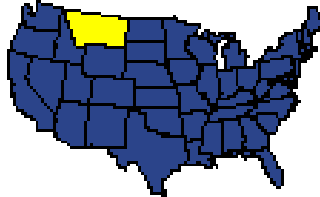# Montana Land Information Plan Fiscal Year 2008

Produced by the Land Information Plan Subcommittee of the Montana Land Information Advisory Council in cooperation with the Montana Department of Administration

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

January 15, 2007

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1.   PURPOSE

The purpose of the Montana Land Information Act (MLIA) 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. MLIA 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. MLIA prioritizes consistent collection, accurate maintenance, and common availability of land information to provide needed, standardized, and uniform land information in digital formats.

2.   ORGANIZATIONAL APPROACH AND IMPLEMENTATION

The Montana Department of Administration, hereinto referred to as the "Department" as provided for in Montana Annotated Code 2-15-1001, prepares this annual plan to partially fulfill the requirements of MLIA. The Land Information Plan is an annual plan developed to describe the priority needs to collect, maintain, disseminate and steward land information. This includes the coordination, collection, maintenance, integration, or dissemination of Montana Spatial Data Infrastructure themes or other associated work. The Land Information Plan Subcommittee of the Montana Land Information Advisory Council (MLIAC) advises the Department in the development of the plan. The plan is submitted to MLIAC for review and endorsement, and finalized by the Department. The plan is intended to represent priority land information needs for Montana's citizens. Government and private sector entities or other stakeholder groups within Montana may implement portions of the Land Information Plan.

The MLIA also established a granting process. Grant criteria under this process are established by the MLIAC Grant Review Subcommittee and are based upon goals and objectives from the Land Information Plan. Entities applying for MLIA grants should implement strategies and initiatives that advance the goals identified within this plan. The Department provides state GIS coordination and general coordination and oversight of MLIA grants. Where appropriate, the products of the grants shall be in compliance with general State information technology (IT) and geospatial data standards and/or policies as defined by the Montana Information Technology Act (MITA) and the Federal Geographic Data Committee (FGDC).

At mid-year and at the end of the fiscal year for the granting period, the Department will report to the MLIAC the status of the plan's priority tasks and measures of success.

3.   PROGRAM GOALS - STATE FISCAL YEARS 2007/2008

This first Land Information Plan spans state fiscal years 2007 and 2008. The Land Information Plan goals support the development of the Montana Spatial Data Infrastructure (MSDI) and are recommendations of the Montana Land Information Advisory Council, its Land Information Plan Subcommittee as well as other stakeholders within the Montana land information community. The goals of this plan are to:

- Support standardized and sustainable methodologies to collect, maintain, and disseminate land information,
- Improve and encourage partnerships and collaboration,
- Encourage and support appropriate integration of geographic information systems technology and geospatial data into business processes and public policy, and
- Foster professional development in land information systems, and assess workforce needs and opportunities.

The goals identified in this plan may be accomplished in various ways through the actions of various entities. For each goal, potential strategies are identified. These strategies may become action items of individuals or organizations charged with carrying out the strategy. The strategies outline in this document may be accomplished through various funding and resource opportunities and the scope of these strategies must not solely depend on MLIA funding.

Goal 1 – Support standardized and sustainable methodologies to collect, maintain, and disseminate land information.

This goal targets one of the core elements of the Montana Land Information Act, which states "MLIA 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."

Strategy 1.1 - Implement MSDI Theme Stewardship.

This strategy addresses the business of data stewardship. All stewardship efforts and users benefiting from stewardship need the same infrastructure: a communication structure, a website for outreach, and a location for the distribution of supporting documents and data. This strategy establishes priorities to ensure that the coordination and infrastructure required for accomplishing tasks common to stewardship are in place and helps to implement the MSDI Theme Stewardship document adopted by the MLIAC on July 1, 2007.

Priority Tasks and Measures of Success

a) The GIO, in conjunction with the Department, will provide oversight responsibility for the stewardship of all MSDI layers.
b) The Department will establish and implement MSDI coordination and communication protocols, and communicate the protocols to MSDI stewardship agencies, leads, working groups, and the MLIAC.
c) MLIAC will endorse theme stewardship agencies and leads for all MSDI themes.
d) Theme Agencies and Theme Leads will execute their stewardship roles and responsibilities as described in the MLIAC Theme Stewardship document.
e) The MLIAC Framework Subcommittee, the Department, and MSDI theme leads will collectively prioritize annual MSDI theme needs, prepare a budget to meet those needs, and forward their recommendations to the MLIAC Land Information Plan Subcommittee.
f) The Department shall compile an annual MSDI plan describing the dollar value of geospatial assets, performance measures, coordination costs, and measure of geographic and attribute completeness that has been produced for each MSDI theme.
g) The Department will complete the development of a process to identify and publish the authoritative source of geographic data products and apply that process to data produced through MSDI theme efforts.

Strategy 1.2 – Advance the collection and maintenance of MSDI themes

This strategy addresses the advancement of all MSDI themes. Themes are at different stages of development, and thus have differing needs. These generally fall into one of three categories: (1) themes that are just starting and need a plan and a prototype, (2) themes that have a plan and have started data acquisition, and (3) themes that are mature in content and development and need resources to maintain what they have.

Priority Tasks and Measures of Success
MSDI Theme Stewards and Leads, in cooperation with MLIAC, the Department, and the land information community, will:
a) Cadastral: Continue the maintenance and integration of tax parcel boundaries; continually adjust all cadastral framework data to the Geographic Coordinate Data Base (GDCB) reference layer as accuracy is enhanced. Implement a persistent identifier for parcels to support application development and historical tracking. Determine additional attributes of general interest, or other cadastral related features (water rights, trust lands, conservation easements etc.) and

implement a process to collect and maintain those attributes or features across jurisdictions.

b) <u>Critical Infrastructure and Structures:</u> Continue coordination and develop strategies for long term maintenance, continue data loading, populate incomplete data layers, request and obtain pertinent data themes from local providers according to priorities established by the working group, and support distribution of current content. Determine and work on a strategy to coordinate the critical infrastructure data model with the USGS "Best Practices" structures data model.

c) <u>Geodetic Control:</u> Geodetic Control supports accurate horizontal and vertical placement of all other layers, particularly Cadastral, by improving horizontal locations. The Geodetic Control team will work with other theme efforts to provide accurate and accepted control data for Montana. Goals include improving GCDB accuracy in priority areas, advancing the Height Modernization program in Montana, promoting public access to public control data including GCDB, promoting the use of standards for reporting control data, developing an on-line database for storing , querying and accessing control data, potentially promoting legislation to require that control generated with public funds be submitted to the public database and promoting training and education opportunities to foster and understanding of the value and use of control.

d) <u>Geographic Names</u>: Advance for consideration for inclusion in MSDI and stewardship, and develop a state framework and stewardship plan.

e) <u>Geology:</u> Continue to revise and add to the existing digital geologic framework for the state; complete a new geologic map of the entire state; complete 30' x 60' quadrangle maps to provide an integrated geologic framework; continue to respond to request for larger-scale, limited-area maps for land- and resource-use planning to address issues such as chronically short water supplies, slope instability, encroachment upon public lands and wildlife, siting of infrastructure facilities, and the general problems of home-site platting, road construction, waste disposal, burn-site management, and earthquake susceptibility; and continue to seek sources of funding to support both the geologic mapping in the field and the digital processing and production of these data into geologic maps available in the public domain.

f) <u>Government Unit Boundaries:</u> Assemble a working group to define this theme, prioritize boundary collection efforts, collect two boundary themes, and investigate the advantages and disadvantages of implementing a separate boundary data model versus incorporation of boundary themes into the cadastral data model.

g) <u>Hydrography:</u> Coordinate local efforts to improve hydrographic data. Implement a process for accepting changes to a commonly accepted high resolution Hydrography for Montana. Maintain and distribute the best available, most commonly accepted GIS data about Montana's

surface water. Implement a seamless method of submitting locally developed data for inclusion in a National Hydrography Dataset. Seek cooperative funding sources to maintain a .25 FTE position. Provide support to NHD users throughout Montana.   Provide two trainings per year on using the high resolution NHD.

h) Hydrologic Units: Complete the certification process and make the final product available to the public. Extract fourth-code sub-basins and fifth-code watersheds from the watershed boundary dataset and integrate with National Hydrography Dataset.

i) Hypsography: Develop a state framework plan and define theme and derivative products, coordinate with local, state, federal governments and the private sector to advance elevation data holdings in Montana, manage the Elevation Spatial Data program in Montana, improve the accuracy of elevation data in Montana as opportunities present themselves, develop and maintain the infrastructure to support access to elevation data, coordinate state and USGS elevation requirements and submit those requirements to the USGS on an annual basis.

j) Landcover: Develop a state framework plan beginning with a Needs Assessment, obtain funding to hire a full-time coordinator, continue regular meetings of the landcover working group with increased participation from more stakeholders (especially from the private sector), provide interpretive information for the Ecological Systems classification, coordinate with USGS and other interested parties to plan and develop land cover updates every five years, investigate and institute methods to integrate land cover with a land use legend and finer scale mapping like National Wetlands Inventory and USFWS riparian mapping, increase coordination with stakeholders, integrate data sets from other organizations to enhance the land cover/land use theme, establish a vegetation plot repository with active outreach to vegetation data collectors so that a centralized statewide database is available for spatially accurate ground truth data.

k) Orthoimagery: Provide for storage, maintenance, access and distribution of existing orthoimagery products pertaining to Montana. Implement a statewide acquisition and maintenance cycle that is coordinated with federal image acquisition programs. Expand upon the archiving, distribution and maintenance of other types of geo-referenced imagery. Investigate the accessibility, accuracy, integration, and application of imagery data collected via emerging technologies.

l) Transportation and Addressing: Complete the integration and validation of address range data with road segments, improve road geometry and topology, determine attributes of general interest in the application of the transportation theme and implement a process to collect and maintain those attributes across jurisdictions, add railroads, add trails, identify address maintainer(s) in local governments and state agencies, and initiate a process to create and sustain a statewide master address file with address points in cooperation with providers.

m) <u>Soils:</u> Soil surveys are being completed and published by the NRCS on a continuing schedule. Under a recently enacted national initiative, all soil surveys in the U.S. will be completed by 2010 and will include national parks and wilderness areas. Soils data posted via the NRIS Clearinghouse will be kept updated and current on a monthly basis. Additional interpretive maps and query tools emphasizing use and management information are being developed and will be made available via the NRIS Clearinghouse.

n) <u>Wetlands:</u> Develop and maintain an up-to-date wetland layer for Montana that complies with USFWS National Wetland Inventory standards to be used in planning, monitoring, and resource management by agencies, local governments, and the public; create a wetlands theme working group; continue current mapping from the 2005 NAIP CIR orthophotography; ensure funding for NAIP CIR orthophotography is institutionalized into state, federal, and tribal programs so that updates occur every five years; and devise a strategy for continued funding of the Montana Natural Heritage Wetland/Riparian Mapping Center.

Strategy 1.3 – Maintain and strengthen MSDI funding mechanisms.

This strategy addresses locating sustained funding other than MLIA grant funds for advancing MSDI.

<u>Priority Tasks and Measures of Success</u>
a) State Coordinator and Theme Leads, in cooperation with MLIAC, shall meet with Agency Directors and determine theme funding history, needs, responsibilities, and options.
b) MLIAC will recommend funding priorities to local, state, and federal agencies and the Montana Congressional Delegation for possible incorporation into their funding plans.
c) MLIAC, in cooperation with the Department, will leverage current MSDI and MLIA funding to obtain additional funding resources.

Goal 2 – Improve and encourage partnerships and collaboration.

This goal targets strengthening institutional relationships through outreach as an active rather than passive process. This goal recognizes that the success of the Montana Land Information Act relies heavily on the participation of all stakeholders.

Strategy 2.1 – Foster a widely accepted understanding of the current State operational environment, priorities, resources, and activities

about land information. Specific to this strategy is coordination and collaboration with and the support of tribal and local governments.

This strategy addresses the need to actively engage both tribal and local governments in achieving the goals of the Montana Land Information Act, and that Tribal and local governments have a shared interest in land information to which they contribute to and benefit from.

Priority Tasks and Measures of Success
a) The Department in cooperation with MLIAC will implement strategies to engage tribal and local governments to insure they become stakeholders in and help shape the adopted land information strategy.
b) The Department in cooperation with MLIAC will support outreach events to inform local and tribal stakeholders of land information resources.
c) The Department will produce a document explaining to all stakeholders the federated approach for land information under MSDI in Montana.

Strategy 2.2 – Establish formal and structured lines of communication for Montana in regard to national and regional land information issues.

This strategy addresses the need to make certain that MLIAC has an active dialog with congressional representatives to ensure federal initiatives work to (financially) support MSDI\NSDI, that MLIAC is adequately represented at important national strategy meetings like the National States Geographic Information Council (NSGIC) and Western Governor's Council, and that MLIAC is an active voice in national and regional initiatives.

Priority Tasks and Measures of Success
a) MLIAC will establish a protocol for regularly communicating with Montana's Congressional Delegation regarding federal geographic information and policy initiatives that meet the purpose of MLIA.
b) MLIAC will establish a protocol for regularly communicating with regional and national organizations regarding geographic information and policy initiatives that meet the purpose of MLIA.

Goal 3 – Encourage and support the integration of geographic information systems (GIS) technology and geospatial data into business processes and public policy.

This goal targets strengthening the integration of land information with business operations and public policy development by highlighting the value of land

information and the role of geographic information systems and related technologies as a contributing factor.

Strategy 3.1 – Promote the benefits of geographic information systems and present business cases to government agencies, universities, private sector, and citizens.

This strategy addresses the to need engage both the technical and non-technical user community in developing a mutual understanding of the relevance of land information and related technologies.

Priority Tasks and Measures of Success
a) MLIAC and the Department will produce marketing materials highlighting the integration, use and benefit of spatial data in business processes.
b) MLIAC will establish a working group to strengthen the relationship between the information technology community and the geographic information community and will encourage a strong GIS presence at the State IT conference,
c) MLIAC will identify sectors where geospatial technology is underutilized and develop action plans to encourage the utilization of geospatial technology.

Goal 4 – Foster professional development in land information systems, and assess workforce needs and opportunities.

Strategy 4.1 – Advance GIS professional development and education opportunities in Montana.

This strategy addresses the need to assess where the gaps are in skills, knowledge, and abilities, and works with the public and private sector on strategies to fill that gap. Montana may face a significant gap in both the acquisition and retention of the skills, knowledge, and abilities to collect, maintain, disseminate, and utilize digital land information.

Priority Tasks and Measures of Success
a) MLIAC will work with other entities and organizations to support improved educational and professional development opportunities.
b) MLIAC will work to identify the skills, knowledge and abilities required to support present and near-term workforce demands.

4.   ANNUAL PROGRAM COST AND BUDGET

The spreadsheet starting on page 12 represents a best ESTIMATE of costs associated with accomplishing the goals and objectives of the 2008 Land Information Plan. It is submitted with the following caveats.

1. The bulk of the costs associated with this plan are related to the stewardship, collection, maintenance and distribution of MSDI themes. These costs were developed at a Theme Steward Workshop November 16, 2006.

2. Theme Stewards were asked to submit estimates based on FULL funding - a best case scenario that assumed adequate funding was available to advance all themes.

3. The difference between the total estimated cost of the plan ($2,252,600) and the estimated amount of MLIA funds available for 2008 grants ($655,000) will need to be made up from existing agency budgets, the Department's MLIA coordination funds, grants, or other sources. Preliminary investigation indicates that there presently are not enough available funds to cover all strategies contained in the plan.

4. Costs for some line items, for example 2.1a (engaging local and tribal governments) may increase depending on MLIA grant criteria and whether grant requests are submitted in those areas.

5. Department staff costs associated with supporting committed work requirements is estimated at $70,000 per staff member annually. Department costs for data warehousing have not been calculated.

	Montana Land Information Plan Proposed Budget - 2008						
	Estimated Cost per Task						
Task	Brief Description	Personnel	Software and Equipment	Consulting$ Contracting	Travel	Potential Funding Source	Notes
1.1a	MSDI Oversight	49000	3000	0	2000	MLIA coordination	Department assists stewards; provides research, development, contract administration and data hosting services;
1.1b	MSDI protocols	14000	0	0	0	MLIA coordination	Could entail - standardized web templates, collaboration software (sharepoint), web update
1.1c	MLIAC stewardship endorsement	0	0	0		NA	Motion to endorse 12/14/06
1.1d	Theme Agencys and leads to execute roles and responsibilities	0	0			NA	Costs defined in Section 1.2
1.1e	MSDI Prioritzation	7000				MLIA coordination	Work with MLIAC Framwork Subcommittee to prioritize needs, prepare budget(s)
1.1f	MSDI plan	7000				MLIA coordination	Develop MSDI plan including dollar value of assets, performanc measures, coordination costs - work with all MSDI stewards to accomplish this
1.1g	Authoritative Source	7000				MLIA coordination	Develop and test a process to define authoritative source and publish authoritative source(s) of MSDI theme products
1.2a	Cadastral	106000	8000	350000	6000	MLIA Grant BLM Grant	Grant application will be filed as per MSDI plan
1.2b	Critical Infrastructure	116000	4100	140000	12500	MLIA Grant Other Grants	Grant application will be filed as per MSDI plan
1.2c	Geodetic Control	0	25000	35000	0	BLM Grant	Personnel costs included in 1.1a
1.2d	Geology	116000	25000	25000	25000	MBMG	
1.2f	Boundaries	47000	7000	140000	4300	SBA Grant BLM Grant	Theme stewardship and data development covered under SBA Grant

1.2g	Hydrography	30000	1500	0	5000	MLIA Grant USGS Grant	MSL has an existing grant with USGS that may be continued
1.2h	Hydrologic Units	0	0	0	0	NA	
1.2i	Hypsography/Elevation	12000	3000	0	2000	Federal Funding	
1.2j	Landcover/Landuse	143000	7250	7350	10600	MSDI Grant Other Grants	
1.2k	Orthoimagery	13500	43000	0	3000	MLIA Grant? - Existing Agency Budgets	Some coordination costs included in 1.1a Host imagery, develop partnerships, contract management if required - **DOES NOT INCLUDE ACQUISITION COSTS ESTIMATED AT APPROXIMATELY 3 MILLION DOLLARS FOR COLOR AND COLOR IR IF THE STATE IS FLOWN IN THE SUMMER OF 2008 - STATE SHARE OF 2005 ACQUISITION WAS ABOUT $800,000**
1.2l	Transportation	135000	6000	40000	10000	MLIA Grant Other Grants	Grant Application as per MSDI Plan
1.2l	Addressing	0	3000	36000	5000	Unknown	Personnel costs included in 1.1a
1.2m	Soils					Federal Funding	
1.2n	Wetlands	70000	2000	300000	5000	MSDI Grant Other Grants	
1.3a	MSDI funding	7000	0	0	0	MLIA coordination	Meet with State Agency Directors to determine funding history, needs, responsibilites and new funding source options
1.3b	MLIAC recommends funding priorities to others	0	0	0	0	NA	
1.3c	Additional MSDI funding	14000	0	0	5000	MLIA coordination	Grant investigation and writing, marketing proposals
2.1a	Engage Tribal/Local Stakeholders	7000	0	0	3000	MLIA coordination	Work with Local and Tribal GIS policy makers and produce needs assessment

2.1b	Support Outreach Events	14000	0	0	3000	MLIA coordination	MAGIP fall technnical meeting, MAGIP Eastern Montana outreach; Work with educational community; support additional workshops
2.1c	Federated Approach Doc	3500	0	0	0	MLIA coordination	Research other federated approaches, produce document describing Montana's federated approach
2.2a	MLIAC communicates with congressional delegation	0	0	0	5000	MLIA coordination	
2.2b	MLIAC communicates with regional and national organizations	0	0	0	0	NA	
3.1a	Marketing Materials	7000		10000		MLIA coordination	Assumes that actual materials are developed through contract. Costs will vary based on number and content - If done in house this would take additional staff time
	TOTALS	**925000**	**137850**	**1083350**	**106400**		
	TOTAL ESTIMATED COST OF 2008 Plan	**2252600**					
	Estimated 2007 MLIA Grant Funds available for 2008 projects (as of 1/1/07)	**655000**					
	TOTAL ESTIMATED FUNDING NEEDED FROM OTHER SOURCES	**1597600**					

January 15, 2007

5.   APPENDIX A

Appendix A - Acronyms used in this Document

CIR - Color Infrared Imagery
FGDC - Federal Geographic Data Committee
GCDB - Geographic Coordinate Database
GIS - Geographic Information Systems
GIT - Geographic Information Technology
IT - Information Technology
MITA - Montana Information Technology Act
MLIAC - The Montana Land Information Advisory Council
MLIA - The Montana Land Information Act
MSDI - Montana Spatial Data Infrastructure
NAIP - National Aerial Imagery Program
NHD - National Hydrography Dataset
NSDI - National Spatial Data Infrastructure
NSGIC - National States Geographic Information Council
NWI - National Wetlands Inventory
USGS - United States Geological Survey
USFWS - United States Fish and Wildlife Service