Development of the County Boundary Base Map Layer of the Georgia Spatial Data Infrastructure

Overview: The county boundary database contains one of the most elemental base-map themes utilized in most Geographic Information Systems (GIS). County boundaries are frequently used by state GIS systems for data management, data aggregations, demographics, cartographic representations, and spatial analysis. Presently, most State of Georgia cartographers operationally use the 1:100,000-scale U.S. Census Bureau TIGER/Line files or the U.S. Geological Survey (USGS) Digital Line Graph file county boundaries for most official GIS mapping purposes. Some organizations have digitized county boundaries from the 1:24,000-scale USGS; but none of these maps have been Census or USGS certified.

The Georgia Department of Community Affairs (DCA) proposes to produce a multipurpose 1:24,000-scale GIS county boundary database for the State of Georgia, using the best available map sources, and certifying it through a review by the most qualified authorities. DCA is already working with the Georgia Municipal Association, the Georgia Secretary of State-Archives and History Division, and others on a plan to assume a custodial and operational role in the mapping of municipal boundary annexations. Proposed legislation may be sponsored during the 1999 legislative session. This proposed large-scale county boundary mapping project is complementary with the annexation mapping and other such intergovernmental programs at DCA.

Background: There are several existing sources of digital county boundaries for Georgia. They include: Georgia DOT county boundaries, scale 1:31,680, source derived from USGS 7.5-minute quadrangles, 1995 U.S. Census Tiger line files, scale 1:100,000, source U.S. Census and USGS 100K-DLGs, and local government large scale detailed boundaries (where available). These sources of digital data will all be helpful in building a new set containing the best available definitions of Georgia's county boundaries.

Methodology: Much of the work involved with this project will involve communicating with local authorities and conducting research in the Georgia Secretary of State-Archives and History Division to identify the appropriate representation of the county boundaries. It is anticipated that this will encompass more than half of the contracted work. In addition, DCA will conduct a formal survey to inventory where local boundary data is available to integrate with the statewide county base map. DCA's primary goal in this project is to produce a 1:24,000-scale map by using the best available county boundary maps and related information from the various sources. As it was described in the DDTWG work plan, this map will be the 'definitive source' only in that it will be a best-fit database with quality measures identifying boundary lines that are not clearly defined.

The approach to building this database will be to collect the best statewide digital databases, or digitize them from source maps, to create a representation of county boundary lines that match the USGS 1:24,000-scale 7.5-minute quadrangles. Any digitizing work to be done will meet Georgia State mapping requirements as defined in **GIS Standards and Guidelines in the State of Georgia**, Section 4, 'Data Capture'. This database will be revised through research at the Georgia Secretary of

State-Archives and History Division, and with data provided from local government authorities. The linear boundary features will be vertically integrated and attributed from other detailed sources such as the State Transportation and Hydrographic databases whenever those data are available as spatially congruent USGS-certified 1:24,000-scale digital GIS data. Draft maps will be sent to the county governments and regional development centers for review and certification that the maps are an acceptably accurate 1:24,000-scale definition of their boundaries. A formal arbitration process will be instituted to resolve discrepancies and/or disputes regarding boundaries. DCA, in fact, already has some limited authority, as well as a model conflict resolution process, under its **Rules for Mediation of Interjurisdictional Conflicts** (Chapter 110-12-5).

DCA is already working very closely with the U.S. Census Bureau on the Boundary and Annexation Survey (BAS), the Local Update of Census Addresses (LUCA), Address List Review 1999 (ALR 99), and other programs. DCA suggests that if possible the State should make every effort to integrate the compilation, and especially the review, of this county boundary map with the next BAS. In this way Georgia can leverage this work to facilitate the early adoption of the State Boundary Base Map layer into the Census GIS geospatial framework data. And although not required as part of the DDTWG work plan, DCA would also submit the county boundary base map to the USGS National Mapping Division for review, comment, and technical certification.

DCA will work with the Association of County Commissioners of Georgia, regional development centers and others to support this project and distribute the maps and surveys to the appropriate county officials.

Technical Data Specification: The county boundaries produced from this project will meet the following specifications:

Spatial accuracy: Must meet National Map Accuracy Standards for its scale.
Scale: 1:24,000 or better
Tiling method: Statewide
Projection: Geographic
Datum: NAD83
Units: Decimal Degree
Data Format: Arc/Info export file

Polygonal Attributes:	County_ID – State FIPS and county FIPS
	Name - Name of the county (upper case)
	County_FIPS – County FIPS Number
Linear Attributes:	Feature_type - If boundary is coincident with a feature
	Feature_ID – Unique ID of the coincident feature
	Feature_name – Name of the coincident feature
	Source – Source of the boundary line (linked to metadata)
	Description – Brief narrative of the boundary line
	Edit Date – Date of the edit
	Confidence - Relative positional accuracy
Region Coverages:	Regions representing administrative and governmental service units that are delineated by county boundaries.

Region Attributes:	Feature_name - Region number and/or name. Contact – Service area contact title. Contact information phone, address, email, and fax. Edit_date - Date of the edit

A more comprehensive data dictionary with FGDC documentation will be produced from this project.

Maintenance and Custodial Responsibility: The boundary map data developed from this project will require a maintenance program. The Department of Community Affairs will develop a comprehensive plan that addresses the institutional and technical issues of boundary database maintenance. The Department of Community Affairs is presently developing a proposed maintenance plan for municipal boundary annexations. Similarly, the maintenance plan for county boundaries will include procedures for capturing and integrating detailed large-scale boundary updates into the database. The Department of Community Affairs will act as data custodian to facilitate the on-going maintenance of this county boundary database, if it is so directed and funded by the General Assembly. Therefore, DCA wants to be a major contributor to the conceptual boundary maintenance plan.

Deliverables: The Contractor will:

1. Provide all necessary personnel, equipment, and facilities required to produce a seamless county boundary database that meets the technical standards specified in the scope of work with associated technical documentation, data dictionary, metadata, and maintenance plan.

2. Provide completed data sets to the Georgia GIS Data Clearinghouse for review and acceptance. Adjust final boundary map delivery schedule to accommodate GSDI transportation and hydrography map delivery schedules, as jointly deemed necessary by the GISCC and DCA.

3. Adhere to the "Geographic Information Systems Standards and Guidelines for the state of Georgia."

4. Adhere to the feature content documented in the National Mapping Program's Technical Instructions, Part 30 Governmental Units, "Standards for Core Content," with modifications approved by the GIS Coordinating Committee's Data Development TWG as specified in the scope of work.

5. Submit quarterly progress reports summarizing project activities.

APPENDIX B

DELIVERY SCHEDULE

Delivery	Date
Quarterly progress report	October 1, 1999
Initial draft county database developed from best available data sources and quarterly progress report.	January 1, 2000
Survey, research, and integrate updates to the draft database; develop draft final database for review and quarterly progress report.	March 1, 2000
Solicit approval of final database and develop a maintenance plan.	June 14, 2000