

<h1>Cadastral Mapping Standard</h1>	<b>Document Number:</b> <b>SS-40</b>
	<b>Effective Date:</b> <b>7/02/2004</b>
	<b>Published By:</b> Arkansas State Land Information Board

## 1.0 Purpose

This standard is intended to make digital cadastral data more uniform and accurate. This will facilitate the sharing of a statewide, seamless digital cadastral spatial data layer. Adherence to this standard will ensure the “usability” of the spatial data theme and its attributes by multiple entities. This standard will ensure a consistent manner in which the cadastral parcel spatial data and attribute data are collected or stored. This will enable the data to be merged seamlessly and become transferable regardless of creator or jurisdictional boundaries.

## 2.0 Scope

Provide a standard that will enable the seamless compilation of the digital cadastral spatial data layer statewide.

## 3.0 Background

The State Land Information Board (SLIB) was created by Act 914 of the 1997 General Assembly and is responsible for:

- 3.1 Identifying problems and solutions in implementing a spatial data repository
- 3.2 Developing and coordinating a schedule for state spatial data projects
- 3.3 Recommending methods of financing for state spatial data projects
- 3.4 Providing educational programs that are focused on spatial data technologies
- 3.5 Coordinating collaborative projects
- 3.6 Establishing spatial data standards (Section 4. (f) (1) of Arkansas Code 15-21-5).  
Arkansas Code 15-21-5 An Act to Amend the Arkansas Code to Create the Geographic Information Office and Establish the Arkansas Spatial Data Infrastructure and for other purposes establishes these SLIB principles:
- 3.7 Validity, consistency, comprehensiveness, availability, and currency of data are essential components of all automated land information systems.
- 3.8 Coordination with federal, state, regional, county, and municipal agencies, state universities and colleges, private firms, and others who require the same spatial data will reduce duplication of efforts and expense.

- 3.9 Creation of new data in an accurate and usable format in accordance with the states shared technology architecture will ensure availability across state agencies.

## 4.0 References

**Arkansas Code 15-21-502 (6)** – The digital cadastre manages and provides access to cadastral information. Digital cadastre does not represent legal property boundary descriptions, nor is it suitable for boundary determination of the individual parcels included in the cadastre.

**Arkansas Code 15-21-502 (6)** – “Digital cadastre” means the storage and manipulation of computerized representations of parcel maps and linked data bases;

**Arkansas Code 15-21-502(7)** – “Framework data” means commonly needed data themes developed, maintained, and integrated by public and private organizations within a geographic area. These data themes include but are not limited to: digital cadastre, public land survey system (PLSS), elevation, geodetic control, governmental units, hydrography, orthoimagery, transportation, soils, and geology;

## 5.0 Standard

### **Technical Practices for Creating Cadastral vector layer**

#### ***Cadastral Feature Types:***

Vector points may be used to represent a parcel. The parcel point shall be located within the parcel boundary.

Vector polygons shall be used to represent parcel boundaries. The parcel boundaries shall “seamlessly” match across jurisdiction boundaries (i.e., cities, counties, etc.).

Parcel boundaries shall be processed using appropriate GIS procedures to create and maintain accurate topology.

#### ***Heads-Up Digitizing:***

Parcel boundaries intended to meet the standard may be produced utilizing heads-up digitizing techniques. Within the Cadastral Standard, heads-up digitizing methodologies refers to Georeferencing scanned paper maps and tracing the relevant parcel boundaries to create the parcel features. Heads-up digitizing methodologies used may include but are not limited to stream mode and arc/node mode. Heads-up digitizing shall be performed utilizing the following standards:

Capture scale shall not fall outside the range of 1:1200 to 1:3600

Projection shall be Arkansas State Plane North or Arkansas State Plane South

\*See Definitions for Projection for each county

Datum shall be North American Datum 1983 (NAD 83)

Units shall be Feet

Source shall be Digital Ortho-imagery that has a verified minimum horizontal accuracy of 10 meters or better, and a minimal pixel resolution of 1 meter.

Heads-up digitizing method should only be used where clear visual ground evidence of ownership is present on the Ortho-imagery (i.e., fence line, tree line, grass line, etc.).

***Metes and Bounds:***

Parcel boundaries may also be produced utilizing metes and bounds techniques. Metes and bounds techniques pertain to the use of coordinate geometry with bearings and distances to accurately map the parcel boundary. Bearing and distance source data used may include but are not limited to legal descriptions, subdivision plats, and plats of survey. Metes and bounds should be used when clear visual ground evidence of ownership is not present.

***Relative Dimension Accuracy:***

Relative dimension accuracy refers to the accuracy of the ‘digital representation’ of the parcel boundary on the Ortho-imagery, in comparison with the legal description or plat. The relative accuracy is checked by measuring the parcel line of the ‘digital representation’ and comparing that distance to the legal or platted distance. The relative accuracy of the ‘digital representation’ shall fall within 5% of the deeded or platted dimension.

**Cadastral Data Characteristics**

The following standards apply to the collection and maintenance of the parcel characteristics that are intended to meet the standard. The characteristics for the parcel shall contain but are not limited to the following:

**Geometry:**

***Parcel Outline (Polygon):*** This is the geographic extent of the parcel, the parcel boundaries forming a closed polygon. The collection of parcel outlines forms the parcel map.

***Parcel Centroid:*** This is a point within the parcel that can be used to attach related information. The parcel centroid provides a general point location of the parcel.

**Attributes:**

***Cadastral Data Attribute Table:***

<i>Field Name</i>	<i>Length</i>	<i>Type</i>	<i>Description</i>
<i>county_id</i>	25	<i>text</i>	<i>County Identification Number</i>
<i>parcel_id</i>	25	<i>text</i>	<i>Parcel Identification Number</i>
<i>parcel_lgl</i>	255	<i>text</i>	<i>Legal Description</i>

<i>source_ref</i>	50	<i>text</i>	<i>Geometry Source Reference</i>
<i>srce_date</i>	10	<i>date</i>	<i>Geometry Source Date</i>
<i>ow_name</i>	50	<i>Text</i>	<i>Owner Name</i>
<i>ow_add</i>	80	<i>text</i>	<i>Full Owner Address</i>
<i>ow_src_dat</i>	10	<i>date</i>	<i>Owner Source Date</i>
<i>ph_rd_num</i>	10	<i>text</i>	<i>Physical Road Number</i>
<i>ph_pre_dir</i>	2	<i>Text</i>	<i>Physical Prefix Direction</i>
<i>ph_rd_nam</i>	72	<i>Text</i>	<i>Physical Road Name</i>
<i>ph_rd_typ</i>	4	<i>Text</i>	<i>Physical Road Type</i>
<i>ph_suf_dir</i>	2	<i>Text</i>	<i>Physical Suffix Direction</i>
<i>ph_cty_nm</i>	50	<i>text</i>	<i>Physical Community Name</i>
<i>ph_st_nm</i>	2	<i>text</i>	<i>Physical State Name</i>
<i>ph_zip</i>	5	<i>integer</i>	<i>5-Digit Physical Zip Code</i>
<i>ph_add</i>	80	<i>text</i>	<i>Full Physical Address</i>
<i>type</i>	2	<i>text</i>	<i>Type Code</i>
<i>assess_val</i>	20	<i>integer</i>	<i>Assessed Value</i>
<i>imp_val</i>	20	<i>integer</i>	<i>Improved Value</i>
<i>land_val</i>	20	<i>integer</i>	<i>Land Value</i>
<i>total_val</i>	20	<i>integer</i>	<i>Total Value</i>
<i>assess_dat</i>	10	<i>date</i>	<i>Assessment Date</i>
<i>nbhd</i>	6	<i>text</i>	<i>Neighborhood</i>
<i>s_t_r</i>	20	<i>text</i>	<i>Section, Township, &amp; Range</i>

<i>schl_code</i>	6	<i>text</i>	<i>School Code</i>
<i>acre_area</i>	10	<i>text</i>	<i>Acreage/Area</i>
<i>calc_acre</i>	10	<i>text</i>	<i>Calculated Acreage</i>

**County Identification Number:** A unique identifier for the parcel, using a combination of the County FIPS code and the Parcel Identification Number.

**Parcel Identification Number:** A unique identifier for the parcel as defined by the Computer Aided Mass Appraisal system (CAMA).

**Parcel Legal Description:** This is the deeded legal boundary for the parcel contained in the CAMA system.

**Geometry Source Reference:** This is a pointer to or an attribute describing the source reference for the parcel. This can be a document number, book/page, or a map of survey. The geometry source reference should describe the source of the parcel geometry, either the centroid or the parcel outline.

**Geometry Source Reference Date:** The date of the geometry source reference referred to in the Geometry Source Reference. This date is a general indication of the currency of the parcel geometry.

**Owner Name:** Name of the property owner.

**Owner Address:** An indication of the property owner address, not necessarily the parcel physical address. Used by the Assessors office for sending mail to parcel owner.

**Ownership Source Date:** This is a pointer to or an attribute describing the source reference date for the current owner of record.

**Physical Road Number:** Physical address road number of property.

**Physical Prefix Direction:** Physical address prefix direction of property.

**Physical Road Name:** Physical address road name of property.

**Physical Road Type:** Physical address road type of property.

**Physical Suffix Direction:** Physical address suffix direction of property.

**Physical Community Name:** Physical address Community name of property.

**Physical State Name:** Physical address State name of property.

**Physical Zip Code:** Physical address Zip Code of property.

**Physical Address:** Concatenated full physical address of property.

**Type Code:** This is a code that represents the property classification. Below is a list of possible type codes.

#### PROPERTY TYPE CODES

AI	Agriculture Improved
AV	Agriculture Vacant
AM	Agriculture Miscellaneous
RI	Residential Improved
RM	Residential Miscellaneous
RV	Residential Vacant
CI	Commercial Improved
CM	Commercial Miscellaneous
CV	Commercial Vacant
II	Industrial Improved
IM	Industrial Miscellaneous
IV	Industrial Vacant
PS	Public Service
EX	Exempt
MN	Mineral
MH	Mobile home only
IO	Improvement only
VP	Void Parcel
RC	Reference Card

**Assessed Value:** This attribute is the monetary amount at which a property is put on the assessment roll.

**Improved Value:** This attribute is the monetary amount of any improvements that have been made to the land.

**Land Value:** This attribute is the monetary amount of the land without improvement.

**Total Value:** This attribute is the monetary amount of the Improved Value plus the Land Value.

**Assessment Date:** This is the date in which the most recent assessment has been completed.

**Neighborhood:** This attribute is used to represent geographical or market areas.

**Section, Township, & Range:** This attribute indicates the parcel location by Section, Township, and Range.

**School Code:** This attribute is the taxing school code.

**Acreage/Area:** This is the attribute containing the legal deeded acreage or parcel area.

**Calculated Acreage:** This is the attribute containing the calculated acreage. It is calculated by the GIS software and can be compared to the deeded acreage to verify the consistency of the data.

## **Additional Considerations**

**Update/Maintenance:** A specific entity shall be identified to ensure that parcel boundary data is updated and maintained in a timely manner. Following spatial or attribute updates or modifications performed to the parcel boundary data, it shall be submitted to the entity responsible for performing quality control practices.

**Quality Control:** Rigorous quality control techniques shall be implemented to ensure the parcel data has acceptable horizontal accuracy and attribute integrity, such as building and maintaining topology, visual and measurement accuracy checks.

**Metadata:** Cadastral data intended to meet the standard shall have Federal Geographic Data Committee (FGDC) compliant metadata created for each spatial data file. Compliant metadata shall be provided with Digital Cadastres that are created, updated, or distributed by any parties intended to meet the standard. The metadata shall be supplied anytime it is distributed or transferred among participants or other entities responsible for creating, performing quality control, maintaining, updating, and/or distributing the data. The metadata shall be transferred in a FGDC standard format (i.e., -Z39.5, text, HTML file, etc.) and must have successfully passed through a FGDC compliant metadata parser.

**Distribution:** The ‘Digital Cadastre’ data shall be distributed digitally via GeoStor (Arkansas’ Spatial Data Warehouse) at no fee to private or public users.

## **6.0 Procedures**

The agency shall be able to demonstrate compliance.

## **7.0 Revision History**

<b>Date</b>	<b>Description of Change</b>
05/30/2002	Original Standard Statement Published
xx/xx/2002	First Update to Standard

## **8.0 Definitions**

**Acreage** – Refers to the common square measure of land described in the land tenure system. One acre equals 43,560 square feet.

**Attribute(s)** – Properties and characteristics of spatial data entities.

**Arc/Node Mode** – Arcs and nodes are defined by the user as they are digitized.

**Character** – (Also known as text or alpha)

**Digital Cadastre** – (as defined in AR Code 15-21-502 (6)) – The storage and manipulation of computerized representations of parcel map and linked parcel databases.

**Entity** – Any object about which an organization chooses to collect data.

**Georeferencing** - software procedure that consists in positioning, through points with known coordinates (check points), scanned paper images in the respective area of the real territory according to a given reference system

**Relative Accuracy** – A measure of the accuracy of individual features on a map when compared to other features on the same map.

**Topology** – Spatial relationships and connectivity among graphic GIS features, such as points, lines, and polygons. These relationships allow display and analysis of “intelligent” data in GIS. Many topological structures incorporate begin and end relationships, direction and right/left identification. Accurate Topology will ensure that there are no gaps or sliver between adjacent parcels, as well as no overlapping parcels.

### **Projection - NAD 1983 State Plane Arkansas North and South Zone**

**North-** Baxter, Benton, Boone, Carroll, Clay, Cleburne, Conway, Craighead, Crawford, Crittenden, Cross, Faulkner, Franklin, Fulton, Greene, Independence, IZard, Jackson, Johnson, Lawrence, Logan, Madison, Marion, Mississippi, Newton, Perry, Poinsett, Pope, Pulaski, Randolph, Scott, Searcy, Sebastian, Sharp, St. Francis, Stone, Van Buren, Washington, White, Woodruff, and Yell.

**South-** Arkansas, Ashley, Bradley, Calhoun, Chicot, Clark, Cleveland, Columbia, Dallas, Desha, Drew, Garland, Grant, Hempstead, Hot Spring, Howard, Jefferson, Lafayette, Lee, Lincoln, Little River, Lonoke, Miller, Monroe, Montgomery, Nevada, Ouachita, Phillips, Pike, Polk, Prairie, Saline, Sevier, and Union.

## **9.0 Related Resources**

National Spatial Data Infrastructure (NSDI) – Cadastral Standard

World Wide Web: <http://www.fairview-industries/fgdc-cad.html>

International Association of Assessment Officers (IAAO) - Standard on Cadastral Maps and Parcel Identifiers

World Wide Web: <http://www.iaao.org>

Arkansas Centerline File Standard

World Wide Web: <http://www.gis.state.ar.us/Downloads/GIS/acf/ACFstan.pdf>

Arkansas Standards for Collecting Mapping Grade Global Positioning System Positions  
World Wide Web: [http://www.gis.state.ar.us/Downloads/LIB/gps\\_standards.pdf](http://www.gis.state.ar.us/Downloads/LIB/gps_standards.pdf)

## **10.0 Inquiries**

Direct inquiries about this standard to:

Arkansas Geographic Information Office  
124 W. Capitol St.  
Suite 200  
Little Rock, AR 72201  
<http://www.gis.state.ar.us>  
501-682-2937

## **11.0 Attachments**

As required