

Spring 2009

Touch of Nature GIS Project: Land Use Management Plan SIUC

T. J. Freeman

Southern Illinois University Carbondale

Andrea Frigo

Southern Illinois University Carbondale

Michael Schuler

Southern Illinois University Carbondale

Follow this and additional works at: http://opensiuc.lib.siu.edu/srs_2009

Recommended Citation

Freeman, T. J.; Frigo, Andrea; and Schuler, Michael, "Touch of Nature GIS Project: Land Use Management Plan SIUC" (2009). 2009. Paper 4.

http://opensiuc.lib.siu.edu/srs_2009/4

This Article is brought to you for free and open access by the Student Research Showcase at OpenSIUC. It has been accepted for inclusion in 2009 by an authorized administrator of OpenSIUC. For more information, please contact opensiuc@lib.siu.edu.



Touch of Nature GIS Project: Land Use Management Plan Southern Illinois University

T.J. Freeman, Andrea Frigo, Michael Schuler

ABSTRACT

Management of forest resources within Touch of Nature is pertinent to environmental education and could be improved with a Geographic Information System. The goal of our project was to establish a baseline for geographic data that can be utilized by students, faculty and staff of SIUC and Touch of Nature. We believe that the collection and distribution of geographical data necessary to the forest management research program will help coordinate future activities within the Touch of Nature borders and specifically the West Indian Creek area.

BACKGROUND

Touch of Nature Environmental Education Center occupies 3,100 acres of land to the southeast of Carbondale, IL. Their main goal is to conduct environmental education programs as well as allow SIUC Departments to perform field labs. Management of forest lands was passive when SIUC took control but has since developed into a hands-on management program deemed to be necessary by the SIUC Forestry Department. The Touch of Nature area was heavily managed in the past with positive and negative consequences. The use of restoration ecology to develop and maintain study areas would demonstrate sound land stewardship by SIUC, thusly increasing the intrinsic and extrinsic value of Touch of Nature.

OBJECTIVES AND METHODS

Our project began when Dr. Ruffner and Kate Hellgren expressed their need for a Land Use Management Plan for Touch of Nature. In order for the land use management plan to succeed, we saw it fit to develop a GIS containing layers essential to Touch of Nature, including the location of Educational Forest areas. The first step in creating the Touch of Nature GIS was to go into the field and collect data. Taking GPS points for the Educational Forest system, set up by the Forestry Department, was the most important part of this step. Once all relevant GPS locations were taken, they were converted to a shapefile using Google Earth. Relevant data layers were then collected from online databases. Using ArcGIS we were then able to extract a local area around Touch of Nature. The last step was to import all layers into a Geodatabase.

Tools Used:

- Old Southern Illinois Orienteering Map
- Magellan eXplorist XL GPS
- Compass
- Google Earth
- ArcGIS 9.2
- ArcCatalog – ArcInfo
- Guidance from Dr. Ruffner & Dennis Carril

RESULTS

The end result of our project is a functioning Geodatabase containing numerous data layers of the area surrounding Touch of Nature. A Touch of Nature border has been rendered as well as outlines of all Educational Forest and Prescribed Burn Units. The following is a non-exhaustive list of layers included in the Geodatabase:

- Outline of Touch of Nature
- Forestry Management Units
- Forestry Burn Units
- Geology Layers
- Hydrology Layers
- Topography
- Orthophotography Layer
- Bedrock and Geologic Types
- Glacial Drift Thickness
- Quaternary Deposits
- Roads
- Archaeological Potential Areas
- Flood zones (100 year zones)
- Public Land Survey System Grid
- Geographic Name Information System

FUTURE DIRECTIONS

The implementation of our Touch of Nature GIS and database will aid in management practices for Touch of Nature, the Department of Forestry, and hopefully other SIUC departments. Mainly this geodatabase will enable quantification and visualization of spatial data useful to the Touch of Nature area. For example, locations of study species, presence in or out of burn units, and other attributes could be queried. Our GIS will assist in management practices that will help restore ecological integrity, increase educational and capital resources, and foster interdisciplinary cooperation across SIUC departments and Touch of Nature.

ACKNOWLEDGEMENTS

We would like to thank Dr. Ruffner and Dennis Carril for providing field knowledge, Kate Hellgren and Dr. Therrell for helping us develop a project plan and both Touch of Nature and the Forestry Department for additional information regarding the Land Use Management Plan.

Geo Community. 15 Apr. 2009
<<http://www.geocomm.com/>>.

The Illinois Natural Resources Geospatial Data Clearinghouse. Illinois State Geological Survey, Institute of Natural Resource Sustainability, UIUC. 15 Apr. 2009
<<http://www.isgs.illinois.edu/nsdihome/>>.

Fig. 1

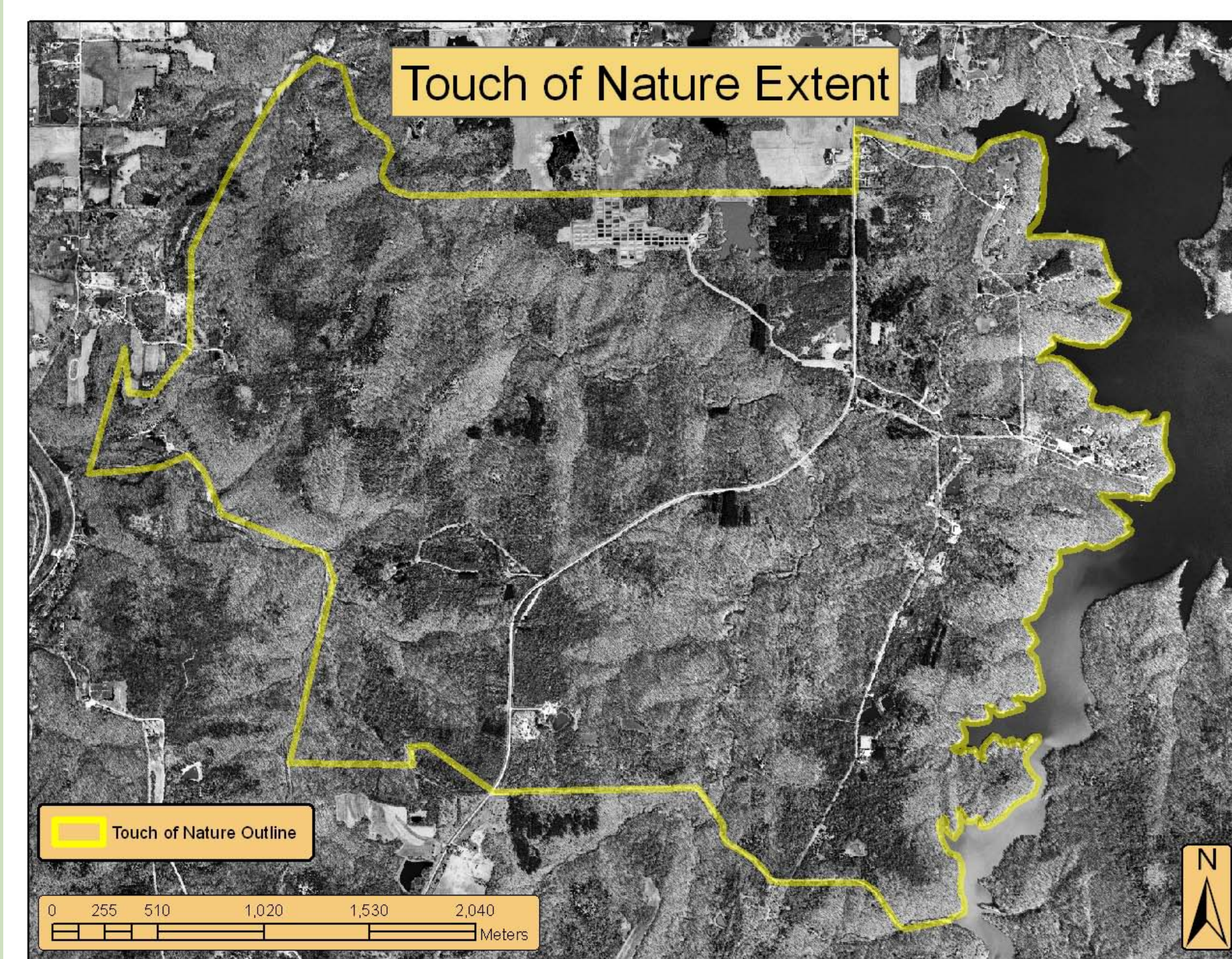


Fig. 2

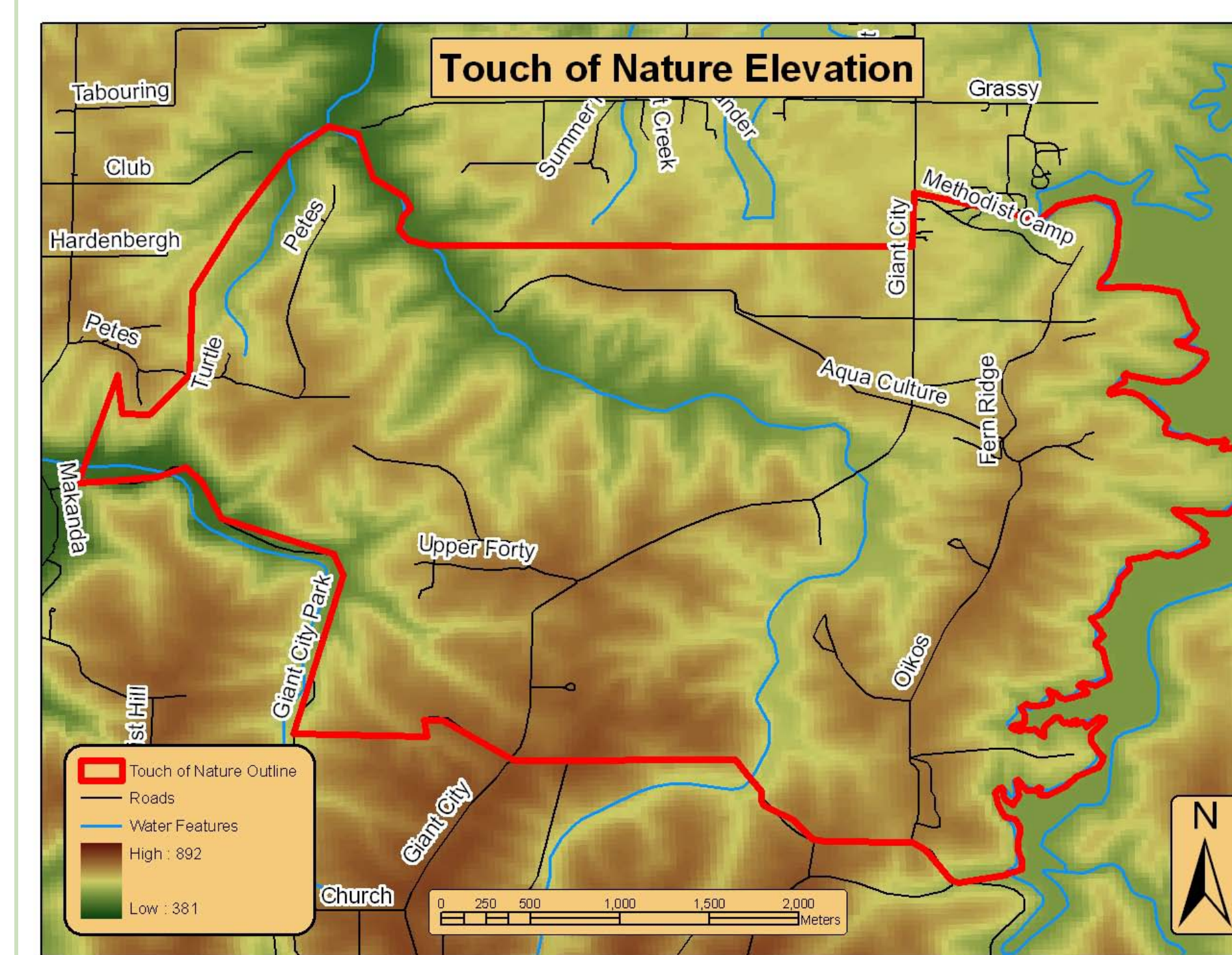


Figure 1 shows the Touch of Nature outline in yellow on top of an orthophotograph. Figure 2 shows the Touch of Nature outline, Elevation, roads and water features.

Fig. 3

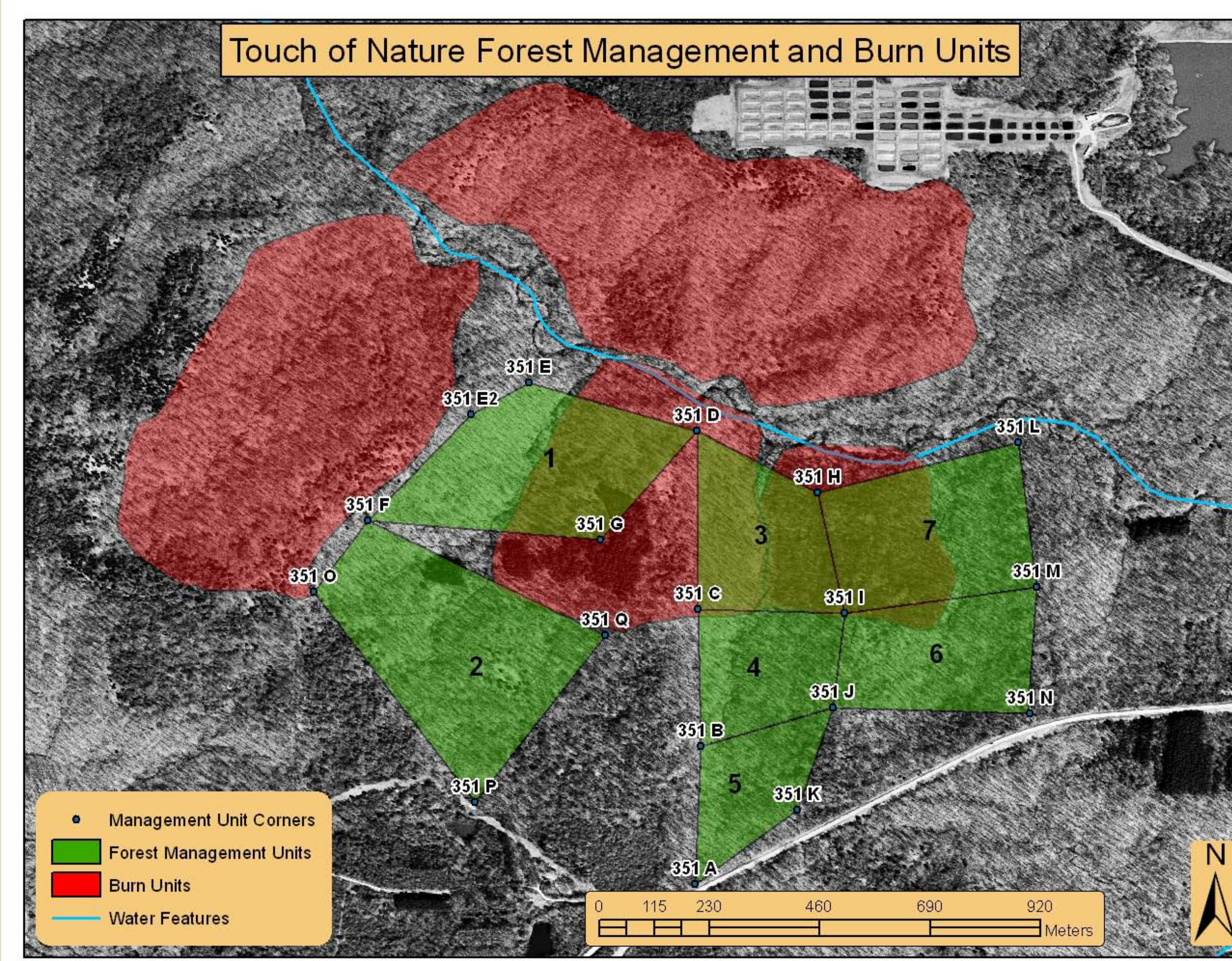


Figure 3 is the final map showing Forest Management Units (green) and Burn Units (red). The map also shows management unit corner coordinates and water features.

Fig. 4

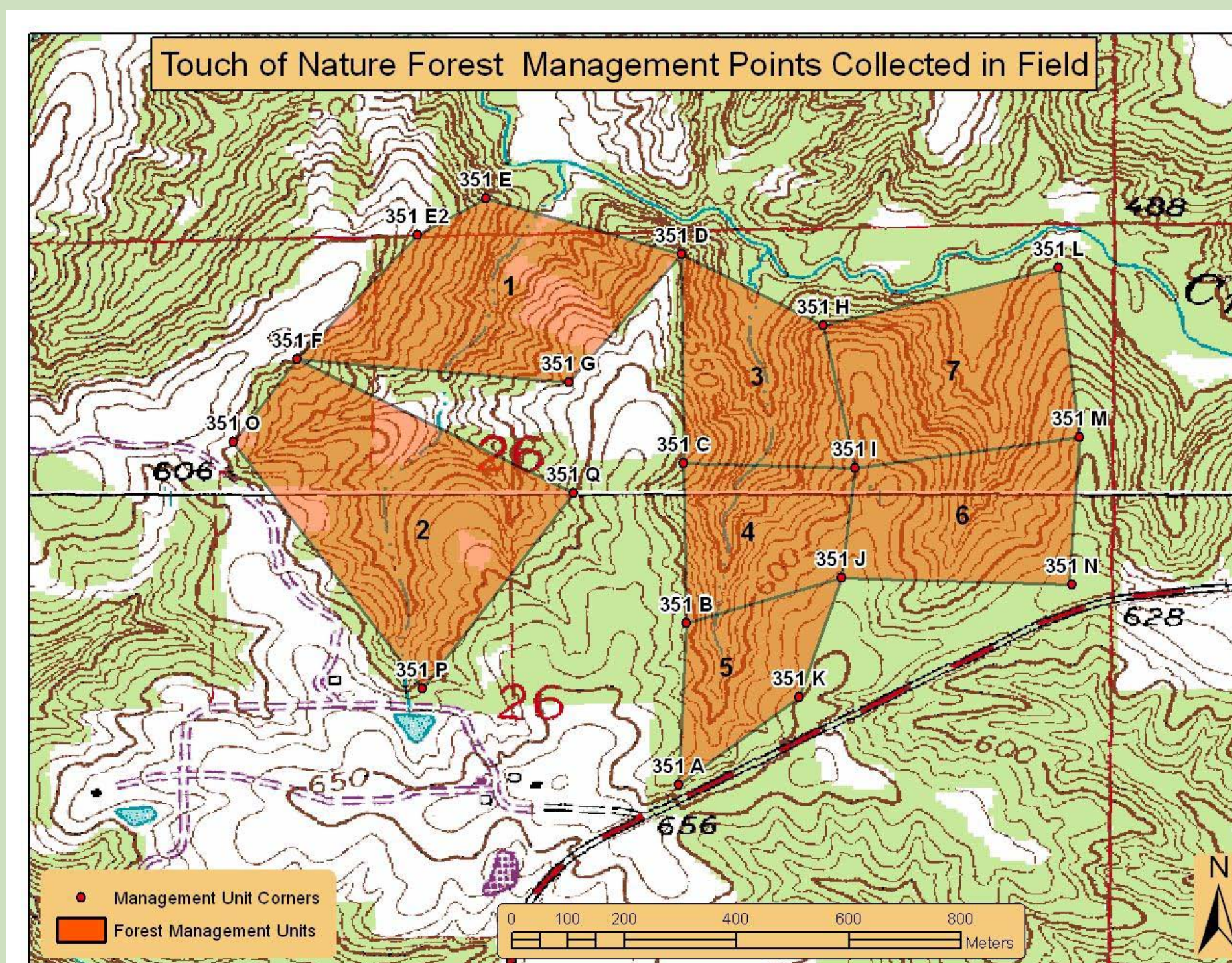


Figure 4 is a topographical representation of the Forest Management Units (orange) and corner coordinates.

Fig. 5

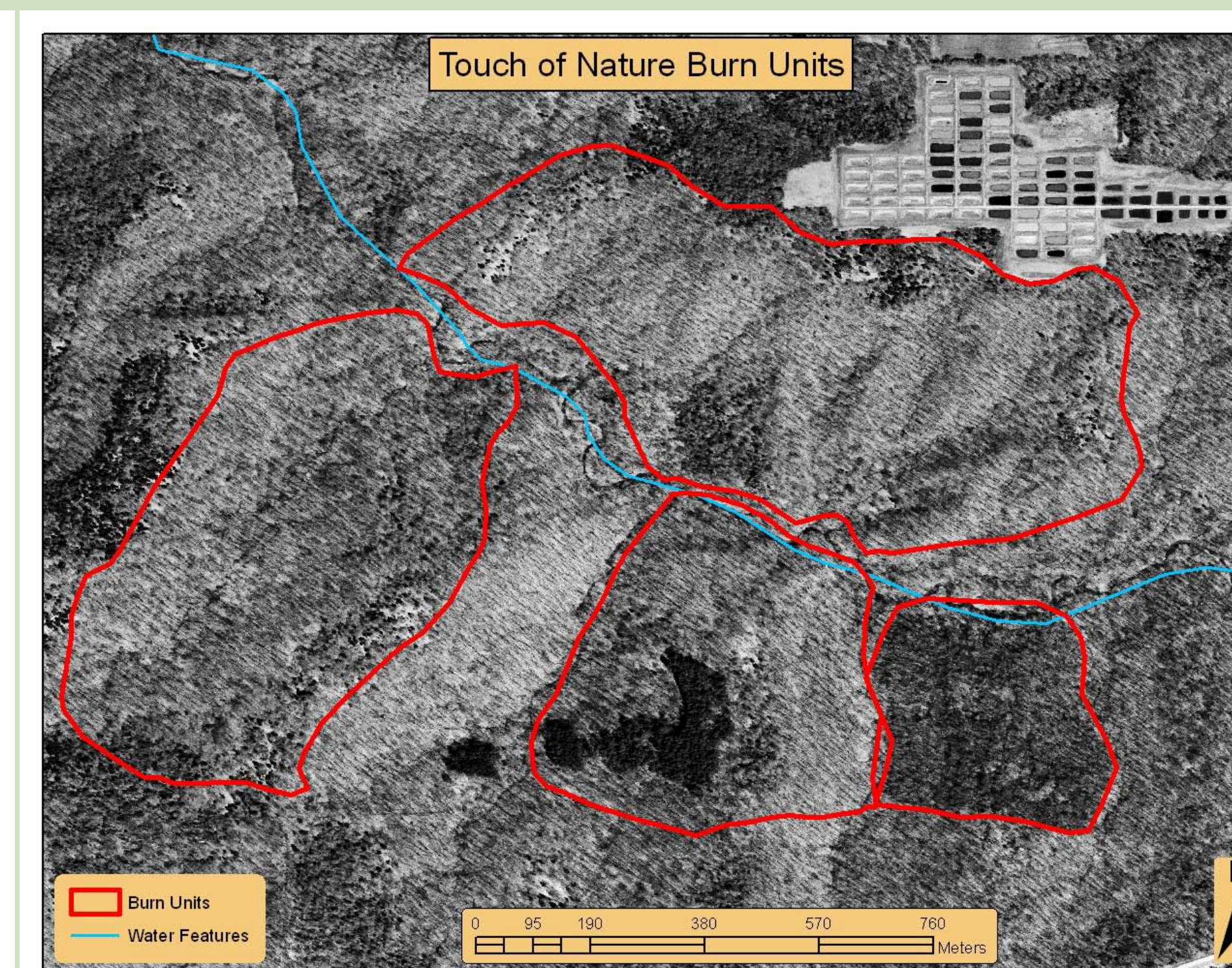


Figure 5 is an orthophotograph with burn units outlined (red) and water features.