



1 Project Team

Project Role	Organization	Contact	Email
Manager	CAPCOG	Sean Moran	smoran@capcog.org
Sponsor	CAPCOG	Clay Collins	ccollins@capcog.org
Participant	City of Austin	Dean Labonte	dean.labonte@ci.austin.tx.us
Participant	City of Cedar Park	David Shore	Shore_d@ci.cedar-park.tx.us
Participant	City of Georgetown	Bryce, Chris	cbryce@georgetowntx.org
Participant	City of Marble Falls	Tim Dolan	tdolan@ci.marble-falls.tx.us
Participant	City of Round Rock	Chris Collier	ccollier@round-rock.tx.us
Participant	Fayette County	Moore, Dawn	dmoore@capcog.org
Participant	Hays County	Steve Floyd	stevef@co.hays.tx.us
Participant	Travis County	Heidi Dues	heidi.dues@co.travis.tx.us
Participant	Williamson County	Stluka, Emily	estluka@wilco.org
Participant	LIST ADDITIONAL	PARTICIPANTS	HERE
Participant	LIST ADDITIONAL	PARTICIPANTS	HERE
Participant	LIST ADDITIONAL	PARTICIPANTS	HERE
Vendor	TO	BE	DETERMINED

2 Project Description

The Capital Area Council of Governments (CAPCOG) GeoMap Project is a four-year, cost-sharing initiative to produce and maintain current geospatial base map data for the Capital Area. Historically, project participants have received several dollars of data for every dollar contributed, making GeoMap a great opportunity for Central Texans to develop low cost, accurate, and up-to-date Geographic Information Systems (GIS) data for their organization.

2.1 Duration

This Statement of Work (SOW) shall be in effect for four years from the date the GeoMap contract is executed. The GeoMap contract will include an option to extend the contract for two consecutive two year periods.

2.2 Type and Value

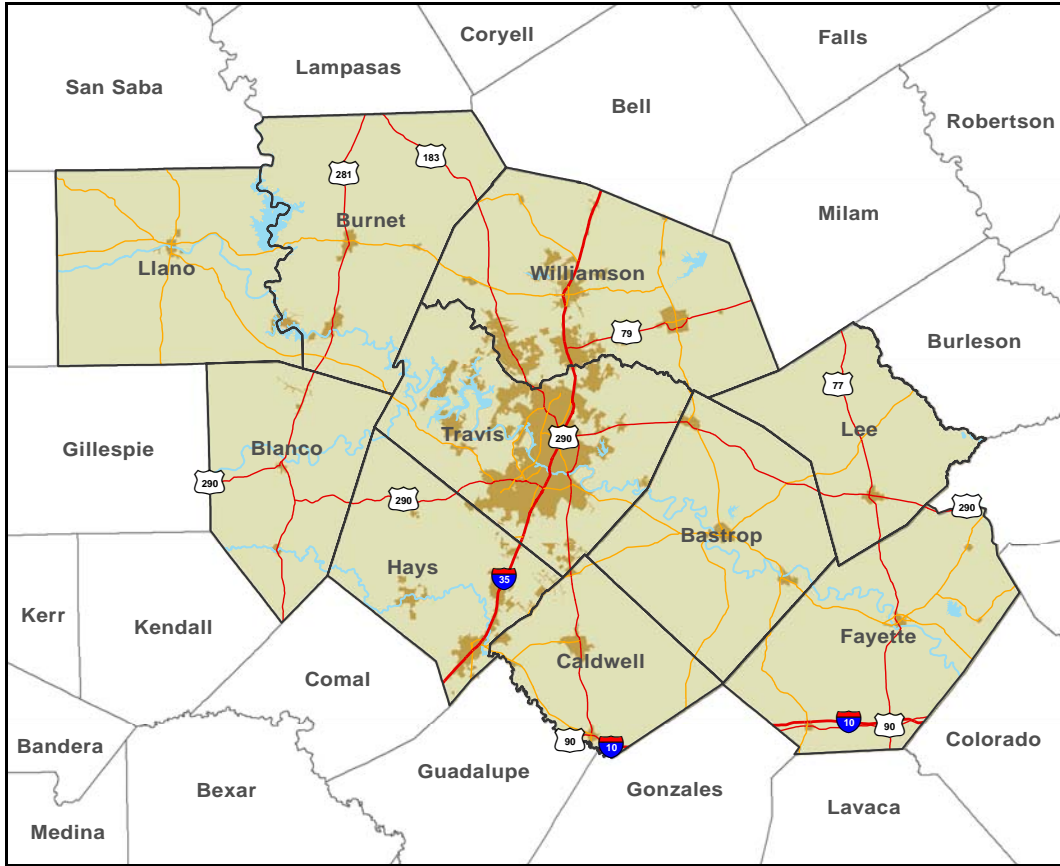
This SOW and the resulting GeoMap contract is not a commitment to funding and serves only to establish the framework for acquiring geospatial base map data in our region. Participating in the GeoMap Project does not commit an organization to funding GeoMap, nor does it guarantee a price discount or matching dollars.

All GeoMap data acquisition initiatives and associated funding requirements will be defined by a Memorandum of Understanding (MOU) between CAPCOG and participating organizations (Appendix D) and submitted as a work order drafted by participants, approved by their organizations, and submitted under the GeoMap contract.

The GeoMap contract is an Indefinite Delivery Indefinite Quantity (IDIQ) contract. It will include a firm fixed unit price with a not-to-exceed value based on the selected vendor's cost proposal.

2.3 Project Area

The project area consists of the CAPCOG administrative boundary, which includes participating organizations that serve all or a portion of Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, and Williamson Counties.



CAPCOG GeoMap Project Area

2.4 Project Goal

The project goal is to produce and maintain current geospatial base map data for the Capital Area. In support of this goal, GeoMap participants are striving to:

- Create enhanced base map products at a reduced cost through cost sharing;
- Minimize duplicative efforts to generate base map data in our region;
- Establish a common geographic framework for addressing local and regional issues, including Emergency 9-1-1, infrastructure management, preliminary engineering, environmental analysis, and floodplain management;
- Provide a continuous stream of geospatial data that support mission-critical applications;
- Manage the resource and budgetary expectations of participating organizations; and
- Create readily accessible base map data in the public domain

CAPCOG’s mission to be the catalyst for regional planning and implementation through effective utilization of resources, is realized through initiatives like the GeoMap Project.

2.5 Project History

CAPCOG initiated the first GeoMap Project in 1996 to support Emergency 9-1-1 (E-9-1-1). In that project, CAPCOG teamed with the City of Austin to create a seamless black and white orthoimage coverage for its entire ten-county area. From this base, a number of planimetric features were captured including:

- Building (points)
- Building (polygons)

- Contour (lines)
- Control (points)
- Hydrography (lines)
- Hydrography (polygons)
- Jersey Barriers (lines)
- Landmark (polygons)
- Miscellaneous Features (lines and points)
- Miscellaneous Hydro (lines and points)
- Obscured Area (polygons)
- Railroad Centerlines (lines)
- Spot Elevations (point)
- Street Centerlines (lines)
- Tile Index (polygon)
- Transportation (polygons)

The orthoimage base and planimetrics were completed in 1997.

Given the Capital Area's explosive growth, in 2002 GeoMap participants began discussing a new data acquisition initiative to update the 1997 data. CAPCOG teamed with the Cities of Georgetown, Lockhart, Round Rock, San Marcos, Williamson County, and the Texas Natural Resources Information System (TNRIS) to create a seamless color orthoimage coverage for the entire ten-county area. Planimetric features first generated in 1997 were updated using the 2002 orthoimage base. Several of the participating communities also purchased contour and Light Detection And Ranging (LIDAR) topographic data.

Most recently, in 2003 the City of Austin teamed with the Cities of Buda, Cedar Park, Round Rock, Taylor, Travis County, and Travis County Emergency Services to create color orthoimagery and updated planimetric data for their individual communities. Many of the participating communities also purchased contour and LIDAR topographic data. Although CAPCOG did not contribute funding in 2003, CAPCOG did provide in-kind contract management and quality control services.

2.6 Measures

Project deliverables will be monitored according to milestones outlined in the Work Breakdown Structure (WBS) and Production Specification sections of this document. Additional measures may be developed by GeoMap participants and submitted as an amendment to this SOW.

2.7 Project Scope

The Capital Area Council of Governments (CAPCOG) GeoMap Project is a multi-year, cost-sharing initiative to produce and maintain current geospatial base map data for the Capital Area. The project scope is divided into four annual data acquisition initiatives and includes an option for the purchase of additional services on an as-needed basis. An example of what each year's initiative might be is described below.

Year One: High Resolution Orthoimagery and Planimetric Update

During the first year of the GeoMap contract, the selected vendor could furnish GeoMap participants with a two-foot resolution, seamless orthoimage base for the entire ten-county region. Utilizing this base, the vendor would update planimetric features (e.g. road centerlines, building centroids, etc.) for the region. Participating organizations contributing to the regional effort would be given the opportunity to provide additional funding to enhance the basic framework datasets (e.g. upgrade 2' orthoimagery to 6" orthoimagery). This service provides GeoMap participants with the ability to acquire high-resolution data for a fraction of the cost by pooling local and regional funding.

Years Two and Four: Spot Data Acquisition

During years two and four of the GeoMap contract, participants would have the option of submitting work orders to purchase geospatial data included in the GeoMap contract for their area of interest. Additional data acquisition services include, but are not limited to:

1. True Orthoimagery
2. 2nd Generation Orthoimagery
3. Geo-referenced Imagery
4. Digital Elevation Models (DEM)
5. Ground-Based LIDAR
6. Contours and Digital Terrain Models (DTM)
7. Planimetrics
8. Watershed Boundaries
9. Land Cover
10. Vegetation

For example, a GeoMap participant that is experiencing high-growth cannot wait until year three to update their imagery. In this case, the participant may submit a work order to purchase one-foot orthoimagery during year two of the GeoMap contract for their specific area of interest. Depending on the geographic area of interest, participating organizations may not enjoy the cost savings possible during years one and three of the GeoMap contract.

Appendix E includes the production specifications for each layer listed above and available via the GeoMap contract.

Year Three: High Resolution Geo-referenced Imagery and Planimetric Update

During the third year of the GeoMap contract, the selected vendor could furnish GeoMap participants with two-foot, seamless geo-referenced imagery rectified to an Aerial Triangulation solution for the entire ten-county region. This imagery that would fit into the CAPCOG tile structure and be tone matched, but would not have any inherent level of horizontal accuracy (because it would not be ortho rectified to a DEM). This could provide updated imagery that is slightly less accurate than an orthoimage, at a fraction of the cost.

Utilizing this geo-referenced imagery (and if it met specific horizontal accuracy thresholds), the vendor would update planimetric features (e.g. road centerlines, building centroids, etc.) for the region. Participating organizations contributing to the regional effort will be given the opportunity to provide additional funding to enhance the basic framework datasets (e.g. upgrade 2' imagery to 6" imagery).

Because geo-referenced imagery can be produced at a significantly lower cost than orthoimagery, it may serve GeoMap members to switch years one and three of the GeoMap contract. This would allow participants sufficient time to identify additional funds for the acquisition of high-resolution orthoimagery in year three, instead of year one of the GeoMap contract.

At anytime during the contract period, participating organizations, individually or collectively, may purchase one or more of the geospatial layers listed in Appendix E.

2.8 Enhancements Not Included in Scope

Additional enhancements not included in this scope may be identified during development and implementation and should be submitted as an amendment to this SOW.

2.9 Scope Amendments

There are no amendments to the SOW at this time.

2.10 Interrelated Projects

Interrelated projects include applications supported by GeoMap and other data acquisition initiatives.

GeoMap Applications

GeoMap participants have a number of applications that require accurate and current geospatial base map data, including:

- Emergency 9-1-1 (i.e. Fire, Police, and EMS)
- Mapped Automated Location Identification (MappedALI)
- Infrastructure Management (e.g. water, wastewater, electric, road, facilities, etc.)
- Disaster Preparedness
- Economic Development
- Local and Regional Planning
- Tax Appraisal Mapping
- Watershed and Floodplain Management
- Transportation Planning
- Voter Registration
- Environmental Analysis
- Natural Resource Management
- Land Use Planning
- Preliminary Engineering
- Crime Analysis
- Urban Wildfire Management

Other Data Acquisition Initiatives

When possible, CAPCOG will actively coordinate with other organizations in an effort to increase participation in GeoMap and/or reduce duplication. There are several on-going data acquisition initiatives in the Capital Area, including:

- TNRIS Strategic Mapping Program (StratMap)
- United States Geological Survey (USGS) 133 Cities Initiative
- Natural Resources Conservation Service (NRCS) high-resolution elevation initiative
- Appraisal Districts annual aerial photography projects
- Texas Department of Transportation (TxDOT) on-system mapping, county road inventory, and transportation planning and engineering projects

3 Development and Implementation

Development and implementation of this project will be managed by CAPCOG in coordination with participants and the selected vendor.

3.1 Specifications

Appendix E includes the production specifications for each layer listed above and available via the GeoMap contract.

3.2 Constraints

Currently, the most limiting factor associated with completing this SOW is a lack of identified funding. GeoMap participants will need to commit funding through a MOU (Appendix D) with CAPCOG defining the deliverables and committing funding before a work order is submitted to the vendor.

Another constraint is the seasonal nature of data acquisition initiatives. For example, acquiring leaf-off orthoimagery requires a flight between December and February to ensure a minimal level

of vegetation. Recognizing these seasonal constraints during project and work order planning will ensure a high-quality and timely product.

3.3 Assumptions

Factors that are considered to be true, real, or certain and are the basis for developing the Project Scope include:

- CAPCOG requires, full and unrestricted ownership of the data, which shall be placed in the public domain. Under this agreement, CAPCOG and participating organizations shall be free to use and distribute the data in any manner they see fit, absent of licensing constraints.
- While no entity is required to financially participate in GeoMap (including CAPCOG), it is assumed that funding participation in GeoMap will be consistent with the The CAPCOG 2002 and City of Austin/Travis County 2003 data acquisition initiatives.
- The funding and resources required to complete this SOW will be identified.
- While one of the primary objectives is to leverage tax payer dollars to create enhanced base map products at a reduce cost, GeoMap participants are not guaranteed a financial match or discount.
- The CAPCOG Executive Board will approve the Request for Proposal and resulting contract that are based on this SOW.

3.4 Responsibilities

Each member of the project team bears a responsibility for the success of this project.

Manager

The manager is responsible for management of the overall project and its deliverables. The manager will:

- Act as the participant's single point of contact for the project;
- Facilitate communication between project members;
- Control planning and execution of the project's activities and resources to ensure that established cost, time, and quality goals are met; and
- Review deliverables in accordance with the quality control standards established in the project management plan and recommend their (a) acceptance and approve for payment, (b) conditional acceptance, then approve for payment, or (c) rejection and return to be redone.

Sponsor

The sponsor will provide project oversight and serve as a second line of communication with the CAPCOG Executive Director and/or Board. Participants can contact the sponsor at any time to discuss their satisfaction with the project.

Participants

Participants (including CAPCOG) are expected to:

- Provide the selected vendor with any supporting materials and data in a medium and/or format agreed upon by project members;
- Serve as the single point-of-contact for their organization relative to GeoMap;
- Work in good faith to achieve the GeoMap project goal and objectives;
- Review deliverables in accordance with the quality control standards established in the project management plan and recommend their (a) acceptance and approve for payment, (b) conditional acceptance, then approve for payment, or (c) rejection and return to be redone.

Vendor

Prior to producing any data deliverables, the selected vendor will develop a project management plan (PMP) to guide the GeoMap project execution, control, and change processes. The PMP will:

- Document any assumptions and decisions, facilitate stakeholder communication, and document scope, tasks, costs, and schedules;
- Document the project execution, control, and change processes;
- Establish standards for the transfer, tracking, storage, conversion, versioning, packaging and distribution of GeoMap data and supporting materials;
- Guide quality planning, quality assurance, and quality control;
- Establish standards for information distribution, performance reporting, and administrative closure; and
- Identify, analyze, responds to, and monitor risk.

The vendor will submit all deliverables to CAPCOG according to a timeline established in the GeoMap contract and/or work orders. Upon delivery, and after verification by CAPCOG staff, CAPCOG will forward the deliverables to participating members. To facilitate communication, the vendor will establish and maintain a project website for tracking and reporting project progress.

The vendor will (a) furnish all tools, equipment, supplies, supervision, transportation, and other accessories, services, and facilities necessary to complete the work; (b) furnish all materials, supplies, and equipment specified and required to be incorporated in and form a permanent part of the completed work; (c) provide and perform all necessary labor; and (d) perform and complete the work in accordance with good technical practice, due diligence, and in accordance with the requirements of this SOW, the GeoMap contract, and associated work orders.

3.5 Work Breakdown Structure (Draft)

ID	Task Name	Duration	Start	Finish	2009																				
					2006				2007				2008				2009								
					Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
1	Year One: High Res Orthos and Planimetrics	180 days	Mon 10/3/05	Fri 6/9/06																					
2	Plan Project	1 mon	Mon 10/3/05	Fri 10/28/05																					
3	Geodetic Control Survey	2 mons	Mon 10/31/05	Fri 12/23/05																					
4	Acquire Data (e.g. imagery, etc.)	1.5 mons	Mon 11/14/05	Fri 12/23/05																					
5	Aerial Triangulation	2 mons	Mon 11/28/05	Fri 1/20/06																					
6	Pilot Area	1.5 mons	Mon 11/28/05	Fri 1/6/06																					
7	Compile Elevation Data	3 mons	Mon 11/28/05	Fri 2/17/06																					
8	Production	6 mons	Mon 12/26/05	Fri 6/9/06																					
9	Quality Control	3 mons	Mon 3/20/06	Fri 6/9/06																					
10	Delivery (75%)	0 days	Mon 4/17/06	Mon 4/17/06																					
11	Delivery (90%)	0 days	Mon 5/15/06	Mon 5/15/06																					
12	Delivery (100%)	0 days	Fri 6/9/06	Fri 6/9/06																					
13	Year Two: Spot Data Acquisition	260 days	Mon 9/4/06	Fri 8/31/07																					
14	Plan Project	20 days	Mon 9/4/06	Fri 9/29/06																					
15	Acquire Data	240 days	Mon 10/2/06	Fri 8/31/07																					
16	Year Three: High Res Georeferenced Imagery	260 days	Mon 9/3/07	Fri 8/29/08																					
17	Plan Project	20 days	Mon 9/3/07	Fri 9/28/07																					
18	Acquire Data	240 days	Mon 10/1/07	Fri 8/29/08																					
19	Year Four: Spot Data Acquisition	260 days	Mon 9/1/08	Fri 8/28/09																					
20	Plan Project	20 days	Mon 9/1/08	Fri 9/26/08																					
21	Acquire Data	240 days	Mon 9/29/08	Fri 8/28/09																					

3.6 Quality Assurance and Quality Control

GeoMap Quality Assurance (QA) begins with the development of a PMP that clearly defines the production process and associated controls for ensuring a high quality product. The Manager, Sponsor, and selected Participants will review the proposed workflow process to ensure that a logical progression of quality control steps is included. The PMP will be approved by the Manager before proceeding with production.

Quality Control (QC) steps will be documented in the PMP and monitored on a work order tracking database stored on a project website. At anytime during the project, project members will be able to access the work order tracking database via a standard Internet browser. In addition to monitoring the project status in real time, project members will be able to review data and provide feedback to the vendor through an ArcIMS viewer. This proactive approach to project and data management provides project members with a transparent view of the data during all stages of the project.

3.7 Acceptance Criteria

Final products will be divided into seventy-five percent (75%), ninety percent (90%), and one hundred percent (100%) deliverables. The selected vendor will be paid within 30 days of a CAPCOG approved final product. Partial payments may be agreed upon for a series of deliverables to be negotiated by the selected proposer and CAPCOG.

A late fee of 0.1 percent of the work order price will be billed to the successful proposer per day if the delivery dates are not met. CAPCOG is exempt from Federal and State Tax; therefore, do not include tax in the proposal price. If the proposer fails to meet production and delivery schedules established in the contract and/or work order, or fails to correct identified errors or omissions within the timeframe established in the contract and/or work order, CAPCOG may terminate the contract and seek damages for its breach.

Payment is contingent upon quality control. To ensure that all deliverables satisfy a minimum quality standard, CAPCOG and/or participating organizations will randomly sample 1% of the images or features in a deliverable. The random sample will be based on acceptance criteria as defined in the project management plan (PMP). If an error rate of greater than 0.25% occurs in that sample, the delivery shall be rejected without payment. The vendor shall correct all errors identified by CAPCOG and/or participating organizations, review the remaining data for errors, and report error corrections made based on the review. Upon the event that delivery fails the random sample review the second time, payment for that delivery shall be reduced by 10% of the cost of that delivery. Every subsequent failure to meet the quality standard shall result in another 10% reduction of the total cost of that delivery. In no case shall CAPCOG and participating organizations pay less than 50% of the cost of a delivery package. Each incorrect image or feature is counted as an error.

The accuracy of all final deliverables will be reported according to the National Standard for Spatial Data Accuracy (NSSDA).

3.8 Metadata

Final products will include ESRI ArcCatalog generated metadata consistent with the FGDC stylesheet. Appendix F

3.9 Warranty

As described by the selected vendor.

Appendix D: Sample Memorandum of Understanding

CAPITAL AREA COUNCIL OF GOVERNMENTS

INTERLOCAL CONTRACT FOR GEOMAP 2006 WORKORDER 0603

Art. 1. Parties and Purpose

1.1. The Capital Area Council of Governments ("CAPCOG") is a regional planning commission and political subdivision of the State of Texas organized and operating under the Texas Regional Planning Act of 1965, as amended, chapter 391 of the Local Government Code.

1.2. The <PARTICIPATING ORGANIZATION> is a <INSERT LEGAL AUTHORIZATION> that is seeking to obtain < GEOMAP DATA SERVICES>.

1.3. CAPCOG has contracted with <THE SELECTED VENDOR> to provide <GEOMAP DATA SERVICES> to the <PARTICIPATING ORGANIZATION>. This contract is entered into between CAPCOG and the <PARTICIPATING ORGANIZATION> under chapter 791 of the Government Code so that the <PARTICIPATING ORGANIZATION> can contribute funding toward the development of <GEOMAP DATA SERVICES> being developed by the <PARTICIPATING ORGANIZATION> under CAPCOG's contract with <THE SELECTED VENDOR>.

Art. 2. Goods and Services

2.1. CAPCOG agrees to furnish the <PARTICIPATING ORGANIZATION> <GEOMAP DATA SERVICES> as prepared by <THE SELECTED VENDOR> for the <PARTICIPATING ORGANIZATION> under its contract with CAPCOG.

Art. 3. Contract Price and Payment Terms

3.1. The <PARTICIPATING ORGANIZATION> agrees to provide funding and/or in-kind services.

3.2. CAPCOG agrees to provide agrees to provide funding and/or in-kind services.

Art. 4. Effective Date and Term of Contract

4.1. This contract takes effect on the date it is signed on behalf of CAPCOG and it ends, unless sooner terminated under Art. 6, when the level of agreed upon in-kind service, as stated in paragraph 3.1, has been reached or on <FINAL DAY OF CURRENT FISCAL YEAR>, whichever comes first.

Art. 5. Nondiscrimination and Equal Opportunity

5.1. CAPCOG and the <PARTICIPATING ORGANIZATION> shall not exclude anyone from participating under this contract, deny anyone benefits under this contract, or otherwise unlawfully discriminate against anyone in carrying out this contract because of race, color, religion, sex, age, disability, handicap, or national origin.

Art. 6. Early Termination of Contract

6.1. If CAPCOG or the <PARTICIPATING ORGANIZATION> breaches a material provision of this contract, the other may notify the breaching party describing the breach and demanding corrective action. The breaching party has five business days from its receipt of the notice to correct the breach, or to begin and continue with reasonable diligence and in good faith to correct the breach. If the breach cannot be corrected within a reasonable time, despite the breaching party's reasonable diligence and good faith effort to do so, the parties may agree to terminate the contract or either party may invoke the dispute resolution process of Art. 7.

6.2. If the <PARTICIPATING ORGANIZATION> fails to provide CAPCOG the funding and/or in kind services set out in paragraph 3.1, CAPCOG will recommend to the <PARTICIPATING ORGANIZATION> that other provisions be made for completing the work required as outlined in Art. 3.

6.3. Termination for breach under paragraph 6.1 does not waive either party's claim for damages resulting from the breach,

Art. 7. Dispute Resolution

7.1. The parties desire to resolve disputes arising under this contract without litigation. Accordingly, if a dispute arises, the parties agree to attempt in good faith to resolve the dispute between themselves. To this end, the parties agree not to sue one another, except to enforce compliance with this Art. 7, until they have exhausted the procedures set out in this Article.

7.2. At the written request of either party, each party shall appoint one nonlawyer representative to negotiate informally and in good faith to resolve any dispute arising under this contract. The representatives appointed shall determine the location, format, frequency, and duration of the negotiations.

7.3. If the representatives cannot resolve the dispute within 30 calendar days after the first negotiation meeting, the parties agree to refer the dispute to the Dispute Resolution Center of Austin for mediation in accordance with the Center's mediation procedures by a single mediator assigned by the Center. Each party shall pay half the cost of the Center's mediation services.

7.4. The parties agree to continue performing their duties under this contract, which are unaffected by the dispute, during the negotiation and mediation process.

Art. 8 Notice to Parties

8.1. Notice to be effective under this contract must be in writing and received by the party against whom it is to operate. Notice is received by a party: (1) when it is delivered to the party personally; (2) on the date shown on the return receipt if mailed by registered or certified mail, return receipt requested, to the party's address specified in paragraph 8.2 and signed on behalf of the party; or (3) three business days after its deposit in the United States mail, with first-class postage affixed, addressed to the party's address specified in paragraph 7.2.

8.2. CAPCOG's address is 2512 IH-35, South, Suite 220, Austin, TX 78704, Attention: Betty Voights, Executive Director. The County's address is 411 West 13th Street, Executive Office Building, P.O. Box 1748, Austin, Texas 78767, Attention: Joseph P. Gieselman, Executive Manager.

8.3. A party may change its address by providing notice of the change in accordance with paragraph 8.1.

Art. 9. Miscellaneous

9.1. Each individual signing this contract on behalf of a party warrants that he or she is legally authorized to do so and that the party is legally authorized to perform the obligations undertaken.

9.2. This contract states the entire agreement of the parties, and an amendment to it is not effective unless in writing and signed by all parties.

9.4. This contract is binding on and inures to the benefit of the parties' successors in interest.

9.5. <THE SELECTED VENDOR> is a third-party beneficiary of this contract.

9.6. This contract is executed in duplicate originals.

<PARTICIPATING ORGANIZATION>, TEXAS CAPITAL AREA COUNCIL OF GOVERNMENTS

By_____

By_____

<SIGNEE NAME>
<SIGNEE TITLE>

Betty Voights
Executive Director

Date_____

Date_____

Appendix E: GeoMap Production Specifications

Geospatial layers available to participating organizations through the GeoMap contract includes, but are not limited to:

1. True Orthoimagery
2. 2nd Generation Orthoimagery
3. Geo-referenced Imagery
4. Digital Elevation Models (DEM)
5. Ground-Based LIDAR
6. Contours and Digital Terrain Models (DTM)
7. Planimetrics
8. Watershed Boundaries
9. Land Cover
10. Vegetation

In the case of geospatial layers that have very large file sizes, the selected vendor will tile the data according to a pre-determined grid (e.g. USGS 7.5-minute quadrangle, custom grid, etc.). All tiled data must be accompanied by a corresponding index grid stored in an ESRI compatible vector format (e.g. shape file or geodatabase feature class).

The processes required to generate many of the products listed below could result in interim products (e.g. 12-bit imagery, MicroStation files, etc.) that may be of value to CAPCOG and participating organizations. The selected vendor will work with CAPCOG and participating organizations to identify any interim products and the feasibility of including them in the final deliverable.

The production specifications for each layer are listed below.

1 True Orthoimagery

Historically, GeoMap has produced fixed-wing, analog aerial orthoimage panchromatic and color products. Recent advancements in digital orthoimagery provide GeoMap participants with enhancements not available in analog orthoimagery, including:

- A 100% digital product,
- Reduction of errors caused by out-of-focus imagery, dust marks, scratches, or inconsistencies in tone and density,
- Faster production turn-around, and the
- Ability to collect multiple image formats during the same flight (e.g. color and CIR).

Another advancement is the introduction of satellite imagery. While lower resolution than traditional orthophotography and more expensive than geo-referenced imagery, satellite imagery offers several advantages over fixed-wing imagery, including:

- Faster turn-around time,
- Potential for multi-spectral image analysis,
- Larger historical archive, and
- Less distortion present in tall structures (e.g. buildings and bridges).

The GeoMap product specifications for orthoimagery are listed below and do not specify a preference for analog, digital, or satellite imagery.

ITEM	DESCRIPTION
<i>Product Name</i>	1-meter Orthoimagery
<i>Product Description</i>	1-meter Pixel Resolution B&W, Color, CIR, or Multispectral Orthoimagery
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	INSERT HORIZONTAL ACCURACY HERE
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	None
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

ITEM	DESCRIPTION
<i>Product Name</i>	24-inch Orthoimagery
<i>Product Description</i>	24-inch Pixel Resolution B&W, Color, CIR, or Multispectral Orthoimagery
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	No more than + or - ten (10) feet per pixel variation
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	None
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

ITEM	DESCRIPTION
<i>Product Name</i>	12-inch Orthoimagery
<i>Product Description</i>	12-inch Pixel Resolution B&W, Color, CIR, or Multispectral Orthoimagery
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	No more than + or - five (5) feet per pixel variation
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	None
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

ITEM	DESCRIPTION
<i>Product Name</i>	6-inch Orthoimagery
<i>Product Description</i>	6-inch Pixel Resolution B&W, Color, CIR, or Multispectral Orthoimagery
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	No more than + or - two and a half (2.5) feet per pixel variation
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	None
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

1.1 Image Quality

All images shall be radiometrically and geometrically corrected to enable adjacent files to be displayed simultaneously without obvious distinctions among them. Orthophotos should be clear and shall not contain defects such as out-of-focus imagery, dust marks, scratches, or inconsistencies in tone and density between individual orthophotos and/or adjacent sheets. Individual images should contain less than 5% cloud cover. Overpasses, bridges, and tall buildings should be corrected to their true horizontal position. The selected vendor will provide examples of quality control procedures to be used in product development.

1.2 Visual Verification

Visual verification shall be performed by the selected vendor, CAPCOG, and participants to ensure both image completeness and that no gaps occur in the image area or over edge coverage (i.e. include sufficient end lap and side lap). The accuracy of the data shall be verified by comparing image line and sample geometric coordinates to coordinates derived from higher order accuracy for the same points.

1.3 Additional Information

A digital flight line index must be included with the image files which indicate both photography center points and flight line directions.

2 2nd Generation Orthoimagery

2nd Generation Orthoimagery refers to new imagery ortho-rectified to an existing DEM. CAPCOG will provide the selected vendor with the Aerial Triangulation solution and DEM created during The CAPCOG 1997 data acquisition initiative.

ITEM	DESCRIPTION
<i>Product Name</i>	1-meter 2nd Generation Orthoimagery
<i>Product Description</i>	1-meter Pixel Resolution B&W, Color, CIR, or Multispectral Orthoimagery
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	INSERT HORIZONTAL ACCURACY HERE
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A

<i>Dependencies</i>	Existing orthophoto control (AT and DEM)
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

ITEM	DESCRIPTION
<i>Product Name</i>	24-inch 2nd Generation Orthoimagery
<i>Product Description</i>	24-inch Pixel Resolution B&W, Color, CIR, or Multispectral Orthoimagery
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	No more than + or - ten (10) feet per pixel variation
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	Existing orthophoto control (AT and DEM)
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

ITEM	DESCRIPTION
<i>Product Name</i>	12-inch 2nd Generation Orthoimagery
<i>Product Description</i>	12-inch Pixel Resolution B&W, Color, CIR, or Multispectral Orthoimagery
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	No more than + or - five (5) feet per pixel variation
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	Existing orthophoto control (AT and DEM)
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

ITEM	DESCRIPTION
<i>Product Name</i>	6-inch 2nd Generation Orthoimagery
<i>Product Description</i>	6-inch Pixel Resolution B&W, Color, CIR, or Multispectral Orthoimagery
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	No more than + or - two and a half (2.5) feet per pixel variation
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	Existing orthophoto control (AT and DEM)
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

2.1 Image Quality

All images shall be radiometrically and geometrically corrected to enable adjacent files to be displayed simultaneously without obvious distinctions among them. Orthophotos should be clear and shall not contain defects such as out-of-focus imagery, dust marks, scratches, or inconsistencies in tone and density between individual orthophotos and/or adjacent sheets. Individual images should contain less than 5% cloud cover. Overpasses, bridges, and tall buildings should be corrected to their true horizontal position. The selected vendor will provide examples of quality control procedures to be used in product development.

2.2 Visual Verification

Visual verification shall be performed by the selected vendor, CAPCOG, and participants to ensure both image completeness and that no gaps occur in the image area or over edge coverage (i.e. include sufficient end lap and side lap). The accuracy of the data shall be verified by comparing image line and sample geometric coordinates to coordinates derived from higher order accuracy for the same points.

2.3 Additional Information

A digital flight line index must be included with the image files which indicate both photography center points and flight line directions.

3 Geo-referenced Imagery

Geo-referenced imagery refers to aerial imagery rectified to an existing Aerial Triangulation solution. This imagery should be tone matched and fit into the CAPCOG tile structure, but would not have any inherent level of horizontal accuracy (because it would not be ortho rectified to a DEM). This will provide updated imagery that is slightly less accurate than an orthoimage, at a fraction of the cost.

ITEM	DESCRIPTION
<i>Product Name</i>	1-meter Image Map
<i>Product Description</i>	1-meter Pixel Resolution Black & White, Color, or CIR Image Map
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	TO BE DETERMINED
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	Current orthoimage base and AT solution
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

ITEM	DESCRIPTION
<i>Product Name</i>	24-inch Image Map
<i>Product Description</i>	24-inch Pixel Resolution Black & White, Color, or CIR Image Map
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet

<i>Horizontal Accuracy</i>	TO BE DETERMINED
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	Current orthoimage base and AT solution
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

ITEM	DESCRIPTION
<i>Product Name</i>	12-inch Image Map
<i>Product Description</i>	12-inch Pixel Resolution Black & White, Color, or CIR Image Map
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	TO BE DETERMINED
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	Current orthoimage base and AT solution
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

ITEM	DESCRIPTION
<i>Product Name</i>	6-inch Image Map
<i>Product Description</i>	6-inch Pixel Resolution Black & White, Color, or CIR Image Map
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	TO BE DETERMINED
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	N/A
<i>Dependencies</i>	Current orthoimage base and AT solution
<i>Deliverable Format</i>	Separate tiles/in .tiff format (24-bit color or 8 bit grayscale)/with Worldfiles
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

3.1 Image Quality

All images shall be radiometrically and geometrically corrected to enable adjacent files to be displayed simultaneously without obvious distinctions among them. Imagery should be clear and shall not contain defects such as out-of-focus imagery, dust marks, scratches, or inconsistencies in tone and density between individual orthophotos and/or adjacent sheets. Individual images should contain less than 5% cloud cover. The selected vendor will provide examples of quality control procedures to be used in product development.

3.2 Visual Verification

Visual verification shall be performed by the selected vendor, CAPCOG, and participants to ensure both image completeness and that no gaps occur in the image area or over edge coverage (i.e. include sufficient end lap and side lap). The accuracy of the data shall be verified

by comparing image line and sample geometric coordinates to coordinates derived from higher order accuracy for the same points.

3.3 Additional Information

A digital flight line index must be included with the image files which indicate both photography center points and flight line directions.

4 DEM

A Digital Elevation Model (DEM) is a digital file consisting of points of elevations, sampled systematically at equally spaced intervals. The USGS has produced 10-meter DEMs that are available for the entire CAPCOG region. While useful for many applications, a higher resolution DEM is required for floodplain mapping and site level engineering. Maturing technologies, such as LIDAR, provide GeoMap Participants with the opportunity to capture high-resolution elevation data over a large area.

Light Detection And Ranging (LIDAR) uses the same principle as RADAR. The LIDAR instrument transmits light out to a target. The transmitted light interacts with and is changed by the target. Some of this light is reflected / scattered back to the instrument where it is analyzed. The change in the properties of the light enables some property of the target to be determined. The time for the light to travel out to the target and back to the LIDAR is used to determine the range to the target and thus the elevation of the ground.

Raw LIDAR data provides a mass of points that include the x, y, z (elevation), and light intensity for each laser "strike" on the earth. These elevation mass points can be processed to generate a Digital Surface Model (DSM). The DSM includes the elevation for all features visible in an orthoimage of the same area. For example, trees and buildings are present in a DSM. While a DSM has a limited number of applications, it can be processed to produce a number of valuable products, including: a bare-earth DEM, buildings, vegetation, and contours. These value added products support a number of valuable applications including watershed management, preliminary engineering, 3D visualizations, and floodplain mapping (requires a DEM, contours, and breaklines).

Many organizations within the CAPCOG region have already purchased LIDAR data. Any effort to acquire regional LIDAR data should include an inventory of existing LIDAR data and the feasibility of using that data in a regional dataset.

The production specifications for a DEM sufficient to create 2-foot contours are listed below:

ITEM	DESCRIPTION
<i>Product Name</i>	2-meter DEM
<i>Product Description</i>	2-meter (1.7-meter) Bare-Earth Digital Elevation Model
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations, 2001 Adjustment)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	2-foot RMSE
<i>Vertical Accuracy</i>	6-foot RMSE
<i>Primary Attributes</i>	x, y, and z (elevation)
<i>Dependencies</i>	None
<i>Deliverable Format</i>	Mass points in DEM, ESRI point, and ESRI GRID format
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	Files to correspond with USGS 7.5' quarterquads in name & area covered

4.1 Additional Information

Some ground control will be made available (by CAPCOG), but the vendor is responsible for adequate control to assure that required accuracy levels are met. If DEMs provided by CAPCOG are used, these must be updated to reflect changes in development and construction.

4.2 Additional Products

In addition to the 2-meter Bare-Earth DEM, several products should be made available to participating organizations, including:

- Full Feature Mass Digital Terrain Model of all elevation returns
- Mass Points Classified as Structures and Vegetation
- A report documenting that the DEM complies with the minimum specifications adopted by FEMA in the *Guidelines and Specifications for Flood Hazard Mapping Partners Appendix A: Guidance for Aerial Surveying and Mapping, April 2003*.

5 Ground-Based LIDAR

In addition to aerial platforms, a LIDAR unit can be mounted on a tripod or vehicle to collect and produce highly detailed and accurate spatial measurements. Applications include site-level engineering (e.g. bridges, roadways, buildings), surveying damaged ground and structural morphologies (e.g. surveying the impact of a large explosion or significant flood event), and archiving critical/historical infrastructure.

The production specifications for ground-based LIDAR are listed below:

ITEM	DESCRIPTION
<i>Product Name</i>	1-centimeter Ground-Based LIDAR
<i>Product Description</i>	1-centimeter Ground-Based LIDAR
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	1-centimeter RMSE
<i>Vertical Accuracy</i>	1-centimeter RMSE
<i>Primary Attributes</i>	x, y, and z (elevation)
<i>Dependencies</i>	None
<i>Deliverable Format</i>	Mass points
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	

6 DTMs and Contours

Digital Terrain Models (DTMs) will consist of mass points digitized in an even grid pattern and at points of high and low elevation, plus break lines at all significant terrain features, including all street centerlines. All hydrography lines, road edges, and rail centerlines will be compiled as terrain breaks. Additionally, accurate contouring at these intervals will require the use of hard and soft break lines to depict varying degrees of sharpness in linear terrain changes.

ITEM	DESCRIPTION
<i>Product Name</i>	DTMs and 2-foot Contours
<i>Product Description</i>	DTMs and 2-foot Contours
<i>Data Type</i>	TIN and Vector
<i>Projection</i>	Texas State Plane

<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	2 foot RMSE
<i>Vertical Accuracy</i>	6 foot RMSE
<i>Primary Attributes</i>	Elevation and breaklines (hard and soft)
<i>Dependencies</i>	None
<i>Deliverable Format</i>	TIN and Vector Geodatabase Feature Class compatible with ESRI ArcView 9.x
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	

7 Planimetrics

Planimetrics are geographic features that can be seen from an aerial vantage point and can be captured from orthoimagery and image maps. The CAPCOG 1997 data acquisition initiative captured road centerlines, rail lines, airfields, bridges, surface hydrography, and building centroids. These same planimetrics were updated during The CAPCOG 2002 data acquisition initiative.

ITEM	DESCRIPTION
<i>Product Name</i>	Planimetrics
<i>Product Description</i>	road centerlines, rail lines, airfields, bridges, surface hydrography, and building centroids
<i>Data Type</i>	Vector
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	No more than + or - two and a half (2.5) feet per pixel variation
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	Visible/Not Visible
<i>Dependencies</i>	Current orthoimage or image map base
<i>Deliverable Format</i>	Vector Geodatabase Feature Class compatible with ESRI ArcView 9.x
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	

7.1 Additional Information

The following planimetric features were captured during The CAPCOG 1997 data acquisition initiative, including:

- Building (points)
- Building (polygons)
- Contour (lines)
- Control (points)
- Hydrography (lines)
- Hydrography (polygons)
- Jersey Barriers (lines)
- Landmark (polygons)
- Miscellaneous Features (lines and points)
- Miscellaneous Hydro (lines and points)
- Obscured Area (polygons)
- Railroad Centerlines (lines)
- Spot Elevations (point)

- Street Centerlines (lines)
- Tile Index (polygon)
- Transportation (polygons)

8 Watershed Boundaries

The National Water Boundaries Dataset includes watershed boundaries or Hydrologic Unit Codes (HUCs) for the majority of the CAPCOG region. HUCs are being mapped to the 6th level subwatershed and include a 12-digit identifier. While adequate for our more rural areas, urban watersheds are often smaller than the 10,000 to 40,000 acre 6th level HUC and may require additional, higher-resolution mapping.

ITEM	DESCRIPTION
<i>Product Name</i>	Watersheds
<i>Product Description</i>	Watersheds
<i>Data Type</i>	Vector
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	2 foot RMSE
<i>Vertical Accuracy</i>	6 foot RMSE
<i>Primary Attributes</i>	Name and acreage
<i>Dependencies</i>	2-meter DEM, DTM, and 2-foot contours
<i>Deliverable Format</i>	Vector Geodatabase Feature Class compatible with ESRI ArcView 9.x
<i>Deliverable Extent</i>	To be determined
<i>Notes</i>	

9 Land Cover

The Envision Central Texas (ECT) initiative produced 100-foot raster land cover data for the Austin Metropolitan Planning Organization (MPO). While the resolution is adequate for planning and environmental analysis, the Capital Area would benefit from a more consistently updated land cover dataset for the entire CAPCOG region.

ITEM	DESCRIPTION
<i>Product Name</i>	Land Cover
<i>Product Description</i>	Land Cover
<i>Data Type</i>	Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	No more than + or – two hundred (200) feet variation
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	Land Cover Type (based on TGIC Land Cover Working Group), Pervious/Impervious, Change Detection
<i>Dependencies</i>	Current orthoimage or image map base and appraisal district cadastral maps
<i>Deliverable Format</i>	Vector Geodatabase Feature Class and/or GRID Compatible with ESRI ArcView 9.x
<i>Deliverable Extent</i>	CAPCOG
<i>Notes</i>	Includes pervious/impervious and change detection. Ideally captured every four years.

10 Vegetation

The Texas Parks & Wildlife 1984 map, The Vegetation Types of Texas -- Including Cropland, is based on vegetation data that covers the entire state. When viewed at the regional level, this vegetation data is extremely coarse and has limited uses for regional or local analysis. There are higher resolution vegetation datasets for specific portions of the Capital Area (e.g. a vegetation layer for an urban wildfire risk assessment in Western Travis County) but none that cover the entire region.

ITEM	DESCRIPTION
<i>Product Name</i>	Vegetation
<i>Product Description</i>	Land Cover
<i>Data Type</i>	Vector and/or Raster
<i>Projection</i>	Texas State Plane
<i>Zone</i>	Central Zone
<i>Datum</i>	NAD83 (NAVD88 Elevations)
<i>Units</i>	Feet
<i>Horizontal Accuracy</i>	No more than + or – two hundred (200) feet variation
<i>Vertical Accuracy</i>	N/A
<i>Primary Attributes</i>	Vegetation Type, Height
<i>Dependencies</i>	Current orthoimage or image map base, LIDAR data
<i>Deliverable Format</i>	Vector Geodatabase Feature Class and/or GRID Compatible with ESRI ArcView 9.x
<i>Deliverable Extent</i>	CAPCOG
<i>Notes</i>	

Appendix F – Metadata Example

City Limits

Coordinate system: Lambert Conformal Conic

Theme keywords: city limits, jurisdiction, administrative, boundary

Abstract: These are polygon feature classes representing the jurisdictional boundaries of incorporated communities within the CAPCOG region.

FGDC and ESRI Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

Metadata elements shown with blue text are defined in the Federal Geographic Data Committee's (FGDC) [Content Standard for Digital Geospatial Metadata \(CSDGM\)](#). Elements shown with green text are defined in the [ESRI Profile of the CSDGM](#). Elements shown with a green asterisk (*) will be automatically updated by ArcCatalog. ArcCatalog adds hints indicating which FGDC elements are mandatory; these are shown with gray text.

Identification Information:

Citation:

Citation information:

Originators: Capital Area Council of Governments (CAPCOG)

Title:

City Limits

Publication date: 2004

Geospatial data presentation form: vector digital data

Online linkage: <http://www.capcog.org>

Description:

Abstract:

These are polygon feature classes representing the jurisdictional boundaries of incorporated communities within the CAPCOG region.

Supplemental information:

This file was compiled from city limits files provided to CAPCOG by the 10 counties of the CAPCOG region. For questions on these boundaries, please contact the 911 Coordinator of the appropriate county.

Time period of content:

Time period information:

Single date/time:

Calendar date: 2004

Currentness reference:

publication date

Status:

Progress: Complete

Maintenance and update frequency: As needed

Spatial domain:

Bounding coordinates:

West bounding coordinate: -98.737932

East bounding coordinate: -96.631142

North bounding coordinate: 30.870029

South bounding coordinate: 29.629131

Keywords:

Theme:

Theme keywords: city limits, jurisdiction, administrative, boundary

Access constraints: none

Use constraints:

The geospatial and tabular data developed and/or distributed by the Capital Area Council of Governments (CAPCOG) is being made available to the general public under certain terms and conditions. As a condition to obtaining the data, the Licensee hereby agrees as follows:

- 1) No warranties of any kind, including warranties of suitability for any particular purpose, warranties of merchantability, warranties of accuracy, warranties of fitness for a particular purpose, or any warranty of any kind or nature whatsoever are made by CAPCOG with regard to the accuracy or completeness of the data.
- 2) As a specific condition to receiving the data, the Licensee agrees that CAPCOG shall not be liable for any damages, including any indirect, special, incidental, consequential, or damages of any other kind whatsoever, arising out of or connected in any way with the use, re-use modification, or re-publication of the data.
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5) CAPCOG also specifically disclaims any and all liability arising out of or connected to the use of data developed using historical, current, and/or predictive models.

I have read the provisions set forth above and as a condition of obtaining and using any data developed and/or distributed by CAPCOG, I specifically agree that the provisions contained herein are binding upon myself, individual, and upon any organization I may represent.

Point of contact:

Contact information:

Contact organization primary:

Contact organization: Capital Area Council of Governments

Contact voice telephone: (512) 916-6000

Contact facsimile telephone: (512) 916-6001

Contact electronic mail address: gis@capco.state.tx.us

Data set credit:

County 911 coordinator

Native data set environment:

Microsoft Windows 2000 Version 5.0 (Build 2195) Service Pack 4; ESRI ArcCatalog 9.0.0.535

Cross reference:

Citation information:

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Data Quality Information:

Attribute accuracy:

Positional accuracy:

Horizontal positional accuracy:

Quantitative horizontal positional accuracy assessment:

Lineage:

Source information:

Source citation:

Citation information:

Source time period of content:

Time period information:

Single date/time:

Process step:

Process description:

City limits collected from the 911 coordinators of the 10 county CAPCOG region. County wide files merged to CAPCOG extent.

Process step:

Process description:

Metadata imported.

Source used citation abbreviation:

C:\DOCUME~1\sburnett\LOCALS~1\Temp\xml1185.tmp

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Spatial Data Organization Information:

Direct spatial reference method: Vector

Point and vector object information:

SDTS terms description:

SDTS point and vector object type: G-polygon

Point and vector object count: 120

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Spatial Reference Information:

Horizontal coordinate system definition:

Planar:

Map projection:

Map projection name: Lambert Conformal Conic

Lambert conformal conic:

Standard parallel: 30.116667

Standard parallel: 31.883333

Longitude of central meridian: -100.333333

Latitude of projection origin: 29.666667

False easting: 2296583.333333

False northing: 9842500.000000

Planar coordinate information:

Planar coordinate encoding method: coordinate pair

Coordinate representation:

Abscissa resolution: 0.001024

Ordinate resolution: 0.001024

Planar distance units: survey feet

Geodetic model:

Horizontal datum name: North American Datum of 1983

Ellipsoid name: Geodetic Reference System 80

Semi-major axis: 6378137.000000

Denominator of flattening ratio: 298.257222

Vertical coordinate system definition:

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Altitude system definition:
Altitude resolution: 0.000010
Altitude encoding method: Explicit elevation coordinate included with horizontal coordinates

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Entity and Attribute Information:

Detailed description:
Entity type:
Entity type label: citylimits_capcog

Overview description:

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Distribution Information:

Resource description: Downloadable Data

Standard order process:
Digital form:
Digital transfer information:
Transfer size: 0.003

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Metadata Reference Information:

Metadata date: 20041102

Metadata contact:
Contact information:
Contact organization primary:
Contact organization: Capital Area Council of Governments (CAPCOG)

Contact address:
Address type: mailing and physical address
Address:
2512 IH-35 S
City: Austin
State or province: TX
Postal code: 78704

Contact voice telephone: (512) 916-6000
Contact facsimile telephone: (512)916-6001

Hours of service: 8am - 5pm

Metadata standard name: FGDC Content Standards for Digital Geospatial Metadata
Metadata standard version: FGDC-STD-001-1998

Metadata time convention: local time

Metadata extensions:

Online linkage: <http://www.capcog.org>

Profile name: ESRI Metadata Profile

Metadata extensions:

Online linkage: <http://www.esri.com/metadata/esriprof80.html>

Profile name: ESRI Metadata Profile

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