Exhibit A

Maintaining NENA E911 Data in ArcGIS ArcMap and ArcGIS Pro

Proposed Outline for Training

3 days (24 hours)
Authored by Panda Consulting

Overview
This course teaches the range of functionality available in Esri ArcGIS Desktop software (ArcMap and ArcGIS Pro) and the essential tools for visualizing, creating, managing, and analyzing geographic data, especially as it relates to creating and maintaining NENA E911 data.

Course exercises emphasize practice with ArcMap and ArcGIS Pro to perform common GIS tasks and workflows. The tools for creating and managing geographic data, displaying data on maps in different ways, and combining and analyzing data to discover patterns and relationships are highlighted. By the end of the course, you will be prepared to start working with the software on your own.

Who Should Attend:

This course is designed for those with an education in or workplace experience with GIS but no ArcGIS software experience. Knowledge of basic GIS concepts is assumed.

Goals:
After completing this course, you will be able to:

- Know which ArcGIS Desktop application to use for common GIS tasks.
- Create, edit and maintain NENA E911 data stored in a geodatabase.
- Control the display of data layers in ArcMap.
- Classify and symbolize map data.
- Label map features.
- Access feature information in tables and control table display properties.
- Create data from x,y coordinates.
- Create data by geocoding addresses.
- Query and analyze GIS data.
- Create presentation-quality maps and graphs.

Topics Covered:

Investigating geographic data:

- How geographic data is stored; Vector and raster data;
- Geodatabase basics and advantages;
    - Shapefiles;
    - CAD data;
- Managing data in ArcCatalog;
- Displaying data in ArcMap;
- ArcMap basics;
    - Data and layers.
    - Managing map layers:
    - Zooming to layers;
    - Bookmarks;
    - Display windows;
    - Scale ranges;
    - Group layers;
    - Selection layers;
    - Layer files;
    - Creating hyperlinks.
    - Symbolizing categorical data
    - Symbology
    - Choosing symbology
- Types of symbols (marker, line, fill).
- Symbolizing quantitative data:
    - Symbology options (graduated colors, graduated symbols, proportional symbols, dot density, charts)
    - Classification methods (Natural Breaks, Equal Interval, Quantile, Manual); Excluding data from a classification; Rendering raster data.
- Labeling map features:
    - Label placement for different feature types (points, lines, polygons);
    - Label symbology;
    - Controlling label display using scale range and SQL query;
    - Label classes;
    - Label expressions;
    - Label ranks and weights.
- Using coordinate systems and map projections:
    - What is a coordinate system?
    - Geographic coordinate systems;

- Datums;
- Projected coordinate systems;
- Map projections;
- Feature classes and coordinate systems;
- Data frames and coordinate systems;
- Geographic transformations;
- Working with an unknown coordinate system;
- Projecting data;
- Defining a projection.

- Managing tables:
  - Table structure;
  - Layer attribute tables;
  - Non spatial tables;
  - Getting information from tables;
  - Field properties;
  - Table appearance;
  - Connecting tables using joins and relates;
  - Cardinality.
- Editing features and attributes:
  - Reasons to edit data;
  - Working with the Editor toolbar;
  - Edit sketches;
  - Common editing tools;
  - Edit tasks;
  - Snapping to features while editing;
  - Editing attributes;
  - Calculating values for geometry fields;
  - Working with coincident geometry in a map topology;
  - Typical editing workflow.
  - Creating and maintaining road centerlines
  - Creating and maintaining polygon areas
  - Checking and correcting issues with Line layers
  - Checking and correcting issues with polygon layers
- Creating geodatabases and feature classes:
  - Types of geodatabases;
  - Geodatabase organization;
  - Feature class organization;
  - Feature class properties and attributes;
- Getting locations from attributes:
  - Adding data from files containing x,y coordinate data;

- Finding places and addresses;
- Finding routes and nearby places;
- Geocoding;
- Geocoding components (address table, address locator, reference data);
- Address matching overview;
- Geocoding workflow;
- Reference data sources.

- Solving spatial problems with query and analysis:
  - GIS analysis basics;
  - Typical analysis workflow;
  - Common analysis operations (attribute and spatial queries, clipping data from layers, buffering features, overlaying features);
  - Overview of geoprocessing;
  - Analysis results.
- Making a map layout:
  - Working in layout view;
  - Tools for arranging map elements;
  - Data frame properties for layouts;
  - Adding legends, scale bars, and other map elements;
  - Exporting maps;
  - Working with map templates.

Comparison of ArcMap and ArcGIS Pro

- All functionality reviewed previously will be reviewed in ArcGIS Pro with an emphasis on the greater efficiency in using the newer software.

Bring Your Own Project

- The exact outline for the final portion of the training is determined by the instructor, the participants and the projects brought to the class. At the beginning of the day, participants will share the projects on which they seek help. The class votes on which projects to tackle and all data is distributed to all participants who then work through possible solutions and learn the various approaches to solving the issues.

Prerequisites:

- None.

Software Used in Course:
This course is designed to work with the following software:
ArcGIS Desktop* Version ArcView, 10.X ArcEditor, 10.X ArcInfo 10.X and ArcGIS Pro 2.3 or higher