SALT LAKE COUNTY
COUNTYWIDE GIS STANDARD
ON
**GEOGRAPHIC INFORMATION SYSTEM DATA STANDARDS**

**Purpose-**

The purpose of this standard is to establish a framework for consistent GIS data collection, creation, storage, and dissemination for use by county employees and agencies.  These standards aim to ensure consistency, accuracy, and interoperability of all geospatial data collected, managed, and used by Salt Lake County.

The standard will guide County employees in effectively employing GIS data quality standards to ensure effective use of GIS resources across the county.

All those who use County GIS resource(s) or system(s) shall follow the GIS Data Standards as established by the GIS Steering Committee. The GIS Steering Committee will monitor and enforce compliance with this standard.

**Reference-**

The standards set forth herein are provided in accordance with Countywide Policy 1013, which directs Salt Lake County GIS Steering Committee to provide GIS standards. Also referencing the following:

All Countywide Information Technology Security Policies and Standards in the 1400 series

GIS Policies (1013 Salt Lake County Countywide Policy on Geographic Information Systems Policy and Standards)

**1.0    Scope**
All Salt Lake County employees and contractors, consultants, volunteers, and others with a business association with Salt Lake County shall adhere to this policy insofar as they use GIS resources and systems owned or leased by Salt Lake County or contribute GIS data to the county.

**2.0    Definitions**
Geographic Information System(s) (GIS)
A computer-based system of hardware and software designed to capture, store, manage, edit, analyze, and visualize geographically referenced data and information.

GIS Standards
GIS standards are specific requirements that must be met by everyone. These may be

internal requirements or those from an external standards body.

GIS Policy
GIS Technology policies outline specific organizational requirements or rules that must be followed, and specific actions that are not permitted, and include statements of consequences for violations.

GIS Steering Committee
The GIS Steering Committee facilitates cooperation and efficiency within Salt Lake County government by promoting the development, acquisition, and dissemination of GIS infrastructure, data, and services.

Data Sharing
Data sharing means sending, receiving, or advancing shared objectives according to specific terms and conditions.

Data Security
Data security means protecting digital data from unauthored access and unwanted actions.

**3.0    Standard Guidance**
All those who use County GIS resource(s) or system(s) shall follow the County's *GIS Data Standards*, as defined in Appendix A of this document.

**4.0    Exceptions**
Any exceptions to this standard must be explicitly approved in writing by the GIS Steering Committee Chair or their designee.

**5.0    Enforcement**
Anyone found to have knowingly violated this standard shall be subject to disciplinary action, including but not limited to temporary loss of network connectivity, loss of Internet access, or complete and permanent termination of access to any Salt Lake County network and can lead to other disciplinary action, up to and including dismissal from County employment.

**1) Geographic & Attribute Information**

   a) Coordinate Reference System (CRS) – The projection and CRSs primarily used in the county are listed below.  The preferred CRS for original data is Utah State Plane Central. Data creation methods should be documented in the metadata description.  When changing between CRSs, data should be reviewed to ensure that the results are acceptable, and the data are properly located.

      i) NAD 1983 State Plane Utah Central FIPS 4302 US Feet (WKID: 3566)

         (1) This is the primary CRS for creation and storage of data in county enterprise geodatabases and for use in desktop applications.

      ii) WGS 84 Web Mercator Auxiliary Sphere (WKID: 3857)

         (1) Used for cached layers and web services (typical for ArcGIS Online).

      iii) WGS 84 Latitude/Longitude (WKID: 4326)

         (1) Certain specialized use cases may call for data to be stored or created in WGS84 using decimal degree latitude/longitude coordinates.

   b) Geographic Features

      i) Geographic data, that are more than temporary, require properly named attributes that describe the feature. All geographic features must be created from and referenced to the most accurate source data available. Intended use of the data must be included in the metadata description.

         (1) Points

            (a) Point features are represented by a pair of coordinates.  They should typically be used to represent a single location.

            (b) Each point should have valid coordinates (e.g., not [0, 0]) based on the CRS, with enough precision to accurately locate the intended feature.

         (2) Lines

            (a) Line features are represented by an ordered set of vertices, each comprised of a pair of coordinates.

            (b) Vertices of the same feature generally should not be stacked on top of one another.

            (c) Lines should employ the minimum number of vertices required to accurately represent the intended feature.

            (d) Lines should be created with directionality in mind to ensure the proper representation of flows, address ranges, etc.

            (e) Where applicable, snapping and database topology tools should be used to help prevent gaps, overlaps, self-intersections, and dangles.  This ensures optimal network connectivity using nodes.  Line features participating in a network should be split at intersections to allow for proper routing and turning between individual segments.

         (3) Polygons

            (a) Polygon features are represented by an ordered set of vertices, each comprised of a pair of coordinates, where the first and last vertices match to form an enclosed area.

(b) Like lines, polygons generally should not have stacked vertices.

(c) Where applicable, snapping and database topology tools should be used to help prevent gaps and overlaps between polygon features intended to fill out all space of a larger region.

(d) All polygons must properly close and avoid self-intersections that can generate topological errors.

(e) Polygons should employ the minimum number of vertices to accurately represent the intended feature unless additional points are required to maintain topology, legal description, etc.

c) Attributes

i) Field Names

(1) Field names should strive to find a balance between being descriptive and concise. Names should be descriptive enough to help users interpret the purpose of the field, but concise enough to maintain readability and usability. Users should consider that data is often exported to different formats that may have constraints on the length of field names (e.g., shapefiles are limited to 10-character field names).

(a) If descriptive field names are not possible, the metadata description should be used to clearly describe what a specific field represents.

(2) Aliases can be utilized to provide more descriptive or alternate field names

ii) Data Types

(1) Data types should be chosen to best represent each specific attribute and its intended use (text/string, numeric, date/time, and global ID)

(2) Text/string fields should be used to represent alphanumeric values and may include letters, numbers, or symbols. Users must consider the length of potential future data entries when determining the number of allowable characters.

(3) Numeric data types should be used to represent numbers and data often used in calculations. The appropriate integer or floating-point type should be used based on the range of possible values and required precision.

(4) Date and time should be used for fields capturing date and/or time information.

iii) Domains

(1) Field domains should be used for categorical attributes with a defined set of values to promote data quality and prevent typos.

d) Miscellaneous

i) Dataset Categories

(1) Base Datasets -- Salt Lake County uses as a base reference layer, the survey control, which is maintained by the Salt Lake County Surveyor. This base layer includes, but is not limited to, the sections laid out by the original Public Land Survey System (PLSS) survey.

(2) Primary Source Datasets -- Are datasets created by Salt Lake County that have a direct or indirect tie to the base dataset.

(3) Derived Datasets -- Are created from existing datasets to create a new dataset. These datasets can be from internal or external datasets.

(4) External Datasets -- Salt Lake County may be required by law to use datasets created by outside agencies, such as US Census Bureau data and US Congressional Districts. Salt Lake County may not meet the specific requirements of an external data creator except where required by law.

Revision History
Approved by GIS Steering Committee on XX/XX/2024.

ii) Imagery – Aerial imagery that is used for building countywide GIS data shall be the orthorectified imagery approved by the Salt Lake County Surveyor. Other aerial imagery and remotely sensed data for countywide GIS shall be reviewed by the Surveyor for accuracy and compliance with County policy.

    (1) Orthorectified image mosaics or tiles in the NAD 1983 State Plane Utah Central or another local CRS are recommended instead of web-based services to maximize accuracy and minimize distortion.

iii) Acknowledgements

    (1) When creating maps or map products the data creator, publisher, and date of publication must be identified and acknowledged with the following statement:

*"Map created by [ your Org] in conjunction with the offices of the Salt Lake County, Assessor, Clerk, Council, Mayor, Recorder, and Surveyor"*

## 2) Metadata

a) Effective metadata for geospatial data is important to provide information and context to users about the source, purpose, quality, and recency of a dataset, along with any use limitations. The following items represent the minimum standard for any county datasets and correspond to the metadata categories provided in ArcGIS Pro and other ESRI tools, using the Item Description metadata style. These metadata attributes can also be more easily transferred into ArcGIS Online or Enterprise Portal.

i) Title – A concise name for the dataset.

ii) Tags – Keywords that help identify the dataset and are used to help discover

iii) Summary – A brief overview of the dataset and what it represents. Required to be less than 250 characters for the entire summary to show up in ArcGIS Online.

iv) Description – A more detailed description of the dataset. Should include how the data was created, it's intended use, when it was created/last updated, the CRS, and original CRS if different from current. This is also a good place to include important notes about the data, field descriptions, usability at different scales, or any other information that would be helpful to the user.

v) Credits – List the source agency or agencies responsible for creating the dataset.

vi) Use Limitations – Include any disclaimers and/or license information associated with the dataset.

## 3) Data Security and Sharing

a) Data Security

i) GIS data must be protected in accordance with the Salt Lake County Countywide Information Technology Standard on Data Classification and Protection.

ii) All GIS data should be categorized as Public, Protected, or Restricted data as defined by the IT Standard on Data Classification and Protection, and secured accordingly.

iii) Access to GIS data that is created by an office or department will, by default, be available only to the creating entity. The data creator may request that others be given access to the data.

iv) Changes to GIS data configurations that may impact end-users and systems must be vetted and approved through the County's GIS change management process to assess the impact on other agencies. The change management process is established by the GIS Steering Committee. Once approved, the office or department that created the data may make the approved modification.

b) Data Sharing

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Approved by GIS Steering Committee on XX/XX/2024.

i) <mark>Any data sharing must be conducted in accordance with all applicable Countywide Information Technology Security Policies and Standards in the 1400 series.</mark>

ii) No county agency shall distribute data that is created by another agency. This is not intended to prohibit the production of maps that use data created by another internal agency but is intended to allow the creating agency control over the distribution of geographic and attribute data created by that agency.

   (1) Internal Sharing

      (a) As requested by the data creators a repository of GIS data, for use by Salt Lake County agencies, will be maintained by Information Services using appropriate technology. Data must not include protected information as defined by agency requirements. The data in the shared repository will be read-only and changes will only be accepted from the creating agency.

   (2) External Sharing

      (a) Salt Lake County will comply with the Government Records Access Management Act (GRAMA) and Health Insurance Portability and Accountability Act (HIPAA) when distributing data outside of Salt Lake County.

      (b) The agency that creates GIS data is responsible for setting the conditions under which the data may be distributed. This includes fees and the data format that is used. Each agency shall present proposed fees to the GIS Steering Committee for consideration and recommendation.

      (c) If an outside party, contracted by a Salt Lake County agency to perform geographic work, requires access to the county data, that data is subject to distribution restrictions. The contract must include provisions that restrict the contractor from using that data for any purpose outside of the scope and duration of the contract.

      (d) Salt Lake County may share data with municipalities and other public entities through agreement or contract. Such data sharing does not remove the requirement that the creating entity retains final authority over data distribution.

      (e) In the case of data acquired from some outside vendor or agency, any redistribution requests will be referred to the third-party creator.

      (f) When a Salt Lake County agency contracts with a vendor, consultant, or establishes an interlocal agreement with another entity, the agreement or contract must require adherence to the standards as set forth in this standard.