



Draft Montana Land Information Plan State Fiscal Year 2020

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*Produced by the Montana State Library in Coordination with the
Land Information Plan Subcommittee of the Montana Land Information Advisory Council*

Pursuant to Section 4 (c) of the Montana Land Information Act (Senate Bill 98) and
Administrative Rule IV of the Montana Land Information Act

Executive Summary

The Fiscal Year 2020 Montana Land Information Plan has been prepared by the Montana State Library (MSL) with input from the Montana Land Information Advisory Council (MLIAC). Section 90-1-404 (c) of the Montana Code Annotated calls for an annual land information plan that “describes the priority needs to collect, maintain, and disseminate land information. The land information plan must have as a component a proposed budget designed to accomplish the goals and objectives of the plan.”

Land information is collected and managed using computer-based technology, known as Geographic Information Systems or GIS and is used by federal, state, local entities to provide critical services. Collaboration and partnership across all levels of government and sectors is fundamental in building and maintaining this information. Geographic information is required for disaster and emergency response; the development and maintenance of transportation, sewer and water infrastructure; resource conservation and development; and overall land use planning.

The priorities set forth in this plan help to

- Guide the work of the MLIAC,
- Identify the areas of focus for the Montana Land Information Act Grant Program,
- Guide the development and maintenance of the Montana Spatial Data Infrastructure (MSDI), and
- Provide the basis for overall coordination of GIS in Montana.

Given the budgetary and human resource limitations that the State of Montana is facing in the foreseeable future, these priorities become particularly important as the MSL tries to fulfill its mission. Working with state agencies, universities, local and tribal governments, the MSDI theme stewards, the Montana State Library will strive to support efforts to address land information in support of:

- Safety and Emergency Response,
- Local Government Capacity Building,
- Land Record Information,
- MSDI Theme Development,
- Water and Natural Resource Information, and
- The Overall Maintenance, Development and Promotion of GIS.

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The Montana Land Information Plan

The Montana Land Information Act

The Montana Land Information Plan (the Plan) is prepared annually by the Montana State Library, in accordance with the Montana Land Information Act (MLIA), Section 90-1-401, et. seq. of the Montana Code Annotated (MCA). The passage of the Act in 2005 recognized the important role that geographic information plays in Montana, as stated in the purpose section of the Act:

“The purpose of this part is to develop a standardized, sustainable method to collect, maintain, and disseminate information in digital formats about the natural and artificial land characteristics of Montana. Land information changes continuously and is needed by businesses, citizens, governmental entities, and others in digital formats to be most effective and productive. This part will ensure that digital land information is collected consistently, maintained accurately in accordance with standards, and made available in common ways for all potential uses and users, both private and public. This part prioritizes consistent collection, accurate maintenance, and common availability of land information to provide needed, standardized, and uniform land information in digital formats.” (Section 90-1-402 Montana Code Annotated (MCA))

The preparation of the Plan is guided by the Montana Land Information Advisory Council (MLIAC), a 22-member body. The Council includes representatives from federal, state and local government entities, private businesses and the Montana Legislature. The Council is authorized in Section 90-1-406 MCA and has the following *advisory* duties:

- (a) advise the state library with regard to issues relating to the geographic information system and land information;
- (b) advise the state library on the priority of land information, including data layers, to be developed;
- (c) review the land information plan described in 90-1-404 and advise the state library on any element of the plan;
- (d) advise the state library on the development and management of the granting process described in 90-1-404(1)(e);
- (e) advise the state library on the management of and the distribution of funds in the account;
- (f) assist in identifying, evaluating, and prioritizing requests received from state agencies, local governments, and Indian tribal government entities to provide development of and maintenance of services relating to the GIS and land information;
- (g) promote coordination of programs, policies, technologies, and resources to maximize opportunities, minimize duplication of effort, and facilitate the documentation, distribution, and exchange of land information; and
- (h) advocate for the development of consistent policies, standards, and guidelines for land information.

Introduction and Overview

The Montana Land Information Act (MLIA) establishes a Land Information Account which provides funding to the Montana State Library (MSL), to support Montana’s Spatial Data Infrastructure or MSDI – the personnel, methods, data, software and hardware that is used to guide the collection and maintenance of information related to the state’s geography.

The Land Information Account is funded from a portion of recordation fees collected by each county. Fees are assessed on a per page basis. For each recorded page fee, one dollar is deposited into land information accounts: 25 cents are deposited in each individual county’s land information account and 75 cents is transmitted to the State Department of Revenue to be placed in the state’s Land Information Account (Section 7-4-2637 MCA).

The management of Montana’s land information and the disbursement of the Land Information Account funds are guided by the over-arching goals and priorities set forth in this Plan. Setting priorities is particularly important in light of the current budget and personnel constraints at both the state and local levels. The over-arching 2020 Land Information Plan goals are as follows:

- Goal #1** – Ensure that MSDI data layers are consistently collected, accurately maintained and made commonly available.
- Goal #2** – Ensure the existence of an organizational framework and stable infrastructure that efficiently provides the human and technological resources needed to support the use and integration of digital land information into the critical business processes of local, tribal, state, federal, and other stakeholders.
- Goal #3** – Improve the quality and efficiency of critical business processes of stakeholders through the consistent availability of critical land information and the use of GIS technology.
- Goal #4** – Promote the use of GIS across the state through coordination, education, and outreach.

The 2020 Land Information Plan sets the annual priorities to achieve these goals for MLIAC, the MSDI, the Montana Land Information Grant Program and for the successful use of GIS in the state of Montana.

These priorities are specifically described in the FY 2020 Land Information Plan Priorities section of this document.

The Montana Spatial Data Infrastructure Framework

Montana’s Spatial Data Infrastructure framework or MSDI is composed of 15 geographic data themes that provide essential information about our physical landscape. These Themes provide policy makers, natural resource managers, service providers, businesses and the general public with critical information. For example, road center line information and addresses assist first responders in providing emergency assistance. Cadastral information, showing the extent, value, and ownership of land, is critical to property transfer and taxation. Cadastral information also helps in the collection of Census information, which in turn provides the basis for state and federal assistance to local communities. The Themes enable the preparation of various maps and associated reports that are critical to the operations of local and tribal governments, the State of Montana, healthcare providers, engineers and land surveyors, utilities, land managers and many others.

The 15 MSDI Themes are as follows.

- Administrative Boundaries
- Cadastral
- Climate
- Elevation
- Geographic Names
- Geology
- Hydrography
- Hydrologic Units
- Land Cover
- Mapping Controls
- Orthoimagery
- Soils
- Structures and Addresses
- Transportation
- Wetlands

The information necessary to develop, maintain and update each of these Themes is collaboratively built and maintained by a variety of entities at local, regional, state and federal levels. Each of these efforts contributes to the state’s overall spatial data infrastructure. As such, the approach to maintaining geospatial data is “federated”. Collaboration and partnerships across all levels of government and sectors is fundamental in maintaining the framework. The MSDI depends on a variety of entities and efforts. Therefore, it is essential that the data is carefully collected and recorded using best practices including:

- Collaboration and partnership to improve efficiency and reduce duplication of efforts,
- Consistency in data formats, and
- The presence of supporting information and references (referred to as metadata).

Funding, Timeline and Grant Process

Funding

Section 90-1-404 MCA requires the MSL to administer the Montana Land Information Act. As noted above, this work is funded primarily through MLIA. When possible, these funds may be supplemented by general fund or other funding sources. Funds for the state Land Information Account are generated through collection of county recordation fees as described in §7-4-2637 ((3) iii) MCA. This account represents a significant funding source to accomplish the priorities of the Land Information Plan.

The funding provided by the state Land Information Account can fluctuate significantly and can be a difficult-to-predict funding source. The highest recorded annual collections came in at just over \$1 Million in FY 2007 (the second year following passage of the MLIA). Collections are now slowly increasing from an all-time low of \$722,000 in FY 2014. Recent fluctuations in collections create uncertainty about the number of collections that can be expected from one year to the next. For this reason, we are proceeding cautiously and the budget for this year’s Land Information Plan shows only a modest increase over last year. The forecasted budget remains lower than the early years of MLIA and total receipts do not support the overall needs of the MSDI.



Figure 1. Total amount of collections within the state Land Information Account from state fiscal year 2006 (July 1, 2005) through state fiscal year 2017 (June 30, 2017). These collections account for 75% of total collections for the purposes of land information: §7-4-2637 ((3) iii) MCA.

Timeline

The Montana State Library makes use of MLIA funding for MSDI and GIS Coordination priorities specified in this plan. The Montana State Library, in conjunction with the other MSDI Stewards, will submit a report of achieved tasks by July 30, 2020 for Council review. It is important to note that some MSDI tasks may be undertaken by entities other than MSL. Nonetheless, MSL will assume ultimate responsibility for meeting the plan's objectives. These objectives listed in the work plan will be met over the course of state fiscal year 2020 (July 1, 2019 through June 30, 2020).

Grants Process

The Land Information Plan sets forth the goals and priorities that guide the MLIA grant application process. Local, regional, state and tribal jurisdictions are eligible to apply for MLIA grant projects that address the priorities of the Land Information Plan. In accordance with Montana Administrative Rule 10.102.9105, the grant application guidelines will be announced by January 15, 2019. Announcements will be made through the Montana Association of GIS Professionals (MAGIP), the Montana Association of Counties (MACo), the MLIAC distribution list and other communication channels. Grant applications must be received by MSL by February 15, 2019. Review and ranking of grant applications is conducted by a subcommittee of MLIAC. Final grant awards are approved by the MSL Commission in May 2019. Grants are administered by MSL and are awarded for a period of one-year, beginning July 1, 2019 and completed by June 30, 2020.

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FY 2020 Land Information Plan Priorities

This section of the Land Information Plan sets forth the priorities for the 2019-2020 fiscal year. Given the uncertainty of future funding for GIS in Montana, the plan provides realistic goals and priorities for the coming year. The successful development and maintenance of land information, referenced in these priorities, relies upon collaboration and partnership across all levels of government and includes the public sectors. These priorities are comprehensive, in that they provide general guidance for land information-related activities for each of the following:

- The Montana Land Information Advisory Council (MLIAC),
- The Montana Land Information Act (MLIA) Grant Program,
- Development and Maintenance of Montana’s Spatial Data Infrastructure (MSDI), and
- GIS Coordination.

Priorities for the Montana Land Information Advisory Council

1. Review MSDI Framework Themes to determine sustainability under current funding constraints:
 - a. Review what it means to be designated as an MSDI Theme, including:
 - i. Support provided
 - ii. Best practices
 - b. Prepare a recommending document.
2. Create measurable benchmarks to determine success of the grant program.
3. Create measurable benchmarks to determine success of each MSDI layer.
4. Match data layers to the requirements of Montana Statutes (e.g. Growth Policy and Call Before You Dig statutes).
5. Determine the highest needs of stakeholders, other statutory boards and councils, and create a plan for outreach and marketing.

Priorities for Grants

The granting process will give preference to interagency or intergovernmental projects whenever multiple state agencies, local governments or agencies, or Indian tribal governments or tribal entities have partnered together to meet a requirement of the land information plan.

Support Geographic Information Systems for Public Safety and Emergency Response

- Next Generation 9-1-1 (NG9-1-1):
 - a. Boundaries – Development of the Public Safety Answering Point boundaries. Accurate Cadastral data and PLSS digital representation will support the creation of boundaries.
 - b. Addresses – Development of address data that are National Emergency Number Association (NENA) standard compliant and will be integrated into the MSDI Structures & Addresses theme.
 - c. Road Centerlines – Development of road centerline data that are NENA standard compliant and will be integrated into the MSDI Transportation theme.
- Development of GIS to support Disaster and Emergency Operations and Planning: Local, Regional, and MSDI layers are used to help plan and mitigate in the event of a disaster or emergency response

situation including, but not limited to:

- a. Wildfires,
- b. Earthquakes,
- c. Drought,
- d. Floods, and
- e. Invasive Species.

Build Geographic Information Systems to Improve Local & Tribal Government Workflows, Business Processes, and Operations

- a. Land Use Planning,
- b. Infrastructure & Asset Management,
- c. GIS Data & Program Development – Development of base geographic data layers that federate into the MSDI and support other programs, and
- d. GIS data development to support the U.S. Census Bureau’s Geographical and Statistical Boundary Programs.

Improve Land Records

- a. Improvements to digital representation of Public Land Survey System (PLSS) for the purpose of improving accuracy of the MSDI Cadastral and Administrative Boundaries Themes:
 - i. Collecting new survey control data.
 - ii. Digitization and dissemination of documents related to PLSS and nonPLSS corners.
- b. Development and enhancement of administrative boundaries, including but not limited to data layers recognized by the MSDI Administrative Boundaries Theme.

Priorities for the Montana Spatial Data Infrastructure

General MSDI Priorities

- Coordinate with stakeholders (e.g. local, tribal, regional, federal, university, private, and international partners) on the development and maintenance of themes.
- Complete the regular maintenance of MSDI Theme data layers. The schedule of maintenance may vary depending on Themes.
- Publish all MSDI data, in compliance with standards, to the Montana GIS Data List,
- Continue to develop the Montana spatial data archive collection, including annual MSDI entries.
- Work with the non-MSL MSDI Stewards to support data partners and identify funding needs.

MSDI Theme Specific Priorities – Stewarded by the Montana State Library

Administrative Boundaries

- a. Perform annual update of existing layers.
- b. Participate in the U.S. Census Bureau’s Programs: Boundary and Annexation Survey and School District Review Program.
- c. Research and development of County Commissioner District, Voting District, and NG9-1-1 boundaries.*

Cadastral

- a. Perform monthly Cadastral updates, including parcels and conservation easements.
- b. Perform annual update of CadNSDI.
- c. Perform annual update of Public Lands.*

Elevation

- a. Implementation of the Montana Statewide LiDAR Plan.
- b. Identify federal, state, and local partners interested in acquiring LiDAR with the goal of submitting a joint 3DEP application.
- c. Continue to develop the LiDAR inventory, repository, and delivery prototype initiated by the NRCS, with primary focus of making data from additional agencies available.

Geographic Names*

- a. Perform annual data update.
- b. Implement Council’s recommendation for Theme Review.

Hydrography

- a. Develop QC tools that help prioritize where hydrography editing work is most needed.
- b. Promote collaborative editing of the NHD by stakeholders.
- c. Continue to develop the Montana LiDAR inventory, repository, and delivery prototype initiated by the NRCS, with primary focus of making data from additional agencies available.

Imagery

- a. Disseminate and host statewide imagery data and services, including 2019 NAIP.
- b. Continue work to evaluate stakeholder needs and imagery products for Montana.

Mapping Control

- a. Work with stakeholders, specifically Montana State Agencies, to obtain existing survey control.
- b. Coordinate best practice development with stakeholders, including county governments and the Montana Association of Registered Land Surveyor (MARLS).

Structures & Addresses

- a. Perform regular update of data layers.*
- b. Coordinate with local governments to promote NENA NG9-1-1 standard compliant address data.
- c. Work with SITSD to promote MSDI within their 9-1-1 granting process

* Considered at risk and difficult to achieve given recent budget cuts, including the loss of staff.

Transportation*

- a. Develop a statewide NENA NG9-1-1 standard compliant road centerline dataset.*
- b. Define a new data update schedule.*

MSDI Theme Specific Priorities – Stewarded Outside of the Montana State Library

Climate — University of Montana

- a. Evaluate gridded meteorological dataset: Currently evaluating gridded temperature and precipitation datasets for Montana for goodness of fit. This will drive what datasets we focus on for specific applications like drought or products like the Montana Climate Atlas.
- b. Perform updates to the Montana Climate Atlas: Update and enhance the online Montana Climate Atlas and associated map and raster services.
- c. Perform updates to the Climate Station Data: Update the online access to climate station datasets and Montana Mesonet datasets using standards adopted by National Oceanic & Atmospheric Administration (NOAA).

Geology — Bureau of Mines and Geology

- a. Continue geologic mapping in western Montana toward the goal of completing the state at the 1:100,000 scale.
- b. Further refine integrated seamless geology layers (100,000 scale).
- c. Develop larger scale (i.e. 24,000) datasets for special focus areas or inclusion in the 1:100,000 scale dataset.

Hydrologic Units — U.S. Dept. of Agriculture, Natural Resources Conservation Service (NRCS)

- a. The NRCS and MSL will continue to collaborate with the U.S. Geological Survey (USGS) to review and revise additional proposed Watershed Boundary Dataset updates.

Land Cover — University of Montana – Montana Natural Heritage Program

- a. Develop and adopt a partnership-driven plan for creating and routinely updating a new Land Cover layer that integrates with other MSDI layers.
- b. Obtain and incorporate 2018 fire polygons from the GeoMAC Wildland Fire Support database.
- c. Obtain and incorporate the most recent MSDI Transportation dataset

Soils — U.S. Dept. of Agriculture, Natural Resources Conservation Service

- a. Perform annual updates, which includes the revised digital and tabular data for 71 soil survey areas.

Wetlands & Riparian — Dept. of Environmental Quality & Univ. of Montana, Natural Heritage Program

- a. Finish mapping modern statewide wetland and riparian layer in areas with outdated or incomplete mapping.
- b. Incorporate all new value-added attributes and the corresponding metadata.
- c. Update modern wetland and riparian layer in areas with increased land-use changes.

GIS Coordination Priorities

Promote the Use of GIS in Montana

- a. Advocate for the use of MSDI data in state and local business processes, programs, and workflows.
- b. Attend appropriate meetings and conferences including the Montana Association of Counties, Montana Association of Planners, Montana State IT Conference, Montana Association of Geographic Information Professionals, the National States Geographic Information Council (NSGIC) and other meetings of subject matter experts.
- c. Preserve and improve relationships with MSDI data providers through support and local visits that foster knowledge transfer.
- d. Promote the use of GIS within mobile technology:
 - i. Improving field data collection efforts by integrating the use of GIS.
 - ii. Creation of new mapping applications that are optimized for mobile use.
 - iii. Exploring the use of citizen science through mobile technology.

Promote Best Practices and Standards

- a. Engage stakeholder work groups to seek input on the priorities and best practices for data development.
- b. Support local data providers as they adopt appropriate data standards and data collection methodologies.
- c. Advocate for the use of MSDI data as a best practice.

Promote the Dissemination of GIS Data

- a. Identify data that does not currently exist or is not accessible within the Montana Data List.
- b. Conduct ongoing maintenance data discovery through the Montana Data List.
- c. Deliver data via download and web services.
- d. Support the use of the GIS Data List, through training and outreach, for registering Montana related GIS datasets.

Partner with Relevant Professional Associations

- a. To educate and encourage the use of GIS in Montana,
- b. Promote of the Montana Spatial Data Infrastructure, and
- c. Promote the use of Best Practices and Standards.

FY 2020 Land Information Plan Budget

In accordance with administrative rule, the final determination for the amount of available grant funds will be made at the end of March 2019. If additional funds are available, there may be an opportunity to further increase grant funding.

DIGITAL LIBRARY	General Fund	MLIA Funds	NRIS State Core	Coal Tax	Anticipated Contracts/Grants	Total
PERSONAL SERVICES	468,073	495,000			tbd	tbd
OPERATIONS						
Fixed Costs, General Operations	449,399	80,000*		58,297		587,696
Council		10,000				10,000
UM Heritage Contract	52,688	10,000	281,541			344,229
SUB-TOTAL	970,160	615,000	281,541	58,297	tbd	tbd
MLIA Grants - FY 18 Budgeted		250,000				250,000
TOTAL DIGITAL LIBRARY	970,160	845,000	281,547	58,297	tbd	tbd

** Includes Rollover of fund is unspent in FY2019 for a potential cadastral rewrite*

GIS Personal Services FTE	General Fund	MLIA Funds
User Services (Includes Coordinator)	0 FTE	1 FTE
Information Management	1 FTE	3 FTE
Information Products	1 FTE	1 FTE
Total FTE	2 FTE	5 FTE

MLIA Account Balance at Beginning of FY2019	1,108,729.00
FY2018 Obligated MLIA Grant Funds	106,136.68
FY2019 Obligated MLIA Grant Funds	249,449.00

Future Priorities

Statewide LiDAR & Elevation Dataset & Statewide RTN.

Conclusion

The purpose of the Montana Land Information Act is to develop a standardized method for collecting, maintaining, and disseminating land information. The Montana Spatial Data Infrastructure is the necessary framework for carrying out the intention of the Act. The framework provides the basic geographic information needed by both the public and private sectors for program support, day-to-day activities, carrying out business, and solving mission critical problems. The success of the Montana Spatial Data Infrastructure relies heavily upon having appropriate funding; standardized and accurately maintained information; and effective collaboration and coordination. The priorities defined in this plan are intended to help strengthen the MSDI and support the development of GIS in State of Montana.

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