

Jonathan Rodriguez
Professor Jeff Tolhurst
CMPSC 59
November 2, 2011

Geospatial Search & Rescue Analysis of a Tuolumne County Sheriff's Office Missing Person Investigation

- 1.) Objectives:** Provide a quality map to the Tuolumne County Sheriff's Office Investigations Division detailing the efforts and coverage of the Tuolumne County Sheriff's Search & Rescue Team's repeated searches for the missing subject.
- 2.) Statement of the Problem:** Data collected to date has been:
 - A. Scattered; produced by a variety of GPS by people with a variety of GPS capabilities, hence various data problems that need "cleaning"
 - B. Downloaded and displayed in National Geographic Topo, a program with limited features (saved only in "tpo" format) and resolution (poor; too much overlapping of thick GPS tracks)
- 3.) Significance of the Problem:** This project revolves around an active Tuolumne County Sheriff's Office case. The TCSO SAR Coordinator has asked for the geospatial data provided by GPS carried by Ground Searchers on foot, on horse, and on ATV. I am the only person with all this data and the ability to geospatially reference it. But until now I have only been able to provide them with a limited visual representation of that data.
- 4.) Methodology:**
 - A. Data downloaded from Magellan Triton GPSs and a variety of personal Garmin Units.
 - B. Data originally downloaded to National Geographic Topo and saved in the default tpo format.
 - C. Data must be converted to gpx format within National Geographic Topo; each track must be converted individually to prevent DNR Garmin from registering all data as one track.
 - D. Data must be transferred to DNR Garmin one at a time and saved individually.
 - E. Data saved by DNR Garmin must be displayed on ArcMap using both a standard Topo Map and a Bing Hybrid Map to be sent digitally and to be handed physically to the Tuolumne County Sheriff's Office.
- 5.) Time/Task Schedule:**
 - A. November 2 – Proposal Submitted

- B. November 9 – Collect and transfer tpo data to gpx format using NatGeo and start process of transfer to DNR Garmin and ArcMap, SAR Operational Period by Operational Period
- C. November 16 – Finish as outlined above and clean data tracks
- D. November 23 – Continue cleaning tracks
- E. November 30 – Finish up all the above. Finalize maps
- F. December 6 – Have Power Point created by this date and be ready to present anytime thereafter.

6.) Budget:

QTY.	DESCRIPTION	UNIT PRICE	COST
175	Miles spent in Transportation	\$ 0.52	\$ 91.00
10	Meals	\$ 22.00	\$ 222.00
36	Hours	\$ 16.00	\$ 576.00
		Total	\$ 889.00

7.) Equipment List:

- A. Magellan Triton GPSs
- B. National Geographic Topo, California 2009 version
- C. Thumb Drive with Data
- D. DNR Garmin, version 5.04
- E. ArcMap 10 with Topo and Bing Hybrid vector maps
- F. Microsoft Power Point 10

8.) Reference Materials:

- A. Tolhurst, Jeff, Dr., Director GIS Program – Columbia College
- B. Getting to Know ArcGIS 10