



### ***1. Organizational Approach to GIT:***

The Massachusetts Division of Forests and Parks' Bureau of Forestry (<http://www.magnet.state.ma.us/dem/programs/forestry/index.htm>) uses GIT in a limited capacity. The Division is part of the Department of Environmental Management (DEM), an agency of the Executive Office of Environmental Affairs (EOEA). Neither the Bureau nor the Division has a dedicated employee for GIT or GIS. DEM has a dedicated GIS coordinator and some additional staff working with GIS, though they primarily address non-forestry matters, while EOEA serves as the statewide GI/GIT coordinator as described below. The Program Supervisor of the Management Forestry Program serves as the informal lead for GIT in the Bureau. He and other Bureau staff use GIT on a part-time basis, aided sometimes by interns and academic resources at the University of Massachusetts (UMass), usually for specific projects. This relationship works well because, while the Bureau's headquarters is in Pittsfield, the Management Forestry Program is located on the UMass campus in Amherst. In total, the Bureau has about 42 employees with five regional offices in addition to these offices, though these regional offices are not direct users of GIT. Another Bureau of the Division, the Bureau of Forest Fire Control, has about 60 employees and is responsible for providing aid, assistance, and advice to the Commonwealth's towns in the prevention, detection and suppression of forest fires. These Bureaus work together in the use of GIT for wildland fire as discussed below. The Bureau does not have any policies at this time regarding GIT use. The leading Bureau of Forestry issue concerning GIT is that it is hampered in its use of the technology by staffing and funding limitations.

Even with its limited use of and staffing for GIT, the Bureau has realized benefits from GIT. According to former State Forester Warren Archey, GIT has enabled the Bureau to accomplish its mission much more quickly and effectively, and easily communicate decision making rationale to others though he sees that it could be used more to accomplish management needs. According to Bill Rivers, "we can't afford to manage the land without GIS" as it is a critical modeling and planning tool. In particular regarding fire, the Bureau has found that the key benefits are being able to help understand potential fire behavior and determine risk, priorities and where and how to best treat the land and do fuels management to prevent catastrophic fire.

### ***2. GIT Applications and Data Utilized:***

The Bureau has limited internal staffing for GIT, but it is used for applications such as **state land** management, including silvicultural activity and road maintenance prioritization and tracking; **forest health**, including insect and disease monitoring (such as gypsy moth); **wildlife** habitat inventory, wildlife and vegetation monitoring; **wildland fire** inventory, behavior prediction and risk determinations; **multiple resource and recreation management; ecosystem planning;** and various mapping needs. While the early "driver" GIT application was state land management, fire, **land acquisition and conservation prioritization and planning** (such as Forest Legacy), and **urban forestry** are particular growth application areas today. In addition to these activities, the Bureau has recently undertaken a forest resources assessment for the state, including determination of the viability of forestry, which may include GIS and remote sensing if resources are sufficient to do so. The Bureau currently uses ArcView™ software, GPS, and conventional 1:12,000 color infrared imagery, as well as 1:5,000 digital orthophotos when available in ArcView™ and Trimble Pathfinder Office formats. The Bureau primarily accesses data for use with GIS from DEM and custom flights, though it also has extensive field level data to use with GIS and to evaluate the accuracy of remote sensing.

The risk of, and recent new federal funding for, wildland fire has provided particular support for GIT use. While the Bureau is not directly responsible for fire, it has proposed and received funding for various projects conducted in the past and underway with UMass to assess **fire** potential and risks, particularly in

the wildland urban interface. GIT and GIS-based fire prediction and behavior modeling have been successfully used to display and reveal high risk areas and to secure additional federal funding for further GIT and fire prevention work. This was particularly effective in the very valuable and politically sensitive area on Martha's Vineyard. Fire modeling packages used with GIS include BEHAVE, Real Time BEHAVE, BEHAVE Plus, and FARSITE, with work underway with UMass to customize these packages that were primarily developed in and for the west to be more applicable in the Northeast. For example, a custom fuel model has been developed between chaparral and the vegetation of southern Massachusetts to perfect the applicability of FARSITE and the other models in the east. Fuels samples are being collected to help consider the soils that are unique in Massachusetts. Greater use of remote sensing could help to understand fuels conditions and risk, including the relationship of fire to forest health, as well as to learn more about air quality during fires and to quantify the impacts and risks.

### ***3. Statewide and Other GIT Linkages:***

There are several users of GIT in other divisions of DEM and other EOEAs departments. EOEAs also has been the institutional home of a GIS center known as "MassGIS" since the mid 1980s. MassGIS has traditionally served as the focal point for GIT expertise and data in EOEAs and much of state government since then. It was officially designated by the Legislature in 1998 as the lead organization for GI/GIT in state government, and is formally known as the Office of Geographic and Environmental Information (<http://www.state.ma.us/mgis>). MassGIS provides access to data and operates a data clearinghouse (<http://www.state.ma.us/mgis/massgis.htm>), and has various efforts underway to increase collection and interpretation of data. The Executive Office of Administration and Finance's (EOAF) Information Technology Division (ITD) also assists in statewide GIT coordination. The Massachusetts Geographic Information Council (MGIC) has informally served as the lead GIT coordination group, while the Statewide Advisory Board for MassGIS was established by the authorizing legislation for MassGIS. The Bureau of Forestry does not have much direct work with MassGIS. While limited as discussed above, the Bureau's linkage to statewide GIT activities is through DEM since it is a department within EOEAs. However, the Bureau works with UMass and the U.S. Forest Service regarding GIT activities.