_Y	Double		Y coordinate (in shapefile projection)
GPS_X	Double		X coordinate (in shapefile projection)
Elevation	Double		User entered elevation
Comment	Text	100	Any additional Information about point
By_	Text	25	Who recorded point?
DateTime	Text	30	Date and time point was recorded
PDOP	Double		GPS PDOP value at time shot was taken
Notes	Text	50	Not used currently
Station	Text	25	User entered or computed station
Feature	Text	15	User selected feature
Size	Double		Size of waterway
Unit	Text	10	Units used for size (e.g., ft)
Sta_Unit	Text	10	Units used for station field

Waterway

Point # Elev.

Station Calc Rev.

Feature

Size Unit

Comment

By Date

Fields Attributes Symbolog

Polyline Shapefiles

Centerline Polyline

Field	Data Type	Text Field Width	Description
LineID	Short Integer		Auto generated Line ID
Length	Double		Length of polyline
Feature	Text	25	User selected feature
Comment	Text	100	Any additional Information about line
By_	Text	25	Who recorded line?
DateTime	Text	30	Date and time line was captured
PDOP	Double		PDOP value when line was captured
Notes	Text	50	Not used currently
LengthUnit	Text	10	Unit of length field

Centerline

Line #

Length

Feature

Comment

By

Date

Fields Attributes Symbology

Pipeline Polyline

Field	Data Type	Text Field Width	Description
LineID	Short Integer		Auto generated Line ID
Length	Double		Length of polyline
Comment	Text	100	Any additional Information about line
By_	Text	25	Who recorded line?
DateTime	Text	30	Date and time line was captured
PDOP	Double		PDOP value when line was captured
Notes	Text	50	Not used currently
Size	Double		Size of pipeline
Unit	Text	10	Units used for size (e.g., in.)
LengthUnit	Text	10	units used for Length field

Pipeline

Line #

Length

Size Unit

Comment

By

Date

Fields Attributes Symbology

Terrace Polyline

Field	Data Type	Text Field Width	Description
LineID	Short Integer	4	Auto generated Line ID
Length	Double	0	Length of polyline
Feature	Text	25	User selected feature
Comment	Text	100	Any additional Information about line
By_	Text	25	Who recorded line?
DateTime	Text	30	Date and time line was captured
PDOP	Double	0	PDOP value when line was captured
Notes	Text	50	Not used currently
LengthUnit	Text	10	Units used for Length field

Terrace

Line #

Length

Feature

Comment

By

Date

Fields Attributes Symbology

UGO Polyline

Field	Data Type	Text Field Width	Description
LineID	Short Integer	4	Auto generated Line ID
Length	Double	0	Length of polyline
Feature	Text	25	User selected feature
Comment	String	100	Any additional Information about line
By_	String	25	Who recorded line?
DateTime	Text	30	Date and time line was captured
PDOP	Number	4	PDOP value when line was captured
Notes	String	50	Not used currently
Size	Double	0	Size of UGO
Unit	Text	10	Units used for size (e.g., in.)
LengthUnit	Text	10	Units used for Length field

UGO

Line #

Length

Feature

Size Unit

Comment

By Date

Fields Attributes Symbolog

Polygon Shapefiles

Contour Polygon

Field	Data Type	Text Field Width	Description
AreaID	Short Integer		Auto generated Area ID (shows as Contour ID # on form)
Elev	Double		User entered elevation
Area	Double		Computed area
AreaUnit	Text	10	Units used for Area field
Perim	Double		Computed perimeter
PerimUnit	Text	10	Units used for Perim field
Comment	Text	100	Additional Information about polygon
By_	Text	25	Who recorded polygon?
DateTime	Text	30	Date and time polygon was captured
PDOP	Double		PDOP value when polygon was captured
GPS_Y	Double		Y coordinate of area centroid
GPS_X	Double		X coordinate of area centroid
Notes	Text	50	Not used currently

Contour

Contour ID #

Elevation

Area Perim

Comment

By

Date

Fields Attributes Symbolog

DrainageArea Polygon

Field	Data Type	Text Field Width	Description
AreaID	Short Integer		Auto generated Area ID (shows as ID # on form)
Practice	Text	25	User selected practice
Area	Double		Computed area
AreaUnit	Text	10	Units used for Area field
Perim	Double		Computed perimeter
PerimUnit	Text	10	Units used for Perim field
Comment	Text	100	Additional Information about polygon
By_	Text	25	Who recorded polygon?
DateTime	Text	30	Date and time polygon was captured
PDOP	Double		PDOP value when polygon was captured
GPS_Y	Double		Y coordinate of area centroid
GPS_X	Double		X coordinate of area centroid
Notes	Text	50	Not used currently

Drainage Area

ID #

Practice

Area Perim

Comment

By

Date

Fields Attributes Symbolog

Seeding Polygon

Field	Data Type	Text Field Width	Description
ArealID	Short Integer		Auto generated Area ID (shows as Seeding ID # on form)
Practice	Text	25	User selected practice
Area	Text		Computed area
AreaUnit	Text	10	Units used for Area field
Perim	Double		Computed perimeter
PerimUnit	Text	10	Units used for Perim field
Species	Text	50	User entered species
Comment	Text	100	Additional Information about polygon
By_	Text	25	Who recorded polygon?
DateTime	Text	30	Date and time polygon was captured
PDOP	Double		PDOP value when polygon was captured
GPS_Y	Double		Y coordinate of area centroid
GPS_X	Double		X coordinate of area centroid
Notes	Text	50	Not used currently

Seeding

Seeding ID #

Practice

Area Perim

Species

Comment

By Date

Fields Attributes Symbolog

Appendix C – GPS Configuration for Recording Date/Time

As mentioned in *Appendix B – Shapefile Attributes and Forms*, if you would prefer the GPS date and time (rather than your local device's date and time) be recorded in the DateTime attribute field, the GPS configuration needs to be changed.

EZ-PRO is an application that lets a user view and modify the configuration of the GPS receiver. This application as well as the suggested settings were discussed in Appendix B of Missouri Technology Technical Note MO-2. The one setting that needs to be changed from what was given in those instructions is the GPRMC message setting (see below).

To start EZ-PRO,
TAP Start -> EZ-PRO
 from the Today screen.

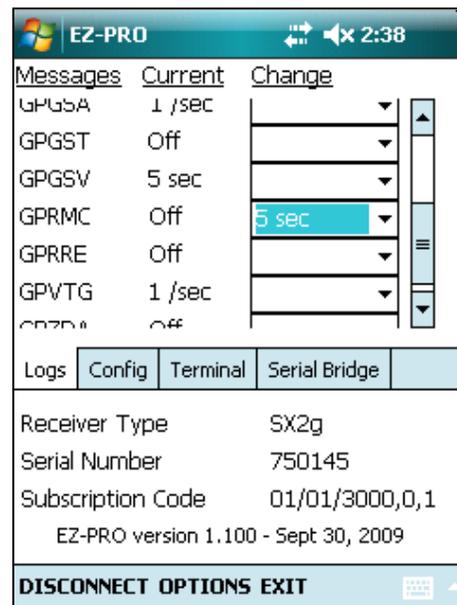


TAP CONNECT > COM2
 at lower right of screen.



It should connect with the GPS receiver and a screen similar to that at right should appear. Scroll down to

GPRMC and change it to 5 sec.



When finished,
TAP EXIT > Exit and Save
 at bottom of window.

