

MAINE STATE LEGISLATURE

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Maine Library of Geographic Information 2006 Annual Report to the Legislature and Joint Standing Committees on Natural Resources and State and Local Government

Below: An Orthophoto of the Maine State Capitol



The initiatives outlined in the Brookings Institution Report “*Charting Maine’s Future*” depend on the public and private stakeholders’ ability to make informed analyses and judgments about regional and statewide land use, residential, commercial and industrial growth patterns, conservation planning and infrastructure development. Indeed, the Brookings Report itself depends significantly on spatial data to make its arguments as evidenced by its many maps as well as the analyses based on those maps and other spatial data.

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This report has been prepared in accordance with the Maine Library or Geographic Information Act, Sec. 5 M.R.S.A. Section 2003(I)(L).

Acronyms & Selected Definitions

Board	Board of directors for the Maine Library of Geographic Information
GeoLibrary or MGLI	Common name for Maine Library of Geographic Information (MLGI)
GIS	Geographic Information System
MeGIS	Maine Office of GIS
NGO	Non-Government Organization
Orthophotograph	Unlike a standard aerial photograph, relief displacement in orthophotos has been removed, so that features are displayed in their true ground position. This allows for the direct measurement of distance, areas, angles, and positions. Also, an orthophoto displays features that may be omitted on a standard map
Resolve 23	Legislative committee that drafted the plan that resulted in the MLGI

1. THE GEOLIBRARY

The Maine Library of Geographic Information (“the GeoLibrary”) is a virtual library created by the Maine Legislature and governed by a partnership of public and private stakeholders to provide cost efficient, web-based public access to public geospatial data.

The mission of the GeoLibrary is to create an electronic gateway to public geographic information, and to expand and promote the value of geographic spatial data through widespread distribution and innovative use for the benefit of Maine’s citizens.

The GeoLibrary’s vision is to provide state-of-the-art, comprehensive, and ever expanding access to public geospatial information and services, and to facilitate the availability of collections and access for all citizens. This vision encompasses:

- the design and implementation of appropriate spatial data standards;
- the development and subsequent maintenance of an Internet-based GeoLibrary Portal. This portal will ensure coordinated access to spatial data, and standards compliance with Open GIS Consortium guidelines. In addition, the portal will aid in developing geospatial data constructs;
- the stewardship of priority statewide spatial datasets and the associated technology essential for sharing geographic data;
- facilitating the modernization and GIS development of local government land records;
- support for smart growth and growth management with datasets and techniques that enable state/county/municipal governments to effectively plan land use, location decisions, and site designs in a way that will minimize negative impacts on the social, economic and environmental health of Maine;
- multi-organizational data-sharing that results in significant savings in the cost of creating and maintaining geospatial data;
- budgeting and revenue development that prioritizes the strategic importance of geospatial information;
- promoting innovative uses of public geospatial information that fosters economic development;
- implementing education and outreach programs that advocates for the further development of Maine as a national center for GIS research, education, and industrial growth.

The Board has identified four areas of strategic focus (SF) to realize its mission and vision:

- SF1. the development and implementation of statewide data standards to ensure data quality and to enable common use;
- SF2. the development of a web-based distribution system to facilitate access to statewide data holdings;
- SF3. the provision of funding and management for high priority data and database development to support community and regional planning, smartgrowth, and community preservation;
- SF4. the provision of coordination, outreach, and education in support of better public use of geospatial data and to enhance Maine’s position as a national center for GIS research, education and industrial growth.

2. 2006 GOALS AND ACCOMPLISHMENTS¹

In 2006 the GeoLibrary undertook the following projects or initiatives in support of its strategic focus:

SF 1. To support the development and implementation of statewide data standards to ensure data quality and to enable common use, the GeoLibrary Board:

- Developed and maintains data standards for non-state parcel data submitted to the GeoLibrary or developed with GeoLibrary managed funds.
- Entered into discussions with the State GIS Executive Council to ensure cooperation and encourage efficiencies in meeting the organizations' missions.

SF2. To support the development of a web-based distribution system to facilitate access to statewide data holdings:

- The GeoLibrary is constructing an enhanced web-based portal as its "front door" for public access to statewide data and to facilitate the development of a virtual GIS network linking statewide geospatial data holdings. This project is nearing completion and will be on line in second quarter '07.

SF3. To support the provision of funding and management for high priority data and database development to encourage community and regional planning, smart growth, and community preservation, the GeoLibrary Board:

- Implemented a \$3.2M project in conjunction with the Federal government to produce digital orthophotography for the state's organized townships. Areas now available and those that will be available in 2007 are presented in Attachment B. See Attachments C and D for samples of orthophotography at varying scales.
- Many of the organizations that have accessed the orthoimagery supplied by the Maine GeoLibrary have filled out an on-line questionnaire. The respondents have been 46% businesses and corporations, 12% state government, 12% educational institutions, 11% municipal government, 7% non-profits, 5% federal agencies and 7% all other. **About 48% of the respondents report measurable cost savings.** The following quotation is from a Maine municipal mapping company: *"We estimate that for a town of approximately 2000 parcels, the savings in a tax mapping project is \$20,000 or more by using the orthoimagery."* Brown University, Rhode Island reported that using the orthoimagery for mapping wetlands saved *"over 3 weeks of intensive manual labor by 2 individuals, say 240 hours or \$12,000"*.
- Developed a grant program and budgeted bond funds to digitize property tax maps with awards varying from \$1,000 to \$10,000. The first round of awards to 44 towns is complete. The second round of awards to 29 towns is underway. See Attachment A for the parcel grants award lists. In 2006, the Geolibrary staff received a significant number of inquiries from municipalities about future funding for grants for digital parcel data. A number of Maine municipalities were contemplating setting up their own GIS systems. They reported that receiving a grant to help automate their parcel data would have been just the spur needed to proceed with their own investment.
- Partially funded an updated Maine's Land Cover Map in coordination with the National Oceanographic and Atmospheric Administration, United States Geological Survey, Environmental Protection Agency, State Department of Environmental Protection, State Planning Office, Departments of Transportation, Health and Human Services and Inland Fisheries and Wildlife.

¹ The GeoLibrary's fiscal year ends June 31. All year references, however, are to the calendar year.

SF4. To support the provision of coordination, outreach, and education in support of better public use of geospatial data and to enhance Maine's position as a national center for GIS research, education and industrial growth, the GeoLibrary:

- Partially funded a GIS Needs Assessment for Maine County Government
- Staffed a booth at the 2006 Maine Municipal Association convention at the Augusta Civic Center. This year's themes were encouraging municipal use of free GIS data and viewers (especially the Geolibary aerial photography viewer) and the general promotion of the municipal GIS. Over 150 brochures promoting the Geolibary were distributed and it is estimated that 40 - 50 people visited the booth.

3. 2007 PRIORITIES AND INITIATIVES

The initiatives outlined in the Brookings Institution Report *Charting Maine's Future, An Action Plan for Promoting Sustainable Prosperity and Quality Places* (2006) depend on the public and private stakeholders' ability to make informed analyses and judgments about regional and statewide land use, residential, commercial and industrial growth patterns, conservation planning and infrastructure development. Indeed, the Brookings Report itself depends significantly on spatial data to make its arguments as evidenced by its many maps as well as the analyses based on those maps and other spatial data.

It is therefore key to the debate that stakeholders have facilitated access to common spatial data and information. There is, however, no statewide or even regional spatial data source upon which planners and the public can depend, let alone one that is easily accessed. The best available data is that

- being developed by the GeoLibrary Board and housed by MeGIS, or
- which will become available through the GeoLibrary's portal (currently under development) in 2007.

The projects outlined in the GeoLibrary's request for bond funding each move all the stakeholders, public and private, closer to the goal of ready, accurate data and information that is essential to planning for Maine's future.

Pending funding, the GeoLibrary Board plans to undertake the following projects and initiatives in support of its strategic focus.

Details Follow		Bond Funds		Match		
Priority	Project	FY07	FY08	FY07	FY08	NOTES
1	Complete orthophoto project					
	Tier B	\$270,000		\$270,000		Federal Match
	Tier C		\$330,000		\$330,000	Federal Match
	begin update cycle		\$250,000		\$250,000	Likely Federal Match
2	Parcel Grants	\$750,000	\$750,000	\$750,000	\$750,000	Municipal Match
3	Standards, Conformity, and Upgrades Validation	\$100,000	\$200,000			
4	Build Statewide GIS Network	\$150,000	\$150,000			
5	Update Statewide Land Cover		\$100,000			
6	Conservation Lands Maps	\$200,000	\$200,000			
7	DFIRM Production	\$300,000	\$430,000	\$300,000	\$430,000	Federal Match
8	Zoning Maps Grants	\$ 50,000	\$ 50,000			
9	Development Tracking	\$250,000				
	SUBTOTAL	\$2,070,000	\$2,460,000	\$1,320,000	\$1,760,000	
	TOTAL		\$4,530,000		\$3,080,000	

Priority 1: Complete the Organized Townships Orthophoto Project and begin the first update cycle

Digital orthophotos are aerial photographs that have been processed to function as "photomaps", having the scale and the measurement characteristics of a map with the qualities and characteristics of a photograph. Because of their "bird's eye view", orthophotos make it easy to recognize and understand the relationship of objects on the ground. They are widely used as a standard base map on which other layers of information can be viewed and analyzed, and are also a source for digitizing ground features to create GIS data layers for specific functions including road centerlines, building footprints, farm fields, forest types, eelgrass beds and utility & road corridors. Change analysis can then be conducted using orthophotos from different years.

To support the management of high priority data for community and regional planning, smart growth, and community preservation, the GeoLibrary implemented a \$3.2M project in conjunction with the Federal government to produce digital orthophotography for the state's organized townships. The GeoLibrary's effort realized significant savings as the cost of producing orthophotos for individual municipalities is dramatically greater than the cost of a single, statewide project. New bond funding will allow the completion of this project for the entire state as well as the beginning of the first update cycle in FY08. See attachment B for those areas covered to date.

This initiative has been extremely well received. Following is a representative evaluation:

"Members of the Maine's Cooperative Forestry Research Unit, a consortium of Maine's forestland owners representing over 7.5 million acres, are benefiting directly from the GeoLibrary orthophoto program. The digital elevation model (DEM) data that was created with the orthophoto program is currently being used to produce depth to water table maps for over 5 million acres across the state. When complete, these maps will improve forest management by reducing road construction costs, improving harvest operations, enhancing silviculture planning, and identifying wetlands. As much of the forestland being mapped is in northern Maine, development of these maps would be greatly improved by additional photography and the underlying DEM data being completed in areas of northern Maine that have not yet been covered." Robert G. Wagner, Professor and Director, Cooperative Forestry Research Unit, the University of Maine.

Priority 2. Continue the Municipal Grants Program for Digital Property Maps

Also known as cadastral maps, property maps land boundaries describe and record ownership and taxation. They are one of the most important local government information assets, forming a fundamental base for many municipal activities. Although GIS parcel data cannot replace detailed ground surveys, the data assist municipal officials with accurate property tax assessment, planning and zoning.

Furthermore, a digital cadastre provides the most efficient method of collecting and collating geospatial data for infrastructure development and regional planning. A grant program has been implemented using bond funds to digitize property tax maps with awards to municipalities varying from \$1,000 to \$10,000, and requiring a minimum 1-1 municipal match for each dollar awarded. The first two rounds of awards are complete with 120 municipalities applying for, and 74 receiving, awards. The Board's priority is to meet municipal demand by doubling the grant monies available under this program. See Attachment A for a list of those towns that have received grants thus far.

Priority 3. Build Data Conformity and Validation Software Tools.

Data conformity and validation software tools allow the GeoLibrary staff to determine rapidly and efficiently if data submitted by a collaborating entity meets the Board's standards for that data layer. Current software provides very limited tools, and non-standard data is of limited use. Consequently, GIS users, especially within state government, have to invest significant time attempting to evaluate data quality. New tools will save staff time and scarce funding so that if data passes the improved conformity test it can move forward expeditiously for inclusion in the GeoLibrary, and if it fails it can be returned to the supplier with an explanation so that its deficiencies can be quickly addressed.

Priority 4. Build a Statewide GIS Network

The Board will develop a virtual network of GIS nodes with affiliated entities such as municipalities, NGOs, etc., linked through common standards such as the Open GIS Consortium (OGC) standards for web holdings, and by network through the newly constructed GeoLibrary portal. The strategy is to implement a grant program whereby organizations that have GIS holdings make the information available using OGC standards. Preliminary plans have the grant program implemented in two tiers.

Tier A – Organizations that already have web enabled GIS data holdings would be eligible for grants up to \$5000 to make their GIS data holdings OGC compliant and thus viewable through a variety of desktop GIS applications (e.g. ESRI, MapInfo, Autodesk).

Tier B – Organizations that have GIS holdings that are not web enabled would be eligible for grants up to \$15,000 to implement a web-based GIS server and to provide assistance with making their GIS holdings OGC compliant.

Priority 5. Update Land Use/Land Cover

Land Cover mapping indicates the dominant vegetation or ground cover within a particular 5m x 5m square grouped into areas of two acres or more. The GeoLibrary provided partial funding for the development of a recently completed Maine Land Cover dataset that is tightly integrated with Federal efforts to map landcover and imperviousness nationwide with tremendous cost savings. Data users include:

- biologists modeling species habitat for population management
- public and private planners studying growth and site location
- environmental specialists looking at storm water issues
- forestry planners studying forest composition and change
- emergency management planners
- meteorologists modeling air emissions.

These users' tasks can be carried out in a more cost effective manner through remote sensing than through field mapping, with a statewide effort providing an added level of consistency. Updates every 2 to 5 years to assess change is key, and with the last effort completed in 2006 there should be an update scheduled for 2008.

Priority 6. Develop Comprehensive Conservation Lands Maps

The State does not now have a mechanism to track conservation lands that are in state, federal, municipal and private ownership. Efforts are underway to address this gap, but without additional resources the gap cannot be closed. Funds will be used to update the current conserved lands/public access data and to develop a mechanism to increase and update the data annually. Efforts will include coordination with a steering committee, discovery and review of documents held by state and local entities, input of attributes into a database, geolocation of sites as necessary, development of FGDC²-complaint metadata, and a mechanism to update the database.

² Federal Geographic Data Committee

The audience of people interested in the status and quality of conserved lands in Maine is large and varied, including:

- legislators, municipal officials, planners, policy makers, the public, and members of non-profit conservation groups who need to assess current programs in order to invest resources effectively;
- permit reviewers for conserved lands who, under Maine statutes and rules, need to know the location and attributes including size, location, type of easements or restrictions, habitat types and viewsheds to analyze the potential effects of new development;
- conservation organizations working under new policy directives such as the Maine Coast Protection Initiative (MCPI) and the Coastal and Estuarine Land Conservation Plan who are challenged to choose projects that address multiple objectives such as public access, conservation of working lands and protection of high priority habitat types. Because each of the seventy MCPI partners has committed to a new framework for strategic land conservation, a variety of public and private conservation organizations would benefit strongly from better evaluative tools; and
- the increasingly more sophisticated eco-tourist who desires additional information about conserved lands beyond simple location information. With more visitors using the internet, a web-based coastal access guide would complement Maine's efforts to claim additional market share of nature-based travelers.

Priority 7. Assist with Digital Flood Insurance Rate Map Production

Recent flood losses have made the public and government more aware of the significant hazards and costs of occupying land along our nation's coastline and rivers. Decisions about where and how to develop in these areas have often not reflected the fact that floods have historically caused more damage and economic loss in the United States than any other type of natural disaster. It is therefore necessary that land use and mitigation planners, state and local economic and community development personnel and local officials be able to guide development in such a way that will increase sustainability while reducing losses.

Congress implemented the National Flood Insurance Program (NFIP) in 1969 to provide flood insurance in those communities that join the NFIP and adopt both the FIRMs and FEMA's floodplain development standards. The flood hazard data and maps (Flood Insurance Rate Maps, or FIRMs) created by the Federal Emergency Management Agency (FEMA) are critical tools to help ensure the appropriateness and sustainability of new and re-development occurring in flood hazard areas. Congress has authorized a Flood Map Modernization Program to update the country's aging inventory of FIRMs to reflect changes that have occurred in watersheds and improvements in mapping technologies. The updated digital maps more accurately reflect hazard areas for floodplain management / land use purposes and for flood risk zones for insurance purposes. The digital FIRMs, or DFIRMs, will:

- better guide economic development, mitigation planning and emergency response;
- provide better information to lenders, insurance agents and the public on issues relating to flood risk and flood insurance; and
- reduce the economic impact of flooding.

The initiative also promotes stronger state partnerships in an effort to create efficiencies in the mapping process. State participation in Flood Map Modernization management and mapping activities help focus funding on areas of state priority and maximize the utilization of mapping funds. The Maine State Planning Office's Floodplain Management Program (MFMP) is partnering closely with FEMA on the management of Maine's Map Modernization activities. The Maine Office of GIS has been collaborating with SPO and FEMA to digitize flood maps in two counties.

However, MEGIS lacks the capacity to accomplish this activity for the entire State. The average age of Maine's FIRMs at 19 years is significantly older than the national average and nearly half of the State's FIRMs lack detailed flood hazard data. These two factors dramatically increase the cost of creating updated Maine's DFIRMs. Federal Map Modernization funds now received by Maine are not adequate for the State to meet FEMA's metrics. Increasing the State's contribution will have a positive effect on the level of federal funding and will allow mapping contractors to supplement the mapping currently being done by MEGIS. Without additional funds, Maine will not meet the national goals of the Flood Map Modernization initiative and will leave Maine citizens, communities and professionals with outdated maps that do not accurately reflect the flood hazard and risk zones.

Priority 8. Create a Zoning Maps Grants Program

A comprehensive regional or statewide zoning data layer is a key component of economic development, development tracking, build-out analyses, and modeling of zoning options used by realtors, developers, business development groups, conservation organization and municipalities. While limited regional composites of zoning data have been made, comprehensive zoning data do not exist on a statewide basis. The Board would fund a program of grants modeled on the Parcel Grants Program to upgrade and submit digital zoning to the GeoLibrary in order to begin creation of a statewide zoning data layer. The relevant data falls generally into two types:

- Shoreland zoning data from each community would be automated and submitted for comparison to an established standard and insertion into the GeoLibrary. Because it is created by State statute and based on natural features, shoreland zoning is comparatively uniform. This part of the project would therefore lend itself best to a regional approach.
- General Municipal Zoning would be automated with zoning areas represented as polygons with attributes describing the municipal zoning classification. Maine municipal zoning does not have a uniform set of zoning codes. Therefore, as with the digital parcel data, standards will need to be developed by the Geolibrary Board to guide data development. A State standard would not involve removing local codes from the data but would include both municipal and zoning information. Again, data from each community would be automated and submitted to the State for comparison to the standard and insertion into the Geolibrary.

Priority 9. Development Tracking

The Board will work with SPO and MeGIS to appoint a development tracking implementation committee, tasking the group with coordinating data collection and pilot projects in support of the Development Tracking Steering Committee Final Report dated March 2005.

4. FINANCIAL EXPENDITURES THROUGH 2006 AND REQUESTED LEGISLATIVE ACTION FOR 2007

The GeoLibrary Board serves *pro bono*, and, as noted, its staffing is funded by arrangement with OIT. The Board was given authority to administer \$2,300,000 in State bond funds for GIS capital investments in November 2002. The Board has entered a series of cooperative agreements with Federal agencies to garner the required \$1.6 million federal match for the approved bond funds. Total Bond expenditures follow.

Bond Total	\$2,300,000.00
Amount expended through 12.31.06	\$1,717,235.05
Amount encumbered by contract through 12.31.06	\$ 482,281.00
Total expended or encumbered to 12.31.06	\$2,199,516.05
Approved by Board vote subsequent to 12.31.06 but not yet encumbered by contract	\$ 35,000.00
Bond Funds Remaining	\$ 65,483.95

Although much has been accomplished, at current levels of funding the GeoLibrary will not be able to sustain its mission. ***The GeoLibrary Board requests that the Legislature approve \$4,530,000 in new bond funding in support of statewide GIS development as detailed in the above priority list*** to include costs for bond administration not to exceed 2% (two percent).

5. ORGANIZATION

5.1 Legislative Background

In 2001, the Legislature instructed the State Planning Office to convene what came to be called the Resolve 23 Steering Committee to study the use of GIS in statewide strategic planning. The Committee developed a Needs Assessment, the conclusion of which recommended the GeoLibrary, and its method of governance, and strategic focus. The Legislature and Governor concurred, and the Maine Library of Geographic Information Act 5 M.R.S.A. Section 2001 *et seq* became effective April 2002.

5.2 Governance

The GeoLibrary is governed by a board of directors, and its members are appointed by the Governor, the President of the Senate, the Speaker of the House, the Chancellor of the University of Maine System, the Director of the State Planning Office, and professional organizations representing major stakeholder groups. The Board is independent, term-limited (with the possibility of reappointment) and drawn from the public and private sectors. It is therefore uniquely positioned to represent all stakeholders fairly and in a way most likely to foster efficient cooperation and mission success. The current membership is:

Representing GIS Vendors

James H. Page, Chair
President / CEO, James W. Sewall Company

Representing GIS Vendors

Will Mitchell, President
Mitchell Geographics

Representing Utility Interests

Gary Duplisea (not yet confirmed)

Representing Environmental Interests

Dan Coker
The Nature Conservancy (not yet confirmed)

Representing the Public

Sean Myers, GIS Specialist
Kennebunk, Maine

Representing the UMaine System

Marilyn Lutz, Vice-Chair
Director, Library IT Planning, University of Maine

Representing Municipal Government

Gretchen Heldmann
City of Hampden

Representing Municipal Government

Denny Ketchell (not yet confirmed)

Representing State Government

David. M. Blocher, representing
Richard B. Thompson, Chief Information Officer

Representing State GIS Functions

Elizabeth Hertz
State Planning Office

Representing Statewide Association of Regional Councils
Ken Murchison, GIS Specialist
Northern Maine Development Corporation

Representing the Commissioner of Administrative and Financial Services
Nancy Armentrout
Office of Information Technology

Representing Statewide Association of Counties
Ken Honey
Lincoln County Commissioner

Representing Real Estate & Development Interests
William H. Hanson, Esq.
Rudman & Winchell, LLC, Bangor

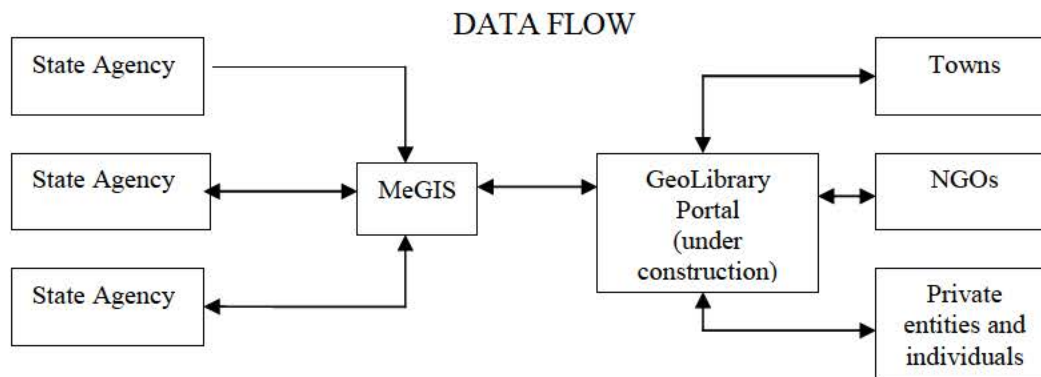
Representing State GIS Interests
Christopher Kroot
Dept. of Environmental Protection

The GeoLibrary Board meets monthly. Agendas and meeting notes can be found on the GeoLibrary website: <http://www.maine.gov/geolib/>. The Board is organized into three standing subcommittees:

- A. Finance Committee, with responsibility for:
 - budget oversight;
 - recommending budget or other financial actions to the Board for approval;
 - primary interaction with outside entities on financial issues.
- B. Policy Committee, with responsibility for:
 - policy oversight;
 - recommending policy adoptions and amendments to the Board;
 - memorializing approved GeoLibrary policies;
 - primary interaction with external entities on policy issues.
- C. Technical Committee, with responsibility for:
 - advising the Board on all technical matters;
 - oversight of all Board projects;
 - primary interaction with outside entities on technical issues.

5.3 Library Structure

The GeoLibrary is staffed by agreement with the Office of Information Technology (OIT). Dan Walters, is the Enterprise Applications Director, and MeGIS manages and operates the GeoLibrary website, GIS database and data access facilities. The GeoLibrary's portal is the central node in a distributed system linking its stakeholders via the web as well as providing the central point of connection between state agencies and the public and other public entities. Schematically:



ATTACHMENT A1:**Parcel Grants Round 1 Award List**

Standard Grants: 54 towns applied, 21 awarded

Cape Elizabeth
Casco
Ellsworth
Falmouth
Freeport
Gorham
Gray
Islesboro
Jackson
New Gloucester
North Yarmouth
Norway
Oxford
Paris
Raymond
Rockport
Rumford
South Portland
Thorndike
Unity
Woodstock

Rapid Grants: 27 towns applied, 24 awarded

Anson
Auburn
Bath
Biddeford
Bridgton
Brooksville
Casco
Castle Hill
Chapman
Cumberland
Denmark
Fort Kent
Harrison
Kittery
Madawaska
Mapleton
Mariaville
Raymond
Skowhegan
Stonington
Sweden
Verona
Woodland
Yarmouth

ATTACHMENT A2:**Parcel Grants Round 2 Award List**

Standard Grants: 36 towns applied, 26 awarded

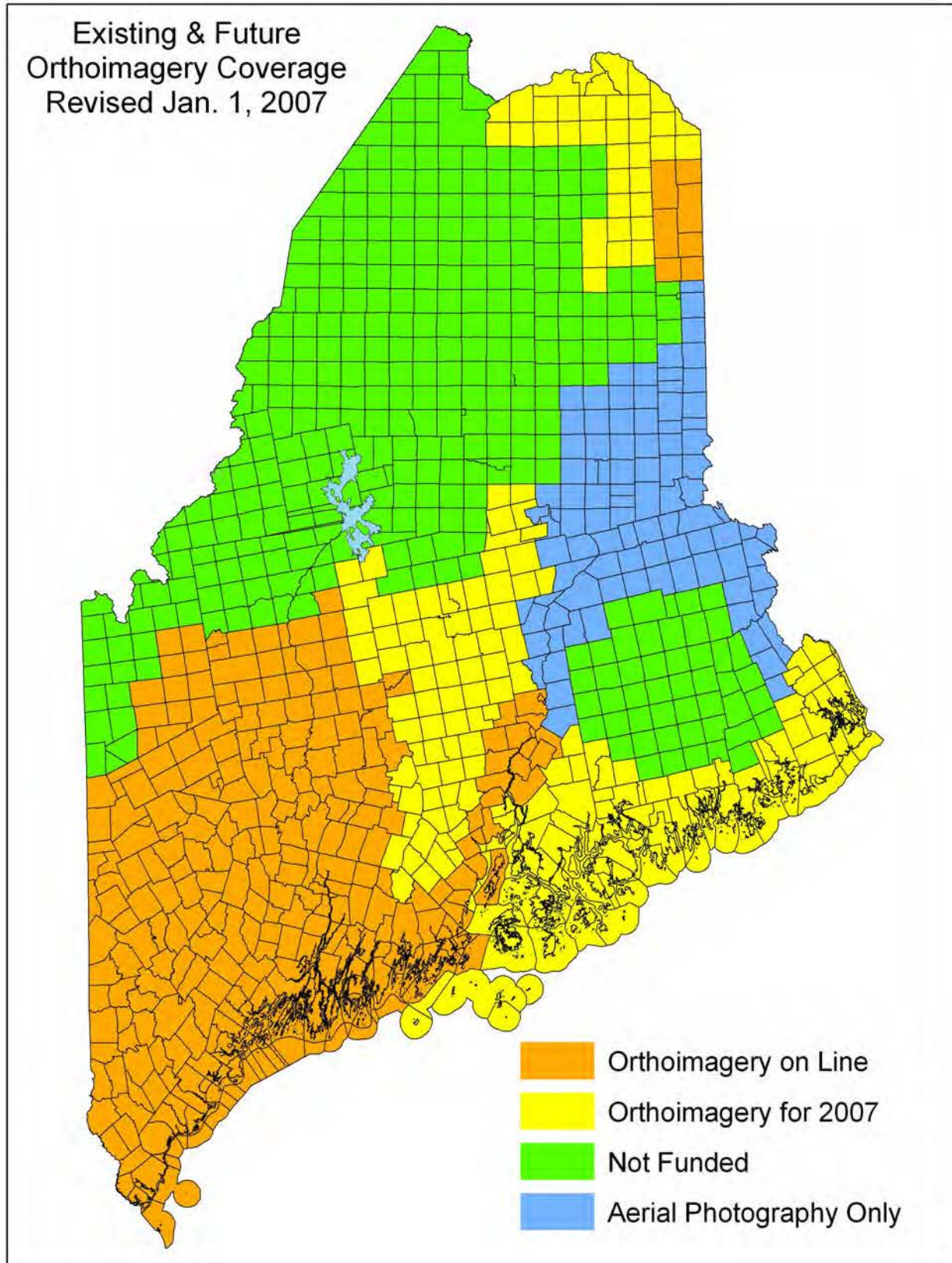
Arrowsic
Bethel
Bowdoin
Bowdoinham
China
Dover-Foxcroft
Friendship
Hermon
Lincoln
Levant
Lovell
Lyman
Ogunquit
Readfield
Richmond,
Saco
Searsmont
Searsport

South Berwick
Standish
Topsham
Turner
Vassalboro
Waldoboro
West Bath
Winslow

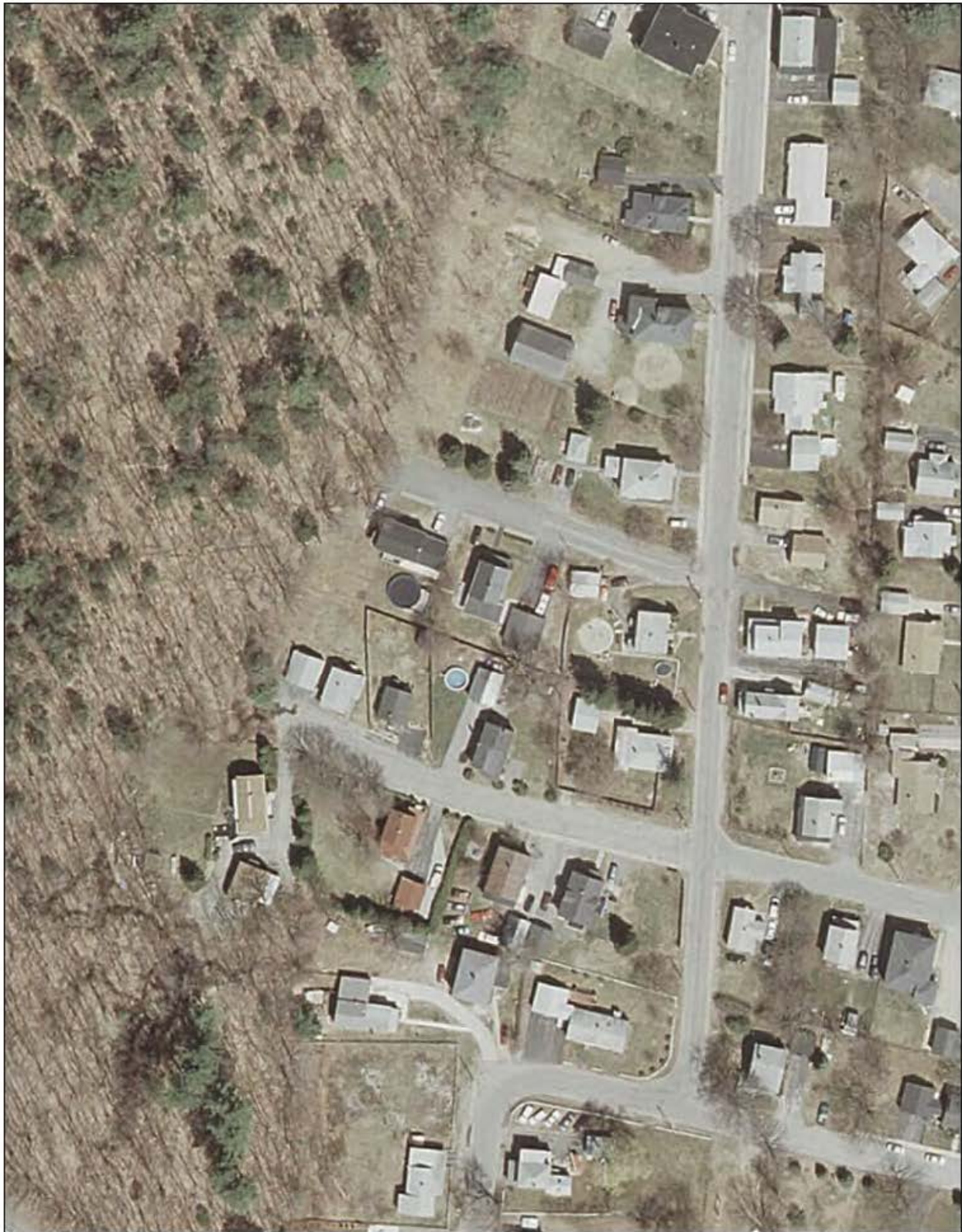
Rapid Grants: 3 towns applied, 3 awarded

Clifton
Phippsburg
Whiting

ATTACHMENT B: Map of Orthophotography Coverage



ATTACHMENT C: 1' Orthophotography Sample



1 foot orthophotography sample 1" = 100'

ATTACHMENT D: 2' Orthophotography Sample



2 foot orthophotography sample 1" = 200'