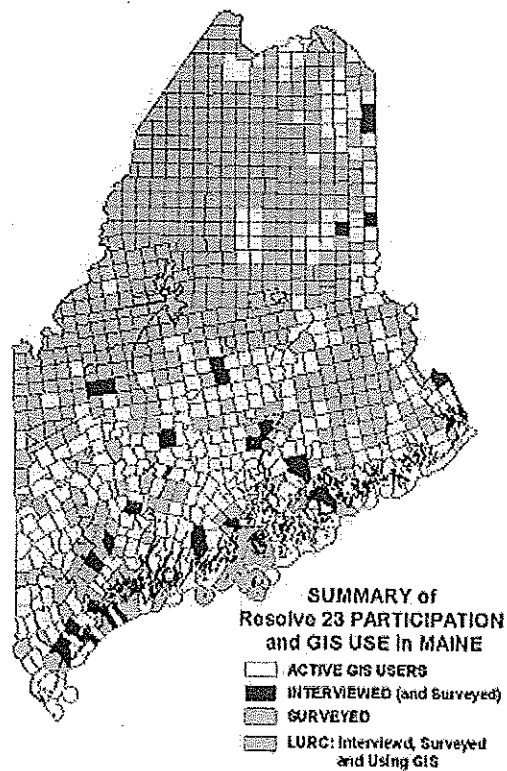


Creating the Geo Archives: Maine Archives of Geographic Information



submitted to the National Historical Publications and Records Commission
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Table of Contents

EXECUTIVE SUMMARY	5
PURPOSE AND GOALS	5
SIGNIFICANCE	5
RELATIONSHIP TO NHPRC GOALS AND OBJECTIVES	6
TECHNICAL CAPACITY AND COMMITMENT	8
PLAN OF WORK	8
PRODUCTS	9
AVAILABILITY OF FACILITIES	9
PROJECT BACKGROUND	10
PURPOSE AND GOALS OF PROJECT	10
SIGNIFICANCE AND RELATIONSHIP TO NHPRC GOALS AND OBJECTIVES	11
<i>Significance</i>	11
<i>Relationship to NHPRC Goals and Objectives</i>	12
<i>Relationship to Criteria for Evaluation of Electronic Records Projects</i>	14
TECHNICAL CAPACITY AND COMMITMENT - SUMMARY	17
DATA STANDARDS COMMITMENT	18
CONTINUING COMMITMENT	19
PLAN OF WORK	20
FLOW OF GIS STATE AND LOCAL GOVERNMENT RECORDS	21
RELATIONSHIP OF PROJECT PARTNERS AND FLOW OF INFORMATION	22
WORK PLAN SUMMARY AND SCHEDULE	23
MAJOR PROJECT EVENTS	25
PRODUCTS	29
AVAILABILITY OF FACILITIES	29
KEY PERSONNEL	30
TECHNICAL CONSULTANTS	30
POSITIONS AND RESUMES	30
JAMES S. HENDERSON, MAINE STATE ARCHIVIST	31
SYLVIA SHERMAN, DIRECTOR, ARCHIVES SERVICES DIVISION	32
JEFFREY BROWN ARCHIVIST III	33
BUDGET	34
APPENDIXES	36
MAINE STATE ARCHIVES DIGITAL RECORDS MANAGEMENT PLAN: 1999-2003	37
SELECTED REFERENCES TO RELEVANT ARCHIVAL	37
TECHNICAL CAPACITY AND COMMITMENT - DETAILED	38
<i>Data Standards Commitment</i>	39
SELECTED REFERENCES FOR GIS DATA STANDARDS	42
SELECTED REFERENCES TO THE MAINE GEO LIBRARY AND MAINE GIS	43
MAINE GIS EXECUTIVE BOARD MEMBERSHIP	43
MAINE LIBRARY OF GEOGRAPHIC INFORMATION BOARD MEMBERS	43
SUPPORTERS, DEVELOPERS, CONTRIBUTORS, AND USERS OF MAINE'S GIS DATABASE	44
LAW CREATING THE MAINE LIBRARY OF GEOGRAPHIC INFORMATION	45
SELECTED GIS RECORDS CREATED BY STATE AGENCIES	51
END NOTES	55

Creating the Geo Archives: Maine Archives of Geographic Information

Executive Summary

Purpose and Goals

This project is an "Electronic Records Program Development Project" as described by the NHPRC. We believe this is "an opportunity to test and refine the results of research and to develop innovative approaches to archival administration of electronic records." And it will "apply results of recent research and test their feasibility in various organizational venues or develop innovative programs."

Several agencies in Maine State government create records of permanent value on geographic information systems (GIS). The Maine Library of Geographic Information (Geo Library), which will make GIS records widely available, is now under construction. The creation of the Geo Library has awakened an understanding of the need for broad standards to enhance interoperability.

The project will take advantage of this opportunity to accomplish the following **goal**: create a digital system, based on current archival research and recommended standards, to be known as the Maine Archives of Geographic Information (Geo Archives), for maintaining State of Maine GIS records having permanent value. Development will also be based on the guidelines in *the Maine State Archives Digital Records Management Plan: 1999-2003*, and on the expertise of Maine's GIS professionals. The Geo Archives will insure that State or local government archival records held by the Geo Library, as well as other archival GIS records held by State agencies but not integrated into the Geo Library, will be retained permanently and will be accessible to researchers through the Geo Library.

Significance

Given the widespread development and use of digital geographic data, preserving spatial data in digital form is increasingly important to document the historical evolution of human activity and to provide useful research access. Current initiatives in Maine State government include developing GIS standards for the new Library of Geographic Information and moving all of State government to a common GIS operational standard. This project will inform this process and guide its results to increase the likelihood of long-term preservation of significant spatial data in electronic form.

A major early GIS application documented the outbreak of, and responses to, the Spruce Budworm epidemic in Maine's forests during the 1970's. This included locations of infestations and applications of treatments. Such infestations are cyclical and will undoubtedly become the focus of public debate again. However, these records are NOT available, having been prematurely destroyed.

No state has developed a strategy to integrate its Geographical Information Systems records with the dual goals of improving long-term access and increasing the chances for permanent retention of archival records. Several developments in Maine State government suggest the time is ripe to pursue these goals, which are consonant with the development of the Geo Library.

A "Needs Assessment" conducted as a precursor to legislation authorizing the "Geo Library" reported that the multiple GIS programs needed a single system to reduce

duplication and provide better access. Problems of incompatible formats and standards were noted. The "data needs" mentioned implied a preservation solution.

The Geo Library and the Maine Office of GIS have the technical capacity, the legal authority, and the history of inter-agency cooperation to accommodate many of these needs. Informed by the need for archival retention of selected records and recent research in this area, they will be key allies for the Maine State Archives to gain intellectual control of these records.

Relationship to NHPRC Goals and Objectives

Certainly this project is consistent with NHPRC's mission statement: "to ensure understanding of our nation's past by promoting, nationwide, the identification, preservation, and dissemination of essential historical documentation." Using emerging national standards, the project will identify (through archival appraisal), preserve (digital records in a digital form), and disseminate globally (through the Geo Library) records of enduring value.

The project stakeholders are a subset of those mentioned broadly in NHPRC's Strategic Plan: legislators, people with environmental and health concerns or interested in the location of cultural resources; teachers and students. Many State agencies create GIS records that provide essential documentation of Maine's government, environment, physical and cultural resources, transportation patterns, and social phenomena such as disease and criminal behavior.

As archivists have painfully observed in recent years, researchers appear to be relying increasingly on "documentation" available on-line. The mountains of paper and microfilm holdings are largely ignored in favor of more accessible material. If GIS records are limited to contemporary material while older records are discarded, documentation "essential" to a broad understanding of the development or impact of public policy will be lost. The "history" of that development will be constructed from the remaining accessible material, a problem exacerbated in recent times by legislative term-limits and a consequent fading institutional memory.

This project is obviously consistent with the NHPRC's goal "to provide leadership in funding research-and-development on appraising, preserving, disseminating, and providing access to important documentary sources in electronic form."

Relationship to Criteria for Evaluation

Be suitable for support from multiple funding and institutional sources

Given the broad interest among the Maine Office of Geographic Information Systems, the Board of the Maine Library of Geographic Information, the Maine State Archives, and participating State agencies with GIS data, the project meets this criterion.

Build on prior work in developing knowledge, tools, and methods for making archival electronic records available, usable, and understandable.

Ilya Zaslavsky's "Archiving Spatial Data: Research Issues" (January 18, 2001 San Diego Supercomputer Center Technical Report) suggests the major considerations in such an effort.

The InterPARES report of October 2001 provides detailed guidance in several appendixes, especially *Appraisal of Electronic Records: A Review of the Literature in English*, and *How to Preserve Electronic Records*.

[Others to be identified]

Be multi-disciplinary in conception and execution.

GIS records by their nature force multi-disciplinary engagement. The records themselves are created for a wide variety of stakeholders: historic preservationists, land use planners, forest managers, etc. The composition of the Geo Library Board indicates a broad spectrum of interests. (See appendix)

Adding the computer professionals, government bureaucrats, and archivists to the mix will make a very interesting soup indeed!

Produce usable models or have generalizable results.

The outcome of this project must be generalizable at least across Maine State agencies, with careful consideration to the needs of local governments, who will also contribute records to the Geo Library and whose records are scheduled by the Maine State Archives. By giving major consideration to related archival research and recommendations, the results should have application at least to other state governments, and probably to similar large institutions.

Identify mechanisms required for widespread implementation.

The limits of this project require a focus on mechanisms for implementation among state and local government entities contributing to the Geo Library database. Application of these standards may provide the basis for wider implementation throughout the state and may be valuable to other states and institutions as a model.

Produce recommendations, which if adopted, would benefit archival management or users of archival records.

The evaluation of this project will focus on issues of implementing practices currently suggested in archival research literature. Recommendations for further development of the Maine system and for others will be an integral part of the project's final report.

Consider political and policy implications.

Strong recommendations for adopting recognized standards, along with a working demonstration of their benefits, are likely to influence State and other funding sources to require conformance with standards to protect the value of GIS data for future use.

Determine costs, benefits, and other economic impacts.

This project builds on existing GIS experience and standards development within Maine State government, and will allow the State Archives to contract, through Service Level Agreements, with the Geo Library to identify GIS records for appraisal, maintain GIS records designated as archival, and provide access to those records, thus avoiding the cost of creating a separate State Archives division to accomplish this objective.

Apply, evaluate, or modify existing archival principles.

The resulting system will apply archival principles of appraisal, scheduling, and accessioning. Obviously each of these will be implemented in the context of digital records. For instance, intellectual control will be enhanced by the application of feature level metadata to the general metadata levels.

Physical control, as noted above, will be exercised by Service Level Agreements with the Geo Library, rather than by the acquisition of media as in the traditional archival practice of accessioning paper and other fixed-format physical materials. The creation of a central physical location for the storage of, and access to, GIS records through the

Geo Library and the companion Geo Archives will improve the opportunities for management of archival GIS records.

Be widely disseminated.

The detailed results, including the system description and adopted standards, will be available on-line at the Maine State Archives Internet site. The Archives and the Geo Library Board will support staff to attend professional conferences to make presentations describing and assessing the project and its products. Descriptive articles will be offered to a variety of archival and GIS publications.

Technical Capacity and Commitment

The State of Maine has the technical capacity and commitment to accomplish the goals of this project, having had experience over twenty years in creating, maintaining, and disseminating GIS records from a wide variety of State and local government agencies.

Already Maine GIS records span two decades of significant developments in Maine. Many of these records provide documentation on siting a nuclear waste facility, tracking low-level radioactive waste, emergency management planning, and environmental monitoring and management.

Records such as these, that document major public issues over a substantial period of time, will be included in the prototype development of the Geo Archives. This will support the missions of both the Maine State Archives and NHPRC in "the identification, preservation, and dissemination of essential historical documentation."

The keys to providing access to archival GIS records lies in the development and implementation of data and metadata standards. A great deal of work in the areas of metadata and feature level metadata standards has been accomplished. The work being proposed in this document will build on these standards to integrate results into the existing GIS fabric of standards and technology.

MEGIS has upgraded all its data documentation to Federal Geographic Data Committee (FGDC) compliant metadata and is working with state agencies to establish this documentation as a statewide standard. FGDC documentation is required for all geospatial data products produced with the assistance of federal funds. By implementing this documentation format, Maine is also participating in the federal effort to contribute to a National Spatial Data Infrastructure.

Key players in state government, local government, the cultural community and the research community have been identified. The Geo Library Board is a broad-based forum that will serve as the project's advisory committee. Board membership and endorsements are attached in an appendix.

Commitment of institutional resources and long-term support of the project may be inferred from the Archives digital records planning, the State's extensive GIS activity, and by the legislative support of the Library of Geographic Information, which the Maine State Archives believes is both the impetus for, and a major beneficiary of, the project. The Library Board, along with the State Archives, will provide resources to continue the program of maintaining archival GIS records.

Plan of Work

This is a sixteen month project involving staff from the Maine State Archives and the Maine Office of GIS.

A Project Manager, knowledgeable in the areas of project management involving digital information systems and sensitive to the needs of stakeholders, will coordinate

the activities of the Technical Team and will review current research literature and digital records projects funded by the NHPRC and others sources for their relevance to this project.

The Project Manager will be supervised by the State Archivist, who is the Project Director and who will serve on the Technical Team.

The Geo Library Board, acting as the project's advisory committee will meet quarterly to review the progress of the Technical Team, to insure the overall goals of the project and that stakeholder needs are met. The Technical Team will be responsible for creating the Geo Archives prototype according to archival standards, using current knowledge of best practices. It will meet monthly or as needed to insure technical coordination

Technical Consultants will bring research and practical experience to the process by meeting with the Technical Team early in the project and by assessing progress at mid-term and near its close. They will receive regular updates of project activity.

Products

A functioning digital system for maintaining, and providing access to, archival GIS records, along with accompanying documentation, published standards, and articles for publication describing the project and its outcomes.

Specifically, the following elements will be included:

- Full system documentation for the Geo Archives
- Archival data and metadata standards for creating, identifying, and maintaining the records
- Proposed technical standards to amend the relevant rules of each of the following:
 - Maine State Archives Advisory Board's *Rules for the Disposition of Local Government Records*
 - Maine Library of Geographic Information's *Rules for Data Contributors*
 - Maine Information Services Policy Board's *Rules for Systems Development*
- Articles describing the projects process and products offered to
 - NAGARA's *Crossroads*
 - NHPRC's *Annotations*
 - SAA's *archival outlook*

Availability of Facilities

The office of the Maine State Archives will be available for administrative and financial functions, as well as for meetings of relevant boards and stakeholders.

The facilities of the Office of GIS, including meeting rooms, networks, servers, and workstations will be available for use by project participants.

PROJECT BACKGROUND

Purpose and Goals of Project

This project is an "Electronic Records Program Development Project" as described by the NHPRC. We believe this is "an opportunity to test and refine the results of research and to develop innovative approaches to archival administration of electronic records" that it will "apply results of recent research and test their feasibility in various organizational venues or develop innovative programs."

Several agencies in Maine State government create records of permanent value on geographic information systems (GIS). The Maine Library of Geographic Information (Geo Library), which will make GIS records widely available, is now under construction. The creation of the Geo Library has awakened an understanding of the need for broad standards to enhance interoperability.

This project will take advantage of this opportunity to accomplish the following **goal**: create a digital system, based on current archival research and recommended standards, to be known as the Maine Archives of Geographic Information (Geo Archives), for maintaining State of Maine GIS records having permanent value. Development will also be based on the guidelines in *the Maine State Archives Digital Records Management Plan: 1999-2003*, and on the expertise of Maine's GIS professionals. The Geo Archives will insure that State or local government archival records held by the Geo Library, as well as other archival GIS records held by State agencies but not integrated into the Geo Library, will be retained permanently and will be accessible to researchers through the Geo Library.

The findings of this project will be used by the State Archives to adopt binding rules governing all local government GIS records scheduled as archival. Private and Federal records held by the Geo Library are not included this project.

For operational, technical and management reasons, the Geo Archives system may be developed as a component of the Geo Library, but will retain its independent mission under the direction of the Maine State Archives. The Geo Library will support the Archives' charge to retain archival GIS records, since the Library has a statutory mandate to establish standards for non-state records in the Library (including local government records). These standards complement standards established by the State's Information Services Policy Board for State agencies. (See Geo Library statute, section 1890-K, 1.B. in appendix.) In addition, the statute requires that "data developed with state funds must be submitted to the library" and data custodians are charged with "Complying with standards adopted by the geographic information board."

The Geo Archives project will create a prototype GIS system to retain archival GIS records with the intent of having the Geo Library Board and the Information Services Policy Board adopt additional standards and practices consistent with the needs of the Geo Archives.

Selected records of agencies such as the Maine Department of Conservation (including the Land Use Regulation Commission and the Bureau of Forestry), Department of Transportation, State Planning Office, and others will be integrated into Geo Archives and, along with other records, will be accessible to researchers and the general public through the Geo Library.

Archival records having no continuing value for the business functions of the creating agency and for the Geo Library, will be maintained and will be accessible via the Geo Library through a Service Level Agreement between the Maine State Archives and the Geo Library.

Significance and Relationship to NHPRC Goals and Objectives

Significance

Given the widespread development and use of digital geographic data, preserving spatial data in digital form is increasingly important to document the historical evolution of human activity and to provide useful research access. Current initiatives in the Maine State government include developing GIS standards for the new Library of Geographic Information and moving all of State government to a common GIS operational standard. Research in electronic records funded by the NHPRC can inform this process and guide its results to increase the likelihood of long-term preservation of significant spatial data in electronic form.

Continuing Need

A major early GIS application documented the outbreak of, and responses to, the Spruce Budworm epidemic in Maine's forests during the 1970's. It included locations of infestations and applications of treatments (cutting, chemical and biological spraying). Such infestations are cyclical and will undoubtedly become the focus of public (political and environmental) debate again. However, these records are NOT available, having been prematurely destroyed.

To our knowledge, no state has developed a strategy to integrate its Geographical Information Systems records with the dual goals of improving long-term access and increasing the chances for permanent retention of archival records. Several developments in Maine State government suggest the time is ripe to pursue these goals, which are consonant with the development of the Geo Library.

Opportunity

The Maine State Archives developed a *Digital Records Management Plan*, funded by an NHPRC grant, in 1999. During that process and in the following years, the Archives has taken opportunities to acquaint legislators, administrators, and digital records creators of the challenges of archival retention. Though that plan still guides us on the broad principles of managing digital archival records, we have not applied for NHPRC support for further action until now because we did not see evidence of agency interest and commitment. We see that now.

A "Needs Assessment" conducted as a precursor to legislation authorizing the "Geo Library" reported that

"Several organizations observed that Maine has multiple, significant GIS programs that tackle statewide data. . . . Each of these is a strong, independent program and there is a high level of sophistication.

These multiple entities share data and participate in some coordinating activities including the Maine GIS Executive Council. However, there remain some significant duplications of effort and data.

There is no single source in Maine where one can obtain all of the best statewide data sets."¹

The groups contacted to assess needs included State and local government agencies, schools, colleges, land trusts, private firms involved in land surveying, real estate, etc. While not asked directly about long-term preservation, the "data needs" mentioned imply a preservation solution:

- The need for parcel data was widespread across all constituencies that were interviewed. People either wanted to create parcel composites or they had parcel

composites that they were unable to use due to *format* (e.g. CAD) or *inability to link* with assessor's attribute information.

- Interest in aerial photos/imagery was widespread.
- Numerous municipalities mentioned an interest in school district data sets. . . .
- Multiple municipalities raised *concerns about parcel updating* going forward, even/especially when parcels exist digitally.
- Multiple parties mentioned that uniform statewide standards would help address problems that they faced. There was widespread frustration with handling parcel composites from multiple towns due to overlap issues at political boundaries, or having the *data stored in different formats* (e.g. CAD vs. GIS, different coordinate system, etc.). Many parties - especially state agencies and regional entities - were interested in assembling multi-town parcel composites to perform regional mapping and analysis.² (Emphasis added.)

The Geo Library and the Maine Office of GIS have the technical capacity, the legal authority, and the history of inter-agency cooperation to accommodate many of these needs. Informed by the need for archival retention of selected records and recent research in this area, they will be key allies for the Maine State Archives to gain intellectual control of these records.

In late 2002 the Archives contacted the staff of the Maine Office of GIS to determine interest in addressing the problem of long-term retention of, and access to, GIS data. They, and staff of Maine's Department of Conservation - responsible for mapping and managing two-thirds of the state's land area - expressed their own concerns for these issues but had no "mandate" to address them.

The Archives, now participating in the Digital Parcel Standards Committee for the Geo Library, recognized the movement to standards as an opportunity to integrate archival needs into the process. The "Foundation Pillars" of the Geo Library development plan include Standards Development, in particular

1. Development of Detailed Data Standards, including "detailed data layer specific content standards," is considered "absolutely essential if new statewide data layers are to be developed from the myriad efforts of multiple participants."
2. Parcel Layer Development, noting that "Parcel data represents one of the most valuable and difficult to assemble data sets . . . Assembling and standardizing statewide parcel data is not a *one-time activity*; it is an *ongoing process*."

The State Archives made a presentation to the Maine GIS Executive Board suggesting a cooperative approach to developing standards consistent with the needs for permanent preservation. After an enthusiastic discussion, the Board endorsed the idea of developing a proposal to the NHPRC, and committed staff time and funds to assist in preparing it.

Relationship to NHPRC Goals and Objectives

Certainly this project is consistent with NHPRC's mission statement: "to ensure understanding of our nation's past by promoting, nationwide, the identification, preservation, and dissemination of essential historical documentation." Using emerging national standards, the project will identify (through archival appraisal), preserve (digital records in a digital form), and disseminate globally (through the Geo Library) records of enduring value.

The project stakeholders are a subset of those mentioned broadly, in NHPRC's Strategic Plan: **legislators** attempting to understand the long-term impact of changes in land use; those with **environmental and health** concerns struggling to understand the long-term relationships among pollution sources, forestry practices, wildlife habitat, and human diseases; those interested in the location of **cultural resources**, such as historic

sites and buildings, and early settlements; **teachers and students** who want to draw on a unique mix of these resources to create their own interpretation of our state's past. These are among the types of GIS data now collected by Maine State agencies.

Many State agencies create GIS records that provide essential documentation of Maine's government, environment, physical and cultural resources, transportation patterns, and social phenomena such as disease and criminal behavior. (See Appendix for examples.) Failure to create a system for preserving these records in an increasingly digitally dependent research environment will mean that readily available, *but incomplete*, records will inform policy makers and historical researchers in their "understanding of our nation's past." Resulting misunderstanding may lead to systematic distortions of historical perspective.

As archivists have painfully observed in recent years, researchers appear to be relying increasingly on "documentation" available on-line. The mountains of paper and microfilm holdings are largely ignored in favor of more accessible material. If GIS records are limited to contemporary material while older records are discarded, documentation "essential" to a broad understanding of the development or impact of public policy will be lost. The "history" of that development will be constructed from the remaining accessible material, a problem exacerbated in recent times by legislative term-limits and a consequent fading institutional memory.

The challenge of preservation in this context is the vast unknown of the digital future. We do not pretend that this project will produce *the* answer to preserving GIS records. However, the imminent challenge is that GIS records of enduring value are being destroyed almost daily as data sets are updated, older data erased, and software introduced that will no longer read legacy data. A standards based project will lengthen the digital life of this data until more comprehensive solutions to the broader issue of preserving digital records emerge.

For example, during the Geo Library needs assessment interviews of the college and university group

"Many participants described university initiatives that created new data sets. The Focus Group acknowledged that their own metadata tracking habits were mediocre and in need of improvement, and that state guidance could be beneficial."³

This project is obviously consistent with the NHPRC's goal "to provide leadership in funding research-and-development on appraising, preserving, disseminating, and providing access to important documentary sources in electronic form."

As with its existing Regrant programs, the Archives will require outcome based performance measures for this project. They will include the following:

By the End of the Project

- Schedule a selected set of GIS records as archival
- Develop the Geo Archives prototype
- Implement the Geo Archives prototype for the selected set of archival GIS records
- Amend the Maine State Archives Advisory Board's *Maine State Archives Advisory Board's Rules for the Disposition of Local Government Records* to reflect the Geo Archives standards for GIS records
- Amend the Maine Library of Geographic Information's *Rules for Data Contributors Records* to reflect the Geo Archives standards for GIS records
- Amend the Maine Information Services Policy Board's *Rules for Systems Development Records* to reflect the Geo Archives standards for GIS records

After Project Completion

- Incorporate an equal number of additional archival GIS records within one year
- Incorporate all archival GIS records now in the Geo Library into the Geo Archives within five years
- Assess the impact of the project on GIS preservation in Maine local governments
- Assess the impact of the project on GIS preservation in other states

The project will also document key outputs that support the outcomes noted above:

- Number of records appraised
- Number of records scheduled as archival
- Number of records integrated into the Geo Archives
- Creation of data and metadata standards for the identification and maintenance of archival GIS records
- Adequacy of standards in insuring data integrity
- Degree of success in providing access to records documenting changes in underlying data over time (e.g., population, land use, road networks or a combination of these data layers)
- Number of requests for the archival records in the system
- Satisfaction of researchers seeking to retrieve the records

Relationship to Criteria for Evaluation of Electronic Records Projects

Proposals should be developed to:

Be suitable for support from multiple funding and institutional sources

Given the broad interest among the Maine Office of Geographic Information Systems, the Board of the Maine Library of Geographic Information, the Maine State Archives, and participating State agencies with GIS data, the project meets this criterion.

Build on prior work in developing knowledge, tools, and methods for making archival electronic records available, usable, and understandable.

Ilya Zaslavsky's "Archiving Spatial Data: Research Issues" (January 18, 2001 San Diego Supercomputer Center Technical Report) suggests the major considerations in such an effort.

The InterPARES report of October 2001 provides detailed guidance in several appendixes, especially *Appraisal of Electronic Records: A Review of the Literature in English*, and *How to Preserve Electronic Records*.

[Others to be identified]

Be multi-disciplinary in conception and execution.

GIS records by their nature force multi-disciplinary engagement. The records themselves are created for a wide variety of stakeholders: historic preservationists, land use planners, forest managers, etc. The composition of the Geo Library Board indicates a broad spectrum of interests. (See appendix)

Adding the computer professionals, government bureaucrats, and archivists to the mix will make a very interesting soup indeed!

Proposals should be designed to:

Produce usable models or have generalizable results.

The outcome of this project must be generalizable at least across Maine State agencies, with careful consideration to the needs of local governments, who will also contribute records to the Geo Library and whose records are scheduled by the Maine State Archives. By giving major consideration to related archival research and recommendations, the results should have application at least to other state governments, and probably to similar large institutions.

Identify mechanisms required for widespread implementation.

The limits of this project require a focus on mechanisms for implementation among entities contributing to the Geo Library database, including state agencies, local government agencies, and private organizations whose data enters the public domain. The statute creating the library gives its Board the authority, in section 1890-K (See Appendix),

To establish and maintain standards, rules and policies for nonstate data custodians' geographic information that is incorporated into the Maine Library of Geographic Information. These standards, rules and policies must be consistent with the standards, rules and policies set by the Information Services Policy Board established in section 1891 that govern state data custodians' information technology. The geographic information board shall adopt rules to carry out this subchapter.

Application of these standards may provide the basis for wider implementation throughout the state and may be valuable to other states and institutions as a model.

Produce recommendations, which if adopted, would benefit archival management or users of archival records.

The evaluation of this project will focus on issues of implementing practices currently suggested in archival research literature. Recommendations for further development of the Maine system and for others will be an integral part of the project's final report.

Consider political and policy implications.

Strong recommendations for adopting recognized standards, along with a working demonstration of their benefits, are likely to influence State of Maine and other funding sources to require conformance with standards to protect the value of GIS data for future use.

Determine costs, benefits, and other economic impacts.

This project builds on existing GIS experience and standards development within Maine State government, and will allow the State Archives to contract, through Service Level Agreements, with the Geo Library to identify GIS records for appraisal, maintain GIS records designated as archival, and provide access to those records, thus avoiding the cost of creating a separate State Archives division to accomplish this objective.

Project results must:

Apply, evaluate, or modify existing archival principles.

As distinct from current research issues, the resulting system will apply archival principles of appraisal, scheduling, and accessioning. Obviously each of these will be implemented in the context of digital records. For instance, intellectual control will be enhanced by the application of feature level metadata to the general metadata levels.

Physical control, as noted above, will be exercised by Service Level Agreements with the Geo Library, rather than by the acquisition media as in the traditional archival practice of accessioning paper and other fixed-format physical materials. The creation of a central physical location for the storage of, and access to, GIS records through the Geo Library and the companion Geo Archives will improve the opportunities for management of archival GIS records.

Be widely disseminated.

The detailed results, including the system description and adopted standards, will be available on-line at the Maine State Archives Internet site. The Archives and the Geo Library Board will support staff to attend professional conferences to make presentations describing and assessing the project and its products.

Descriptive articles will be offered to Maine IS Technology (a State paper and on-line publication); the National Association of Government Archives and Records Administrators' (NAGARA) *Crossroads: Developments in electronic records and information technology*; the Society of American Archivists' *archival outlook*; and NHPRC's *Annotation*.

A member of the team will offer to make a presentation at NAGARA's 2005 annual conference.

TECHNICAL CAPACITY AND COMMITMENT - Summary

The State of Maine has the technical capacity and commitment to accomplish the goals of this project, having had experience over twenty years in creating, maintaining, and disseminating GIS records from a wide variety of State and local government agencies. (See details in Appendix.)

Since GIS first helped Maine respond to a federal proposal to site a nuclear waste facility in the state in the 1980's, Maine's State government GIS experience and usage has broadened. Internet access to Maine's GIS database has been available since 1997 through the MEGIS Internet Data Catalog.⁴ Website statistics have reported an average of 6500+ hits per day, close to two million per year. Page and document views have served over 200,000 viewers annually.

Already GIS records span two decades of significant developments in Maine. Many of these records provide documentation on siting a nuclear waste facility, tracking low-level radioactive waste, emergency management planning, and environmental monitoring and management.

Records such as these, that document major public issues over a substantial period of time, will be included in the prototype development of the Geo Archives. This will support the missions of both the Maine State Archives and NHPRC in "the identification, preservation, and dissemination of essential historical documentation."

Regarding dissemination, Internet access to Maine's GIS database has been available since 1997 through the MEGIS Internet Data Catalog.⁵ The Catalog reports an average of 6500+ hits per day, close to two million per year. Page and document views serve over 200,000 viewers annually. Evidence of MEGIS commitment to improve dissemination through Internet access to includes the addition of an Internet Mapping Service (IMS) in 1998 and an upgrade to ArcIMS services in FY03.

As GIS records are provided to web browsers worldwide, accessibility has raised public awareness its power and potential uses as a means of assessing government practices and accountability through this form of documentation. This substantial demand shows no sign of abating and is likely to increase with the opportunity to integrate research with the additional data layers added annually. Without the ability to retain archival GIS records, the increasing expectations of researchers will be frustrated and their ability to gain access to essential documentation will be limited.

Traditional archival-records management practice has included the "scheduling" of records, to insure that current material appraised as archival will be transferred to the archives for permanent retention. Obviously, in a digital world a major new component is added: insuring access to technologically dependent records.

New, and updated Maine GIS data layers are added to the Maine GIS database continuously. Recent changes include aquifers, Atlantic Salmon habitat, Maine county boundaries, high-resolution aerial photography, public water supply wells, well buffers, intakes, intake buffers, bedrock source water protection areas, sand and gravel travel times, essential habitats for bald eagle, roseate tern, piping plover and least tern. New Maine town and county map information includes flood insurance rates, Census geography data, landcover data from the U.S. Fish and Wildlife Gulf of Maine project, wetlands characterization, and emergency management data.

The Maine State Archives must not only "schedule" these records, but also have assurance that those having archival value will be retained and be accessible for future researchers. That assurance does not now exist. The development of the Geo Archives, in partnership with the Geo Library, will provide the Archives with the capacity to meet these expectations.

Data Standards Commitment

The keys to providing access to archival GIS records lies in the development and implementation of data and metadata standards. A great deal of work in the areas of metadata and feature level metadata standards has been accomplished. The work being proposed in this document will build on these standards to integrate results into the existing GIS fabric of standards and technology.

Maine GIS has adopted the Federal Geographic Data Committee (FGDC), Content Standard for Digital Geospatial Metadata (CSDGM) as a documentation or "metadata" standard.

What about:

Spatial Data Transfer Standard (SDTS), FGDC-STD-002
(a modified version was adopted as ANSI NCITS 320:1998)

Spatial Data Transfer Standard (SDTS), Part 5: Raster Profile and Extensions,
FGDC-STD-002.5

Spatial Data Transfer Standard (SDTS), Part 6: Point Profile, FGDC-STD-002.6
SDTS Part 7: Computer-Aided Design and Drafting (CADD) Profile, FGDC-STD-
002.7-2000

for spatial data interoperability?

Participating agencies are responsible for providing documentation in FGDC format for each digital map added to the Maine GIS database. The metadata must be stored and maintained by the agency responsible for developing and maintaining the data.

MEGIS has upgraded all its data documentation to Federal Geographic Data Committee (FGDC) compliant metadata and is working with state agencies to establish this documentation as a statewide standard. FGDC documentation is required for all geospatial data products produced with the assistance of federal funds. By implementing this documentation format, Maine is also participating in the federal effort to contribute to a National Spatial Data Infrastructure.

Metadata is "data about data". Like a style guide, the Federal Geographic Data Committee (FGDC), Content Standard for Digital Geospatial Metadata (CSDGM) defines what information belongs in a metadata record and the order in which it is presented. The goals and objectives of the Maine GIS FGDC compliant documentation can be summarized as follows:

- to provide a history of each Maine GIS geospatial data set with standardized information on content, location, purpose, accuracy, condition, quality, collection, development processes, scale, projection, feature attributes, and other characteristics of geospatial data necessary to determine the utility of a map for a specific purpose;
- to protect Maine's investment in geospatial data, by minimizing the risk of data loss and the re-creation of existing data, through systematized documentation of geospatial information;
- to promote data sharing by providing information about Maine GIS data holdings to external catalogues, clearinghouses, and brokerages and by providing information on the processing and interpretation of spatial data received through a transfer from an external source.

Maine Office of GIS (MEGIS), in cooperation with Maine's GIS Executive Council and the GIS Technical Group, has purchased Spatial Metadata Management System (SMMS) Implications for this proposal? software for metadata creation and management

with an enterprise solution in mind. While all metadata has the potential to enhance and protect an organization's internal investment in data, the usability and limitations of various tools for metadata creation affect the way the metadata, once created, can be used or leveraged. To a large degree, the structure built-into the selected metadata tool controls subsequent uses of the metadata. In considering the selection of a metadata tool it is important to evaluate other organizational needs such as metadata update, management, publication, coordination and data sharing.

Feature Level Metadata: Archiving GIS Layers for Use and Analysis

The use of Feature Level Metadata (FM) items and codes in feature attribute tables is essential to the construction of the Geo Archives, to provide accessible readable standardized notation that describes the quality and currentness of each geospatial feature's location. FM items will be used to record the following information about the location of a feature: the source used to identify the feature's location, the source originator, the process used to incorporate the feature, also the organization of edit and date of edit if applicable.

Items must be populated with standardized and defined FM codes. FM codes for use in these items, like the items themselves, will be designed to be unique references, as short, clear and self-explanatory as possible. All have been listed, standardized, and defined so that each represents a single information type and entity.

Continuing Commitment

Key players in state government, local government, the cultural community and the research community have been identified. The Geo Library Board is a broad-based forum that will serve as the project's advisory committee. Board membership and endorsements are attached in an appendix.

Commitment of institutional resources and long-term support of the project may be inferred from the Archives digital records planning, the State's extensive GIS activity, and by the legislative support of the Library of Geographic Information. The Geo Library, the Maine State Archives believes, is both the impetus for, and a major beneficiary of, the project.

The Library Board, along with the State Archives, will provide resources to continue the program of identifying and maintaining archival GIS records.

PLAN OF WORK

Close communication among archivists, GIS technical specialists, expert consultants, and the data-user and data-producer stakeholders is essential.

A Project Manager, knowledgeable in the areas of project management involving digital information systems and sensitive to the needs of stakeholders, will coordinate the activities of the Technical Team and will review current research literature and digital records projects funded by the NHPRC and others sources for their relevance to this project. She will insure that the Technical Team considers them in developing the Maine GIS archival model.

The Project Manager will be supervised by the State Archivist, who is the Project Director and who will serve on the Technical Team.

The Geo Library Board, acting as the project advisory committee, will meet quarterly to review the Technical Team's progress and insure the overall goals of the project and stakeholder needs are being met. The Technical Team will be responsible for creating the Maine GIS archival model according to archival standards, using current knowledge of best practices. It will meet monthly or as needed to insure technical coordination.

Technical Consultants will bring research and practical experience to the process by meeting with the Technical Team early in the project, receiving regular updates, and by assessing progress at mid-term and near its close. The proposed schedule for the consultants is as follows:

February 2004

Consultants comment (via e-mail or conference call) on the initial charge of the Geo Library Board to the Technical Team (see Major Project Events below), based on a general review of related research and the goals of the project. They suggest additional research resources.

June 2004

Consultants comment (via e-mail or conference call) on the current goals, review of research, and the user needs/requirement document.

September 2004

A.M.: Consultants meet with Technical Team and Project Manager to review the Maine GIS archival model and to comment on technical specifications sent a week prior to the meeting. They discuss specific problem areas and/or implementation issues that have been identified during the project.

P.M.: Consultants meet with Geo Library Board and key Archives staff, for a discussion of progress toward project goals. Other stakeholders (Chief Information Officer, members of the State Information Policy Board) will be invited to attend.

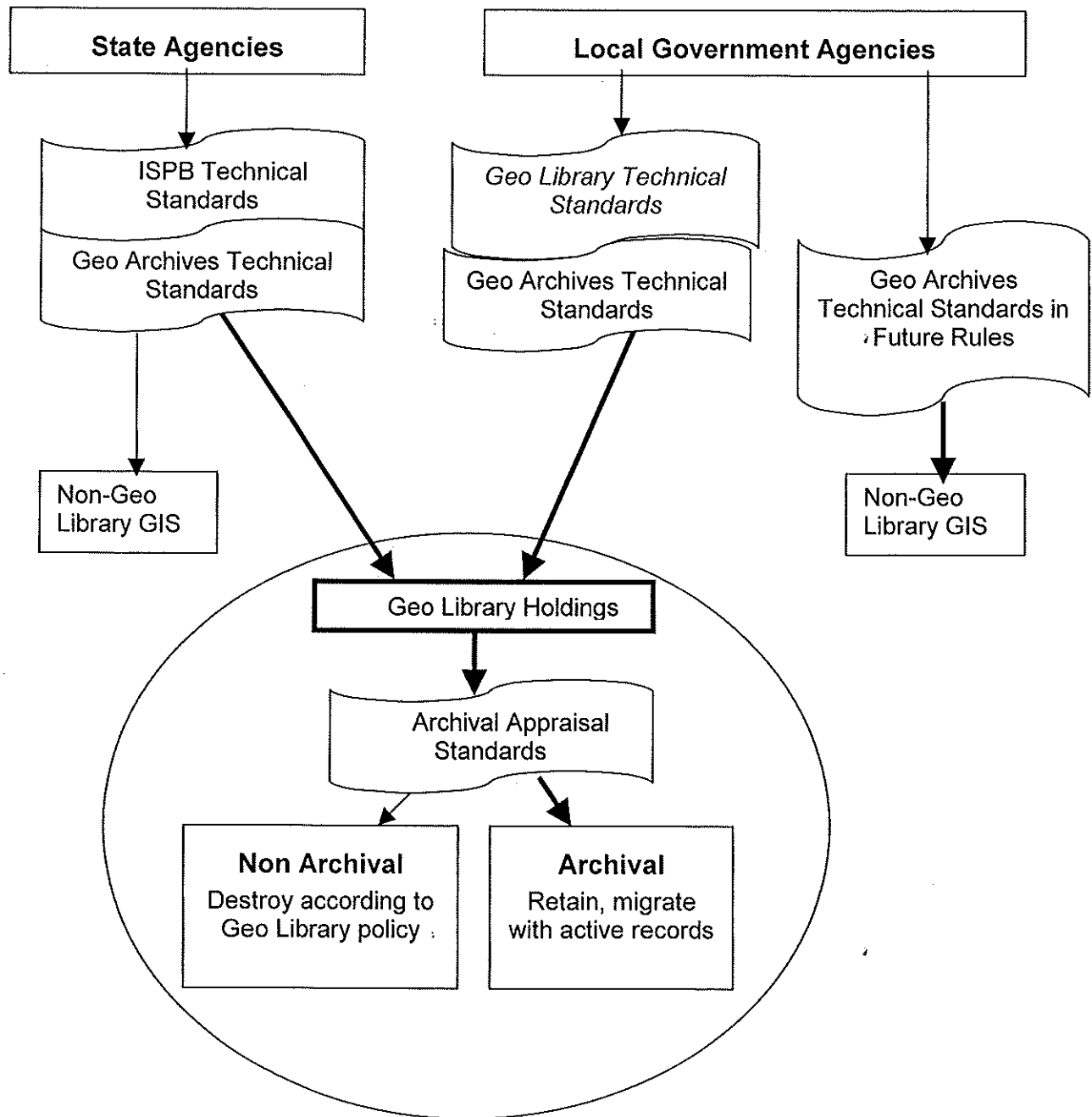
February 2005

A.M.: Consultants meet with Technical Team and Project Manager to review the project to date, the results of the first layer test of the model (see Major Project Events below), and specific problem areas and/or implementation issues.

P.M.: Consultants meet with Geo Library Board and key Archives staff, for a discussion of progress toward project goals. Other stakeholders (Chief Information Officer, members of the State Information Policy Board) will be invited to attend.

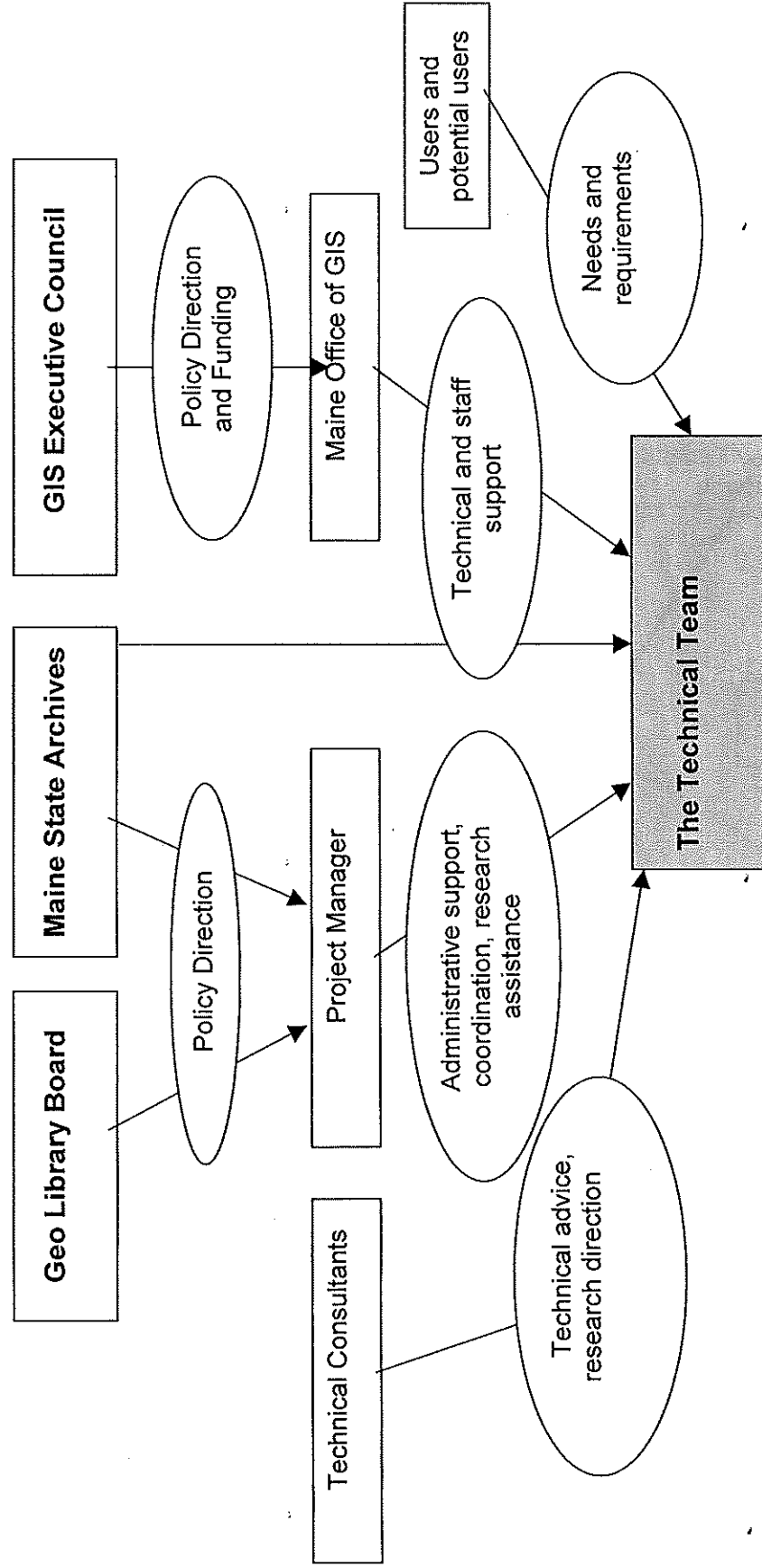
The flow of GIS records under the current and the proposed systems is illustrated in the figure on the following page. Relationships among the project participants are illustrated on the subsequent page. A time line and schedule of project events follows.

Flow of GIS State and Local Government Records



Currently GIS records are created according to technical standards approved either by the Information Services Policy Board (ISPB) for State agencies, or by the Geo Library Board for non-State government agencies and private partners. This project will recommend additional technical standards to insure the ability to retain government GIS records appraised as archival.

Relationship of Project Partners and Flow of Information



Work Plan Summary and Schedule

Symbols: ▲ = meeting; ↗ = comment; ↗ = comment, consultation; ▼ = event ■ = activity conducted by the Technical Team

Events/Milestones (see details)	Initiation Phase				System Design Phase				Implementation Phase							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Technical Team meetings	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Geo Library Board project updates	▲			▲		▲				▲			▲		▲	
Consultants		↗				↗			↗					↗		▲
Review, confirm project goals	■															
Review research	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Select GIS Layers	■															
Design Discussions	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Data owner consultations				↗												
User consultations					↗											
Document needs/requirements				■												
Review goals, research, needs					■											
Systems design						■	■	■	■	■	■	■	■	■	■	■
Draft standards, procedures, design								▼								
Public comment on draft								↗	↗							
Day-long project review meeting									↗							
Modify draft to reflect comments										■						
Publish final requirements document											▼					
Database and programming 1 st layer												■	■	■	■	■
Test of 1 st layer segment													▼			
Resolve issues from 1 st layer test													■	■	■	■
Day-long project review meeting														↗		
Database & programming other layers														■	■	■
Test of all layers															▼	
Resolve issues from layer test															■	■
Publish final documents																▼
Project complete																▼

Major Project Events

January 2004

Project initiation phase begins

The project Technical Team will meet to review the proposal, discuss project goals, and draft a detailed workplan, with specific work assignments, and present it for information and advice to the Geo Library Board. The Board will formally charge the Technical Team to proceed, adding whatever advice it may wish to offer. The Team will also review and identify GIS layers that will be the subject of the research and model development for the Geo Archives. A project web page will be established and all results published as the project moves forward.

February 2004

Project initiation phase continues

The Technical Team will contact the project's **Technical Consultants** Who are these? to identify persons or organizations that are or have done research in this area. The team will also conduct an exhaustive review of related literature.

The Project Director will make a presentation of the project's goals to the State's GIS Executive Council, and to its Information Services Policy Board.

March 2004

Project initiation phase continues

The Team will meet to select the GIS layers that will be the subject of this study. The Team will also start preliminary discussion of the technical design of the Geo Archives prototype and identify information that needs to be gathered for this phase.

In addition to gathering information for the requirements phase, the Team will continue their review of the literature.

April 2004

User Needs Assessment – requirements analysis phase begins

The Team will schedule a meeting with the "owners" (i.e., stakeholders) of the selected layers to brief them on the project and gather input. Team members will follow-up with stakeholders to verify and clarify needs and requirements. The Team will address standards and procedures as well as technical needs.

The Technical Team will contact other users that may benefit from the results of the project to gather their input. The potential users will have been identified by the stakeholders group, technical consultants and from the general knowledge of the Technical Team. They will include current users of State of Maine GIS

records, identified based on special requests to the Office of GIS and by posting a notice on the GIS Data Catalog Internet site (<http://apollo.ogis.state.me.us/catalog/catalog.asp>) requesting volunteers to participate in a needs assessment for this project.

Notices about the project will be sent to academic departments in Maine's colleges and universities, describing the project and its potential as a source for documenting Maine's history and requesting participation in the needs assessment.

The literature review continues.

May 2004

User Needs Assessment – requirements analysis phase continues

User needs and requirements will be compiled from written or e-mailed comments and, if it appears appropriate, from a half-day conference with potential users who may find such a setting more appropriate to ask questions and discuss their interests and needs. The Team will document the user needs/requirements as identified by the stakeholders, users and Technical Team. The needs/requirements address the need for standards and procedures as well as technical needs.

June 2004

User Needs Assessment – requirements analysis phase continues

The Technical Consultants will receive, and are invited to comment via e-mail on, the initial charge of the Geo Library Board to the Technical, the goals of the project, the results of the review of related research, and the user needs/requirements document. The Technical Team will incorporate comments from the Technical Consultants into the literature reviews results and requirements document and distribute to the Geo Library Board, stakeholders and users.

July 2004

Project System Design Phase begins

The Technical Team will begin to meet biweekly to discuss and guide the system design based on the requirements document.

August 2004

Project System Design Phase continues

The Team publishes a draft standards, procedures and a technical design document, and solicits input from the public, stakeholders and users.

September 2004

A day-long meeting is scheduled as follows:

A.M.: Consultants, as individuals or as a team depending on the circumstances, meet with Technical Team and Project Manager to review the project's status based on updates sent a week prior to the meeting, and to discuss specific problem areas and/or design issues.

P.M.: Consultants meet with Geo Library Board members and key Archives staff, for a discussion of progress toward project goals.

October 2004

Project System Design Phase continues

November 2004

Modify project standards, procedures and technical design based on input from Geo Library Board and consultants. The Team will publish a final requirements document.

December 2004

Implementation Begins

Database and programming work starts for the first GIS layer. Where is this discussed?

January 2005

Implementation continues

Database and programming work for the first GIS layer concludes and is tested.

The Team resolves technical issues.

February 2005

A day-long meeting is scheduled early in the as follows:

A.M.: Consultants meet with Technical Team and Project Manager to review the Maine GIS archival model and to comment on technical specifications sent a week prior to the meeting. They discuss specific problem areas and/or implementation issues that have been identified during the project.

P.M.: Consultants meet with Geo Library Board members and key Archives staff, for a discussion of progress toward project goals.

March 2005

Implementation continues

Database and programming work for the remaining GIS layer begins.

Implementation continues

April 2005

Database and programming work for the remaining GIS layers concludes and are tested.

The Team resolves technical issues

The Project is completed.

PRODUCTS

A functioning digital system for maintaining, and providing access to, archival GIS records, along with accompanying documentation, published standards, and articles for publication describing the project and its outcomes.

Specifically, the following elements will be included:

- Full system documentation for the Geo Archives
- Archival data and metadata standards for creating, identifying, and maintaining the records
- Proposed technical standards to amend the relevant rules of each of the following:
 - Maine State Archives Advisory Board's *Rules for the Disposition of Local Government Records*
 - Maine Library of Geographic Information's *Rules for Data Contributors*
 - Maine Information Services Policy Board's *Rules for Systems Development*
- Articles describing the projects process and products offered to
 - NAGARA's *Crossroads*
 - NHPRC's *Annotations*
 - SAA's *archival outlook*

AVAILABILITY OF FACILITIES

The office of the Maine State Archives will be available for administrative and financial functions, as well as for meetings of relevant boards and stakeholders.

The facilities of the Office of GIS, including meeting rooms, networks, servers, and workstations will be available for use by project participants.

KEY PERSONNEL

The Project Manager, Mary Cloutier, is knowledgeable in the areas of project management involving digital information systems and is sensitive to the needs of stakeholders. She will coordinate the Technical Team and will review current research literature and digital records projects funded by the NHPRC and others for their relevance to this project, insuring that the Technical Team considers them in developing the Geo Archives.

The Project Manager will be supervised by the State Archivist, James Henderson, who is the Project Director and who will serve on the Technical Team.

The Geo Library Board, acting as the project's advisory committee will meet quarterly to review the progress of the Technical Team, to insure the overall goals of the project and stakeholder needs are being met.

The Technical Team, along with the Project Director and the Project Manager, will be responsible for creating the Geo Archives prototype according to archival standards, using current knowledge of best practices. It will meet monthly or as needed to insure technical coordination. The archivists, Sylvia Sherman and Jeffrey Brown, will provide guidance on appraisal criteria and potential user patterns based on demand for current archival holdings.

Technical Consultants

Technical Consultants will bring research and practical experience to the process by meeting with key project staff early in the project and by assessing progress at mid-term and near its close. They will receive regular updates of project activity.

Positions and Resumes

Project Director: James S. Henderson, Maine State Archivist

Project Manager: Mary Cloutier, Management Analyst II??

Technical Team:

Sylvia Sherman, Director, Division of Archives Services, Maine State Archives

Jeffrey Brown, Archivist III, Maine State Archives

Dan Walters, Technical Team Leader and GIS Administrator

Senior Programmer Analyst

Database Administrator

Programmer

State and local government GIS coordinator What role will each of these people play in the project? Why are they not mentioned in the plan of work?

James S. Henderson, Maine State Archivist

1987- Maine State Archivist

Director, Maine State Archives, State Historical Records Coordinator; Chair, Historical Records Advisory Board.

State Coordinator, Maine National History Day, 2000-2003.

Developer, Maine Archival Management and Records Management Databases, following USMARC:amc standards, 1989, now merged in a new integrated system.

Internal publications: "Electronic and Voice Mail: A Management Guide for Maine State Government," 1997; "Maine State Archives Digital Records Management Plan," 1990, 1996, 1999; "An Action Agenda for Preservation Planning in Maine," 1993

Project Coordinator, for several grant funded projects:

NHPRC: Digital Records Management Planning, 1997-1998; Re-grants, 1995-1996; 1998-2003; Historical Records Assessment, 1990

NEH: U.S. Newspaper Project, Planning, 1993-1994; Preservation Planning, 1991-1992.

Related Professional Activity

Founding member (1990) and Vice President, Society of Maine Archivists (1995-1997); President, Maine Archives and Museums, 1999-2000; Brunswick, Maine Curtis Memorial Library, Board of Trustees, 1996-2002; President 2002; Northeast Historic Film, Board of Directors, 1995+; Vice-President 2001-2003.

Advanced Archives Institute: Management of Electronic Records, University of Pittsburgh, 1989, 1990, 1992.

NAGARA; Board of Directors, 1990-1992.

Chair, Steering Committee, Council of State Historical Records Coordinators (1991-1992) New England Archivists, Executive Board, 1990-1993; session chair 2003.

Delegate, XXVI International Conference of the Round Table on Archives, Madrid, Spain, 1989.

Consultant, several New England Historical Records Advisory Boards, Strategic Planning: Massachusetts, 1997-1998; Rhode Island, 1995-1996; Vermont, 1994-1995.

1979-1987 Deputy Secretary of State, State of Maine

Responsible for the Divisions of Commissions and Pardons, of Corporations, of Elections, of Public Disclosure (campaign finance).

1974-1979 Social Systems Research Corporation

Firm specialized in evaluation and analysis of state and federal government funded programs. Research Associate, 1974-1975; Partner and co-owner, 1975-1979.

1969-1974 Assistant Professor of Political Science, University of Maine

1968-1969 Assistant Professor of Government, Texas Tech University

EDUCATION

1968 Ph.D., 1967 M.A., Political Science, Emory University, Atlanta, Georgia

1965 B.A., International Relations, University of Maine, Orono

CONTACT

Telephone: 207-287-5793

Mail: Maine State Archives, 84 State House Station, Augusta ME 04333-0084

E-mail: james.henderson@maine.gov

Sylvia Sherman, Director, Archives Services Division

Professional Experience

1971-2003 Maine State Archives

Ms. Sherman came to the Maine State Archives in 1971 as an Archivist III, and since 1975 has served as Director of the Archives Services Division. In this capacity she supervises a staff of 3 professional archivists and 1 records technician who serve to make the State's archival resources available to the public; and who work continually to create indices and guides to facilitate such use. She and the staff are responsible for the physical preservation of these unique and irreplaceable materials. She also plans and develops exhibits, displays, web page texts and other materials that promote interest in, and use of, the agency's holdings.

1959-1971 Teacher of History and History Textbook Editor

1959-1961 Ms. Sherman taught European and American History at the Northfield – Mount Hermon School, Northfield MA.

1961-1962 Edited secondary school American History texts, and accompanying primary source compilation, Ginn & Company, Boston MA.

1962-1971 Ms. Sherman taught European and American History at the Winsor School, Boston MA, and from 1966, served as Chairman of the History Department.

Education

1959 B. A. in American History, Radcliffe College, Cambridge MA

1960 Harvard–Radcliffe Summer Institute of Historical and Archival Management, Cambridge MA

1972 Modern Archives Institute, National Archives, Washington, DC.

Contact Information

Telephone: (207) 287 –5795

E-mail: sylvia.sherman@state.me.us

Mail: Maine State Archives, 84 State House Station, Augusta ME 04333-0084

Jeffrey Brown Archivist III

Professional Experience

1980-2003 Maine State Archives

Mr. Brown has been on the staff of the Maine State Archives since 1980. As an Archivist I, he assisted patrons in the Archives Research Room, before being promoted to Archivist II and becoming the Supervisor of the Research Room. Currently an Archivist III, he is the processing archivist working with archival collections arranging and indexing the contents in Microsoft Access databases. Among some of these are indexes of early Legislative Records, Executive Council files 1820-1840, Misc. Town Records, and Washington County District Court cases. In addition, he handles non-routine reference questions. He is also the webmaster for the Maine State Archives, creating and updating web pages for the agency, and scanning selected images.

1975-1980 Maine State Library

At the Maine State Library, Mr. Brown worked in the Circulation Department assisting patrons in checking out materials and in making copies, as well as ordering materials on interlibrary loan for patrons. He then transferred to the Film Department, where he scheduled film programs for community and non-profit organizations and state agencies.

Education

1983..... B. S. IN BUSINESS ADMINISTRATION, UNIVERSITY OF MAINE AUGUSTA

1974 B. A. in History, University of Maine Orono

1981 Modern Archives Institute, National Archives, Washington, DC.

Contact Information

Telephone: 207-287-5778

E-MAIL:JEFFREY.BROWN@STATE.ME.US

Mail: Maine State Archives, 84 State House Station, Augusta, ME 04333-0084

BUDGET

Maine's GIS Records: Preservation and Access

Project Director

James S. Henderson

Applicant Organization

Maine State Archives

Budget Detail for the period from 1/2004 to 12/2004

Requested Grant Period

From January 1, 2004 to April 30, 2005

			NHPRC	SHARE	Total
	Percent	Rate/hour	[a]	[b]	[c]
1. Salaries and Wages					
James S. Henderson	10%	33.63		\$6,995	\$6,995
Sylvia Sherman (hours @ rate)	5%	23.62		\$2,456	\$2,456
Jeffrey Brown	5%	20.00		\$2,080	\$2,080
Susan J. Rogers (hours @ rate)	1%	13.00		\$270	\$270
Archives Advisory Board Members (7 members)	0.5%	25.00		\$1,820	\$1,820
Geo Library Board (project advisory committee)	0.5%	25.00		\$3,900	\$3,900
		SUBTOT:	\$0	\$17,522	\$17,522
2. Fringe Benefits	Salary	Rate			
James S. Henderson	\$6,995	56%		\$3,917	\$3,917
Sylvia Sherman	\$2,456	46%		\$1,130	\$1,130
Jeffrey Brown	\$2,080	61%		\$1,269	\$1,269
Susan J. Rogers	\$270	56%		\$151	\$151
Archives Advisory Board Members (7 members)	\$1,820	50%		\$910	\$910
Geo Library Board (project advisory committee)	\$3,900	50%		\$1,950	\$1,950
		SUBTOT:	\$0	\$9,327	\$9,327
3. Consultant Fees	Days	Daily Rate			
Archival consultant - four days	4	\$1,000.00		\$4,000	\$4,000
GIS consultant - four days	4	\$1,000.00		\$4,000	\$4,000
		SUBTOT:	\$8,000	\$0	\$8,000
4. Travel	Subsist.	Transportation			
Archival consultant 1 person, 2 days	\$ 154	\$1,200.00		\$1,354	\$1,354
GIS consultant 1 person, 2 days	\$ 154	\$1,200.00		\$1,354	\$1,354
		SUBTOT:	\$2,708	\$0	\$2,708
5. Supplies and Materials					
General office supplies			\$0	\$500	\$500
		SUBTOT:	\$0	\$500	\$500
6. Services					
Telephone (monthly @ \$33 + 200 @ \$1.00)				\$596	\$596
Printing/copying: pages@cost per page	2000	\$0.02		\$40	\$40
Technical Team - Contract with Office of GIS*	Percent	Rate/hour			
Mary Cloutier, Project Manager	35.0%	\$60.00	\$43,680		\$43,680
Senior Programmer Analyst	14.5%	\$74.00	\$22,318		\$22,318
Database Administrator	9.5%	\$74.00	\$14,622		\$14,622
Programmer	9.5%	\$54.00	\$10,670		\$10,670
GIS Administrator*	3.3%	\$84.00		\$5,766	\$5,766
State and local government GIS coordinator*	7.5%	\$74.00		\$11,544	\$11,544
* GIS rates includes overhead/indirect costs		SUBTOT:	\$91,291	\$17,946	\$109,237
7. Other Costs					
		SUBTOT:	\$0	\$0	\$0
8. Total Direct Costs			\$91,291	\$56,003	\$139,294
9. Indirect Costs @ 10%			\$0	\$5,000	\$5,000
10. Total Project Costs			\$91,291	\$61,003	\$152,294

SECTION - B			NHPRC	SHARE	Total
1. Salaries			\$0	\$17,522	\$17,522
2. Fringe			\$0	\$9,327	\$9,327
3. Consultants			\$0	\$8,000	\$8,000
4. Travel			\$2,708	\$0	\$2,708
5. Supplies			\$0	\$500	\$500
6. Services			\$91,291	\$17,946	\$109,237
7. Other Costs			\$0	\$0	\$0
8. Total Direct			\$91,291	\$56,003	\$139,294
9. Indirect			\$0	\$5,000	\$5,000
10. Total Project			\$91,291	\$61,003	\$152,294

Percent share of total project

60%

~~40%~~



Commisson prefers applicant to provide at least 50% cost share.

APPENDIXES

Maine State Archives Digital Records Management Plan: 1999-2003

[to be attached]

Selected References to Relevant Archival

GIS Records

Ilya Zaslavsky. "Archiving Spatial Data: Research Issues" .January 18, 2001. San Diego Supercomputer Center Technical Report.

The Inter PARES report of October 2001 provides detailed guidance in several appendixes, especially *Appraisal of Electronic Records: A Review of the Literature in English*, and *How to Preserve Electronic Records*.

Other Relevant Digital Records Research

Bantin, Phillip. "Recordkeeping Metadata Specifications – Evolution of the IU List of Specifications." Indiana University Electronic Records Project, Phase II, 2000-2002 at <http://www.indiana.edu/~libarch/ER/nhprcfinalmeta.doc>.

Technical Capacity and Commitment - Detailed

Brief History OF Maine's GIS Efforts

The State of Maine has the technical capacity and commitment to accomplish the goals of this project. (See details in Appendix.)

Since GIS first helped Maine respond to a federal proposal to site a nuclear waste facility in the state in the 1980's, Maine's State government GIS experience and usage has broadened. GIS has proven a valuable asset to the state's planning needs for both policy development and implementation.

Internet access to Maine's GIS database has been available since 1997 through the MEGIS Internet Data Catalog.⁶ Website statistics have reported an average of 6500+ hits per day, close to two million per year. Page and document views have served over 200,000 viewers annually.

Early Projects

Since GIS first helped Maine respond to a federal proposal to site a nuclear waste facility in the state in the 1980's, GIS usage has broadened. GIS has proven a valuable asset to the state's planning needs for both policy development and implementation. Working from early digital mapping capabilities promoted and supported by Maine's Low Level Radioactive Waste Authority and the Maine Department of Conservation, the Executive Council for Geographic Information (GIS EC) has guided the development of the statewide GIS since its establishment in 1996 by the Maine Information Services Policy Board (ISPB). Through the use of service level agreements (SLAs) with departments and agencies actively working in geographic information, the GIS EC, MEGIS, the Bureau of Information Services, and many organizations have cooperated to build the Maine GIS database. Datasets on many themes are included: Maine's political boundaries, natural features, infrastructure, emergency management, Census data, public lands, water resources, conservation, essential wildlife habitats, geology, biophysical regions, Atlantic Salmon habitat, high-resolution aerial photography, and data used for planning and management of Maine's coastal ecosystems.

Usage of Geospatial Data

Internet access to Maine's GIS database has been available since 1997 through the MEGIS Internet Data Catalog.⁷ Website statistics have reported an average of 6500+ hits per day, close to two million per year. Page and document views have served over 200,000 viewers annually. Over 4,000 of these were repeat visitors, and close to 1000 visitors on average use the site 10 or more times. MEGIS efforts to improve Internet access to GIS services include the addition of an Internet Mapping Service (IMS) in 1998 and an upgrade to ArcIMS services in FY03.

As GIS information is provided to web browsers worldwide, accessibility has raised public awareness of the power and potential uses of GIS, a technology once limited to technical specialists. MEGIS core services staff respond to over 700 GIS technical support requests from local, county, and federal governments, the general public and SLA customers annually.

This substantial demand shows no sign of abating and is likely to increase with the opportunity to integrate research with the additional data layers added annually.

Recent Activities Relevance to your proposal?

New, and updated Maine GIS data layers added to the GIS database recently include aquifers, Atlantic Salmon habitat, Maine counties, high-resolution aerial photography, public water supply wells, well buffers, intakes, intake buffers, bedrock source water protection areas, sand and gravel travel times, essential habitats for bald eagle, roseate tern, piping plover and least tern. The addition of a new distribution option in the MEGIS Internet Data Catalog has made possible the publication of data in Maine town and county map extents: flood insurance rate, Census geography data, landcover data from the U.S. Fish and Wildlife Gulf of Maine project, wetlands characterization, and E911 roads data. Through state/local cooperation, E911 roads data is now updated on a weekly basis with over 200 of Maine municipalities currently available online. New pages for the MEGIS website include publication of information on E911 Maintenance, the Maine Library of Geographic Information effort, and Maine GIS Standards and Guidelines.

MEGIS project staff are at work on E911 roads finalization; emergency management support; small mapping projects; application development; a local program to extend GIS access to regional and municipal GIS users and to Maine teachers; and a three-year cooperative project with U.S. Geological Survey (USGS) to advance Maine's hydrography data to meet standards for inclusion in the National Hydrography Dataset.

New Initiatives Relevance for your proposal?

This year MEGIS technology staff are participating in update and redesign efforts that will coordinate the MEGIS website with other BIS internet service efforts, and are working closely with the GIS EC, Geo Library Board, GIS users, and BIS to build an infrastructure that will improve access to GIS data from a variety of computer platforms and locations statewide. During FY03, in accordance with GIS EC strategic planning, MEGIS activities continued an Enterprise GIS initiative with the implementation of ArcSDE, Citrix client access, ArcIMS software, and related servers.

Data Standards Commitment

In addition a great deal of related work in the areas of metadata and feature level metadata standards has been accomplished. The work being proposed in this document will build on these standards to integrate results into the existing GIS fabric of standards and technology.

Metadata in Maine: Archiving GIS Layers for Use and Analysis

Maine GIS has adopted the Federal Geographic Data Committee (FGDC), Content Standard for Digital Geospatial Metadata (CSDGM) as a documentation or "metadata" standard.

What about:

Spatial Data Transfer Standard (SDTS), FGDC-STD-002
(a modified version was adopted as ANSI NCITS 320:1998)
Spatial Data Transfer Standard (SDTS), Part 5: Raster Profile and Extensions,
FGDC-STD-002.5
Spatial Data Transfer Standard (SDTS), Part 6: Point Profile, FGDC-STD-002.6
SDTS Part 7: Computer-Aided Design and Drafting (CADD) Profile, FGDC-STD-002.7-2000
for spatial data interoperability?

Maine GIS data documented with FGDC metadata is published through the Maine Office of GIS (MEGIS) internet Data Catalog and can be made available to the national clearinghouse nodes of the National Spatial Data Infrastructure (NSDI). Participating agencies are responsible for providing documentation in FGDC format for each digital map added to the Maine GIS database. The metadata must be stored and maintained by the agency responsible for developing and maintaining the data.

MEGIS has upgraded all its data documentation to Federal Geographic Data Committee (FGDC) compliant metadata and is working with state agencies to establish this documentation as a statewide standard. FGDC documentation is required for all geospatial data products produced with the assistance of federal funds. By implementing this documentation format, Maine is also participating in the federal effort to contribute to a National Spatial Data Infrastructure.

Metadata is "data about data". Like a style guide, the Federal Geographic Data Committee (FGDC), Content Standard for Digital Geospatial Metadata (CSDGM) defines what information belongs in a metadata record and the order in which it is presented. The goals and objectives of the Maine GIS FGDC compliant documentation can be summarized as follows:

- to provide a history of each Maine GIS geospatial data set with standardized information on content, location, purpose, accuracy, condition, quality, collection, development processes, scale, projection, feature attributes, and other characteristics of geospatial data necessary to determine the utility of a map for a specific purpose;
- to protect Maine's investment in geospatial data, by minimizing the risk of data loss and the re-creation of existing data, through systematized documentation of geospatial information;
- to promote data sharing by providing information about Maine GIS data holdings to external catalogues, clearinghouses, and brokerages and by providing information on the processing and interpretation of spatial data received through a transfer from an external source.

Maine Office of GIS (MEGIS), in cooperation with Maine's GIS Executive Council and the GIS Technical Group, has purchased Spatial Metadata Management System (SMMS) Implications for this proposal? software for metadata creation and management with an enterprise solution in mind. This approach has provided an opportunity for Maine GIS to purchase a license to use SMMS software for Maine Office of GIS metadata holdings, and for participating agencies to purchase licenses at a reduced price. The long-term plan is to establish a multi-agency multi-user system for metadata creation with access through a central server and a single database of records. The following services are in place: licensing arrangements, cost savings on the purchase of a license for the use of SMMS in local metadata creation and management at the agency level, and FGDC metadata file sharing in FGDC encoded ASCII text format. The larger project, to determine user needs and provide systems analysis for transitioning the current single user SMMS/Oracle application to a multi-agency multi-user system is planned but has not been established at this time.

While all metadata has the potential to enhance and protect an organization's internal investment in data, the usability and limitations of various tools for metadata creation affect the way the metadata, once created, can be used or leveraged. To a large degree, the structure built-into the selected metadata tool controls subsequent

uses of the metadata. In considering the selection of a metadata tool it is important to evaluate other organizational needs such as metadata update, management, publication, coordination and data sharing.

The SMMS tool *outputs FGDC compliant metadata* in txt, html, sgml formats, works independently of the GIS platform, is database supported, and provides database capabilities to search evaluate, locate and load, catalog, and synchronize data holdings. Currently MEGIS is running the SMMS package off an Oracle database administered cooperatively by the MEGIS Data Center and the State of Maine, Bureau of Information Services (BIS). MEGIS has converted its metadata, which was previously developed and managed using a custom application in MSAccess, to FGDC compliant metadata and Oracle using SMMS. This metadata is delivered through the Maine GIS Internet Data Catalog and uses the search, download and clearinghouse capabilities of the SMMS/Oracle and MetaWeb applications. Advertising for SMMS? Implications for this proposal?

The Maine Office of GIS (MEGIS) provides technical support to state agencies and the public for content development of FGDC metadata and information on FGDC compliant software for metadata development is available through the Maine Office of GIS, Data Center, Technical Support phone line.

Feature Level Metadata in Maine: Archiving GIS Layers for Use and Analysis

The use of Feature Level Metadata items and codes in feature attribute tables is recommended, to provide accessible readable standardized notation that describes the quality and currentness of each geospatial feature's location. FM items are used to record the following information about the location of a feature: the source used to identify the feature's location, the source originator, the process used to incorporate the feature, also the organization of edit and date of edit if applicable.

It is recommended that the items be populated with standardized and defined FM codes. FM codes for use in these items, like the items themselves, are designed to be unique references, as short, clear and self-explanatory as possible. All have been listed, standardized, and defined so that each represents a single information type and entity. Codes are in text, all lower case and include no hyphens, punctuation or spaces. Codes for use in source originator and organization of edit are organizational acronyms that have been confirmed. Wherever possible federal agencies carry the "us" prefix and state agencies carry the postal prefix "me" for the state of origin, i.e. medot, medhs, megis. The FM subcommittee has defined this set of items and related codes with reference to elements in FGDC metadata. The FM recommendation is flexible and will function in most GIS environments independent of FGDC metadata or specific metadata tools; however, because coordination of feature attribute tables with FGDC metadata maximizes available information and minimizes attribute load, parallel or subsequent development of FGDC metadata, and use of cross references to same, is assumed and recommended. This reads like instructions for how to create FM. What is the relevance for your proposal?

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Maine GIS Executive Board Membership

Robert Marvinney, Chair	State Geologist
Ray Halperin	State Department of Transportation
	State Department of Human Services
Others . . .	

Maine Library of Geographic Information Board Members

(also the project's advisory committee)

John Holden, Chair	Statewide Association of Regional Councils
Ed Suslovic, Co-Chair	Real Estate & Development Interest
Barbara Charry	Environmental Interests
James Page	GIS Vendors
Dennis Boston	Utility Interests
Marilyn Lutz	University of Maine
Harry Lanphear	State Government
John Giles	Municipal Government
Paul Mateosian	Municipal Government
Ray Halperin	State GIS Functions
Robert Faunce	Statewide Association of Counties
Will Mitchell	GIS Vendors
Jim Damicius	Maine Science & Technology Foundation
Robert Doiron	Commissioner of Administrative & Financial Services
Tom Asbeck	The Public

Supporters, Developers, Contributors, and Users of Maine's GIS Database

Department of Administrative and Financial Services
Department of Agriculture
Department of Conservation
Department of Corrections
Department of Defense, Veterans, and Emergency Management
Department of Economic and Community Development
Department of Education
Department of Environmental Protection
Department of Human Services
Department of Inland Fisheries and Wildlife
Department of Labor
Department of Marine Resources
Department of Behavioral and Developmental Services
Department of Professional and Financial Services
Department of Public Safety
Department of Transportation
Maine Atlantic Salmon Commission
Maine Drinking Water Program
Maine Forest Service
Maine Library of Geographic Information Board
Maine Geological Survey
Maine Historic Preservation Commission
Maine Land Use Regulation Commission
Maine Legislative Council
Maine Natural Areas Program
Maine Office of Attorney General
Maine Public Utilities Commission
Maine Science and Technology Foundation
Maine State Housing Authority
Maine State Museum
Maine State Library
Maine State Planning Office
Penobscot Indian Nation
University of Maine System
*Federal Emergency Management Agency
*Natural Resources Conservation Service
*U.S. Fish and Wildlife Service, Gulf of Maine Project
*U.S. Fish and Wildlife Service, Atlantic Salmon Habitat Survey
*U. S. Geological Survey
*Bangor Hydro-Electric Company
*Central Maine Power Company

* Private and Federal records held by the Geo Library are not included this project, though they may appear in the holdings of the Geo Library.

Law Creating the Maine Library Of Geographic Information

Title 5: ADMINISTRATIVE PROCEDURES AND SERVICES, Part 4: FINANCE
Chapter 158: ADMINISTRATIVE SERVICES (HEADING: PL 1985, c. 785, Pt. A, @78 (new))

Subchapter 2-B: MAINE LIBRARY OF GEOGRAPHIC INFORMATION (HEADING: PL 2001, c. 649, @1 (new))

§1890-I. Short title

This subchapter may be known and cited as the "Maine Library of Geographic Information Act." [2001, c. 649, §1 (new).]

PL 2001, Ch. 649, §1 (NEW).

§1890-J. Definitions

As used in this subchapter, unless the context otherwise indicates, the following terms have the following meanings. [2001, c. 649, §1 (new).]

1. Association. "Association" means an organization: [2001, c. 649, §1 (new).]

A. Whose membership is identifiable by regular payment of organizational dues and regularly maintained membership lists; [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

B. That is registered with the State or is a corporation in the State; and [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

C. That exists for the purpose of advancing the common occupation or profession of its membership. [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

2. Data custodian. "Data custodian" means a federal data custodian, state data custodian or nonstate data custodian. [2001, c. 649, §1 (new).]

3. Federal data custodian. "Federal data custodian" means any branch, agency or instrumentality of the Federal Government. [2001, c. 649, §1 (new).]

4. Geographic information board. "Geographic information board" means the Maine Library of Geographic Information Board. [2001, c. 649, §1 (new).]

5. Geographic information system. "Geographic information system" or "GIS" means a computer system capable of assembling, storing, manipulating, analyzing and displaying information identified according to locations. A GIS includes operating personnel, hardware, software and the data that go into the system. [2001, c. 649, §1 (new).]

6. Maine Library of Geographic Information. "Maine Library of Geographic Information" or "library" means the statewide network officially sanctioned by the Legislature through this Act by which data custodians or their designees organize, catalog and provide access to public geographic information to all levels of government and to the public. [2001, c. 649, §1 (new).]

7. Nonstate data custodian. "Nonstate data custodian" means any agency or instrumentality of a political subdivision of the State. [2001, c. 649, §1 (new).]

8. Public geographic information. "Public geographic information" means public

information that is referenced to a physical location. Public geographic information includes, but is not limited to, physical, legal, economic or environmental information or characteristics concerning land, water, groundwater, subsurface resources or air in this State relating to: [2001, c. 649, §1 (new).]

8. Public geographic information.

A. Topography, soil, soil erosion, geology, minerals, vegetation, land cover, wildlife and associated natural resources; [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

B. Land ownership, land use, land use controls and restrictions, jurisdictional boundaries, tax assessment, land value and land survey records and references; and [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

C. Geodetic control networks, aerial photographs, maps, planimetric data, remote sensing data, historic and prehistoric sites and economic projections. [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

9. Public information. "Public information" means information that is stored, gathered, generated, maintained or financed by a data custodian. Information of state and nonstate data custodians is public information only if it is either: [2001, c. 649, §1 (new).]

A. A public record under Title 1, section 402, subsection 3; or [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

B. Otherwise expressly authorized by law to be released. [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

The presence of data in the library does not, by itself, make that information a public record. [2001, c. 649, §1 (new).] ⁸

10. State data custodian. "State data custodian" means any branch, agency or instrumentality of State Government. [2001, c. 649, §1 (new).]

11. State funds. "State funds" means bond revenues and money appropriated or allocated by the Legislature. [2001, c. 649, §1 (new).] PL 2001, Ch. 649, §1 (NEW).

§1890-K. Maine Library of Geographic Information Board

1. Purposes and duties. The Maine Library of Geographic Information Board, as established by section 12004-G, subsection 30-B, has the following purposes and duties: [2001, c. 649, §1 (new).]

A. To oversee the Maine Library of Geographic Information to ensure that it operates as a coordinated, cost-effective electronic gateway providing public access to data custodians' public geographic information. Nothing in this paragraph may be construed to affect the rights of persons to inspect or copy public records under Title 1, chapter 13, subchapter I, or the duty of data custodians to provide for public inspection and copying of those records; [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

B. To establish and maintain standards, rules and policies for nonstate data custodians' geographic information that is incorporated into the Maine Library of Geographic Information. These standards, rules and policies must be consistent with the standards, rules and policies set by the Information Services Policy Board established in section 1891 that govern state data custodians' information technology. The geographic

information board shall adopt rules to carry out this subchapter. Rules adopted pursuant to this paragraph are routine technical rules as defined in chapter 375, subchapter II-A. Standards and policies may concern, without limitation: [2001, c. 649, §1 (new).]

- (1) Methods of access and delivery of information held by the library;
- (2) Geographic information system technical specifications;
- (3) Data content, metadata and security, including guideline criteria for accepting 3rd-party data from data custodians or data volunteered by the private sector;
- (4) Privacy and privacy protection;
- (5) Mechanisms to correct inaccuracies; and
- (6) Data validation tools and processes;

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

C. To reduce redundancies in the creation, verification and maintenance of public geographic information and to enhance its utility for complex analyses. [2001, c. 649, §1 (new).]

(1) Each state data custodian, or its designee, that acquires, purchases, verifies, maintains or produces geographic information with state funds or grants shall:

(a) Inform the geographic information board and the Office of Geographic Information Systems of the existence of this information and its geographic extent; and

(b) Upon request, provide to the library and office an electronic copy of all information classified as public, in a form compatible with Information Services Policy Board standards.

(2) Each nonstate data custodian, or its designee, that acquires, purchases, verifies, maintains or produces geographic information with state funds specifically provided for that purpose shall:

(a) Inform the geographic information board and the Office of Geographic Information Systems of the existence of this information and its geographic extent; and

(b) Upon request, provide to the library and office an electronic copy of all information classified as public, in a form compatible with Information Services Policy Board standards;

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

D. To set priorities and authorize the expenditure of state funds, including awarding of grants or subgrants to data custodians when available. The geographic information board may seek federal and other funding partners, accept gifts and grants and expend the funds acquired for purposes consistent with this Act; [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

E. To promote innovative uses of geographic information through the provision of verified, coordinated, intergovernmental information via the Maine Library of Geographic Information. The geographic information board shall seek advice from the general public, professional associations, academic groups and institutions and individuals with knowledge of and interest in geographic information regarding needed information and

potential innovative uses of geographic information; [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

F. To enter partnerships to promote the purposes of this Act; [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

G. To hear and resolve disputes that may arise between data custodians or with respect to information to be placed in the Maine Library of Geographic Information, enforcement of geographic information board standards, rules or policies or other related matters, all in accordance with the Maine Administrative Procedure Act. Complainants may directly present their case to the geographic information board, which has the power to hold investigations, inquiries and hearings concerning matters brought to its attention and to make decisions with respect to the case. All interested parties must be given reasonable notice of the hearing and an opportunity to be heard. Hearings must be open to the public; [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

H. To conduct studies relating to the coordination, development and use of statewide geographic information; [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

I. To report annually beginning January 1, 2004 to the joint standing committees of the Legislature having jurisdiction over natural resources matters, and state and local government matters. The report must provide a review of the past year's activities, including, but not limited to, a description of standards adopted, data added to the library, partnerships established, disputes addressed, studies conducted and financial activity. The library shall also make this report available to the public. This report may also include suggested legislative language intended to address geographic information issues needing legislative action; and [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

J. To develop appropriate internal services to facilitate generalized access for and use of data by governmental agencies and the public. The library may not compete directly with private enterprise. The library shall work in partnership with nonstate data custodians to promote the purposes of this Act. [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

2. Membership. The geographic information board consists of 15 voting members as follows: [2001, c. 649, §1 (new).]

A. The Commissioner of Administrative and Financial Services or the commissioner's designee; [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

B. The Chief Information Officer or the Chief Information Officer's designee; [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

C. The President of the Maine Science and Technology Foundation or the President's designee; [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

D. One member, or the member's designee, who is responsible for overseeing GIS functions of a state department that is a data custodian of geographic information, appointed by the Governor; [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

E. Eight representatives as follows: [2001, c. 649, §1 (new).]

(1) A representative of the University of Maine System, appointed by the Chancellor of the University of Maine System;

(2) Two representatives of a statewide association of municipalities, one representative appointed by the President of the Senate from nominations made by the association's governing body and one representative appointed by the Speaker of the House from nominations made by the association's governing body;

(3) One representative of a statewide association of regional councils, appointed by the Speaker of the House from nominations made by the State Planning Office within the Executive Department;

(4) One representative of a statewide association of counties, appointed by the Governor from nominations made by the association's governing body;

(5) One representative of a statewide association representing real estate and development interests, appointed by the President of the Senate;

(6) One representative of a statewide association representing environmental interests, appointed by the Speaker of the House; and

(7) One member representing public utilities, appointed by the Governor;

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

F. Two members of the private sector representing geographic information vendors, one member appointed by the President of the Senate and one member appointed by the Speaker of the House; and [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

G. One public member, appointed by the President of the Senate. [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

The terms for the members appointed pursuant to paragraph E are for a period of 3 years, except that initially the terms for members appointed pursuant to paragraph E, subparagraphs (1), (2) and (3) are for 2 years; the terms for members appointed pursuant to paragraph E, subparagraphs (4) and (5) are for 3 years; and the terms for members appointed pursuant to paragraph E, subparagraphs (6) and (7) are for 4 years. The term for members appointed pursuant to paragraphs F and G is for 3 years. A member who designates another person to serve on the geographic information board as that member's designee shall provide written notice to the geographic information board's staff of the name and title of the designee. Appointing authorities shall make their initial appointments and provide written notice of the appointments to the geographic information board's staff no later than September 1, 2002. [2001, c. 649, §1 (new).]

3. Board chair. The geographic information board shall annually elect a chair from its membership at the first meeting in each year. [2001, c. 649, §1 (new).]

4. Staff. Staff support to the geographic information board is provided by the Department of Administrative and Financial Services. [2001, c. 649, §1 (new).]

5. Quorum; action. Eight members of the geographic information board constitute a quorum. The affirmative vote of 7 members is necessary for any action taken by the geographic information board. A vacancy in the membership of the geographic information board does not impair the right of a quorum to exercise all the powers and

perform the duties of the geographic information board. The geographic information board may use video conferencing and other technologies to conduct its business but is not exempt from Title 1, chapter 13, subchapter I. [2001, c. 649, §1 (new).]

6. Meetings. The geographic information board shall meet at the call of the chair but not less than quarterly. Notice must be provided no less than 5 working days prior to the meeting. Notice may be in writing by facsimile or electronic transmission. [2001, c. 649, §1 (new).]

7. Memorandum of understanding. Information to be provided by a nonstate data custodian or its designee to the Maine Library of Geographic Information is governed by a memorandum of understanding between the geographic information board or its designee and the nonstate data custodian or its designee. [2001, c. 649, §1 (new).]

8. Data custodian responsibilities. Federal and nonstate data custodians may voluntarily contribute data to the Maine Library of Geographic Information, except that data developed with state funds must be submitted to the library. Data custodians or their designees are responsible for: [2001, c. 649, §1 (new).]

A. Ensuring that the public information is accurate, complete and current through the creation of adequate procedures; [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

B. Updating source databases following verification of suggested corrections that users submit in accordance with geographic information board standards; [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

C. Complying with standards adopted by the geographic information board; and [2001, c. 649, §1 (new).]

[2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).]

D. Providing reasonable safeguards to protect confidentiality. [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] [2001, c. 649, §1 (new).] PL 2001, Ch. 649, §1 (NEW).

§1890-L. Liability

The geographic information board and any of the parties submitting data to the Maine Library of Geographic Information for public use may not be held liable for any use of those data. [2001, c. 649, §1 (new).] PL 2001, Ch. 649, §1 (NEW).

§1890-M. Copyrights and fees

Copyright or licensing restrictions may not be fixed by the geographic information board or data custodians to the information made available through the Maine Library of Geographic Information. The geographic information board may set fees for electronic copies of library data that are no more than 3 times the actual cost of reproduction. Fee schedules must be set annually and made readily available to requestors. [2001, c. 649, §1 (new).] PL 2001, Ch. 649, §1 (NEW).

Guidelines for Archival Metadata Development

This extract from the Maine State Archives Digital Records Management Plan, based on early work by David Bearman in conjunction with the University of Pittsburgh, will be one of several resources the project will use in developing the appropriate metadata. The material below refers to recordkeeping systems, but contains useful references for GIS records as well.

I. Compliant Recordkeeping *systems* comply with the legal and administrative requirements for record-keeping within the jurisdictions in which they operate, including specific requirements not referenced below.

II. Accountable

Responsible: The organization must have policies, assigned responsibilities, and formal methodologies for management of its record-keeping *systems*.

Implemented: Records must have been created and maintained in the normal course of business and documented procedures that were followed should conform to common practices in the industry.

Credible: The *system* must control quality characteristics of information being input and process information in a fashion that is consistent and accurate.

III. Functional Recordkeeping *systems* must capture, maintain and access evidence over time. If they do, records will be:

Complete: Records accurately capture all information recorded or generated by their creators. Records incorporate or link to a representation of the software functionality that created them, other versions or views, a data model of relations between elements of information within a record, eye-readable conventions such as placement or font, and other structural information that adds to their meaning. Records incorporate or link to information about the context of their creation.

Identifiable: A distinctive and bounded record exists for every business transaction.

Authentic: The *system* must validate records creators and/or authorizers.

Communicated: The *systems* must capture a record of all communication in the conduct of business between two people, between a person and a store of information available to others, or between a source of information and a person.

Sound: Record *integrity* is protected from accidental or purposive damage or destruction and from any modification after they have been received by anyone other than the creator.

Auditable: Record documentation traces the processes in which records participated, including indexing, classification, filing, viewing, copying, distribution, disposition, use and destruction throughout the record life. Management controls preserve auditability of interactions external to the *system* (such as during *media migration* or transfer).

Understandable: Records documentation should permit stored business records to be logically reconstructed. Information content, plus any structure and context

must be preserved in meaningful and documented relations. For records with functionality, *business application* procedures must be documented so that they can be correctly associated with the status of the *system* at the time of record creation and later.

Removable: It must be possible with appropriate authority to remove records from the *system* leaving only audit trails to document their prior existence.

Exportable: Record content, structural representation and representation of context must be exportable, in standard protocols if such protocols exist.

Available: The *system* must document all logical *archival records* it contains, indicate the terms under which they are available for research, and retrieve them for authorized users.

Renderable: The *system* must render records by display or otherwise as they appeared to creators with views in effect at time any record was used or retain structural data necessary to determine such views.

Redactable: The *system* must support delivery of redacted, summarized, or censored copies and keep records of the version released.

The *metadata* specifications define the *information system* required to implement the *record keeping system*.

Pittsburgh Metadata Specifications:

Handle Layer: Flags the following data as a record and assigns distinguishing identifiers indicating the record's domain, from which the *provenance* derives. In addition, descriptors are identified in this layer to enable retrieval.

Terms and Conditions Layer: Invokes security measures controlling the potential use of a record. Recognizes and acknowledges the level of permission given a user, identifies if payment is necessary in order to use the record and then arranges for the transfer of payment, redacts records based on the level of privacy, confidentiality, or secrecy outlined in tables set by the *system*. These tables are subsequently referred to as "resolvers."

Structural Layer: Enables the record's ability to be utilized over time, as opposed to becoming unusable due to hardware/software obsolescence. Allows for the ability to indicate when *migration* of the data is necessary.

Contextual Layer: Identifies the *provenance* (i.e. the person, *system*, or instrument that is responsible for generating the record) of the record/data to maintain its use as evidence of a transaction and verify the record's accountability.

Content Layer: Describes the actual data engaged in the transaction of which the record is evidence. The form of the data cannot be defined because it may take any form.

Use History Layer: Establishes when and how the record was used previously - for example: what redacted versions have been released and when, if the record was destroyed, under whose or what authority it was destroyed and when, how was the record indexed (identifies anything that was done to the record since its creation). This layer is reserved for the end because it is the only layer that will be continuously added to without having to open the record.

Selected GIS Records Created by State Agencies

The Maine Historic Preservation Commission tracks properties and locations of archaeological and architectural significance and reviews approximately 2000 site projects per year, using desktop GIS to assist in this process. It's future needs include the following:

- Sharing inventories and information regarding historic and archeological sites with communities, regional planning agencies and other planning and preservation organizations will help to ensure inclusion of this information in the comprehensive planning process. Such information shared regularly and according to standard digital formats will result in qualitative improvement of these plans.
- GIS can assist MHPC in the ongoing development of its statewide historic preservation plan, as a useful tool for assisting in cataloging, indexing and prioritizing these resources.
- More fully automated and accurately sited archaeological records could be used to analyze and predict locations of potential finds.⁹

The University of Southern Maine tracks archaeological sites and their state or preservation.

- LETTERS OF SUPPORT

SECRETARY OF STATE, DAN A. GWADOSKY

Chief Information Officer, Richard Thompson

Commissioner of Finance and Administration, Rebecca Wyke

Commissioner, Department of Conservation

Director, Maine Historic Preservation Commission, Earle Shettleworth

????, University of Maine, Farmington (Bathymetric mapping)

????, University of Southern Maine (Archaeology)

????, University of Maine - Orono

End Notes

¹ STATE of MAINE, *GIS Needs Assessment & Requirements Analysis and Strategic Plan to Develop The Maine Public Library of Geographic Information*. Report contracted to Applied Geographics, Inc. for the Resolve 23 Steering Committee, p. 5. (See related documents at <http://apollo.ogis.state.me.us/sc/final/default.htm>).

² GIS Needs Assessment, p. 6.

³ *Maine Resolve 23 Needs Assessment Write-ups*, Educators Interviews, p. 5. Produced by Applied Geographics, Inc. for the Resolve 23 Steering Committee.

⁴ See <http://musashi.ogis.state.me.us/catalog/catalog.asp>

⁵ See <http://musashi.ogis.state.me.us/catalog/catalog.asp>

⁶ See <http://musashi.ogis.state.me.us/catalog/catalog.asp>

⁷ See <http://musashi.ogis.state.me.us/catalog/catalog.asp>

⁸ While the Geo Library will post all its records for use, both public (i.e. non-confidential government records) and private (donated records from businesses), the Geo Archives project will deal only with government records.

⁹ *Maine Resolve 23 Needs Assessment Write-ups*, Maine historic Preservation Interviews, p. 3.

