Newell Wright, Vista Stewart, Tegan Swain, and Lynn Shreve

Using GIS and the Web on Eglin AFB

The Department of Defense, as stewards of military lands, considers cultural resource protection a part of its central mission, "the defense of the United States – its people, its land, and its heritage."* At Eglin Air Force Base, protecting cultural resources includes using the newest Geographic Information Systems (GIS) and web technologies.

For the past several years, Eglin has incorporated both of these technologies into daily operations for the identification, documentation, protection, and maintenance of the archeological and historic properties on the base. The GIS is a mapping, photography, remote sensing, Global Positioning System (GPS), and database management tool united into a single system and distributed on inter-office and base-wide levels. The Eglin web page is the base's primary public information distribution medium while it has improved the efficiency of various missions.

Eglin is the largest single land holding air force base in the free world. Consisting of 464,000 acres—720 square miles—it is located in the western region of the Florida panhandle bordering the Gulf of Mexico. Close proximity to coastal waters and abundant terrestrial resources have made this location attractive to human inhabitants for thousands of years. Prehistoric site types on Eglin AFB include small early Archaic temporary campsites to sizeable late Mississippian villages (7000 B.C.–A.D. 1500).

In addition to prehistoric settlement, Eglin has a rich history of colonial settlement, pioneering homesteads, naval stores, and military activity and testing. The first military use of Eglin as an auxiliary field and bombing and gunnery range occurred in 1935. Soon after, approximately 300,000 acres were acquired from the Choctawhatchee National Forest which provided a larger installation for military research and development. Evidence of forestry and military activity is suggested by the remains of homestead sites, turpentine camps, historic military structures, laboratories, firing ranges, abandoned missile testing sites, and simulated villages.

Due to the existence of historic buildings listed on the National Register of Historic Places, Eglin has established two historic districts. Camp Pinchot Historic District is a group of historic Forest Service buildings that have been preserved and are currently being used as an integral part of the mission. The Eglin Field Historic District is a group of buildings constructed during WWII that have been preserved and restored to provide offices for base personnel serving in administrative, legal, research, and hospital related positions. The Cultural Resources Management Office is currently in one of these rehabilitated structures. Eglin is therefore provided with evidence of a cultural past ranging from prehistoric camps to abandoned missile test sites. With resources this diverse and geographically separate, electronic technologies provide the most efficient method of location and documentation.

The primary focus of the GIS program is the inventory, evaluation, preservation, and documentation of archeological sites and historic structures. GIS greatly facilitates the mapping, recording, and in some instances relocation of resources across the property that makes up the Eglin military installation. Environmental Management Historic (EMH), the division responsible for historic preservation, worked with the Florida State Historic Preservation Office (SHPO) to implement a preservation program applicable to Eglin AFB. In the 1980s, EMH conducted quarter section surveys of the base and developed a probability model for archeological occurrence. The high probability zones were determined to be primarily within 656 feet and 50 feet in elevation of previous or existing water resources. Areas of documented activity such as mills, structures, homesteads, or historic military properties were also given high testing precedence. Enhanced GIS planning increases the ability to observe inventoried areas where missions are planned, and also to evaluate zones of interest to the installation prior to a mission occurring.

As a tool of the preservation management process, high probability zone maps are available base-wide. Point and click menus, similar to

Microsoft Word or Microsoft Excel menus, assist the user in creating maps for their projects through a customized Microstation Viewer. Mission planners can create composite maps for locations within the Eglin AFB boundary by overlaying maps of various streams, test areas, historic buildings, and high probability zones for recovery. There is also a zoom feature which highlights only the area slated for activities. In this way planners can produce customized maps from their own computer and print or send these maps over the web to fellow planners and other offices.

EMH works closely with the Natural Resources office during controlled burns and timber sales to preserve combustible, nonrenewable, and other at-risk resources across Eglin by exchanging maps through the Microstation Viewer. The availability of the viewer to the entire Eglin command facilitates information sharing and increases awareness of resources and promotes compliance with protection requirements.

Mission planners can easily view the area slated for activities and incorporate resource concerns in their strategy. A customized cultural resources viewer created for EMH expedites accessibility to GIS maps and database information needed to assist other base divisions.

Eglin uses the Trimble Global Positioning System to facilitate navigation to known sites, record new site locations, and document shovel tests locations and results. Data obtained from these investigations is then entered into an electronic database and appended to precise real time location maps. The Trimble units give a differential GPS location reading to within +/- 50 cm. Data downloaded from the field is incorporated into an Access Database. The information is exported through an Open Database Connectivity (ODBC) link to generate Area, Site, and Artifact maps. This process of electronic transfer has improved the accuracy and reliability of the survey and testing outcomes. Existing State of Florida site forms have also been incorporated electronically allowing EMH to access information from previously investigated sites, enter updated information, and record new sites, through easy entry menu screens. The GIS system also has the capability to link artifact provenience with site location and curation records.

Eglin's Historic Structures Program is conducting an inventory of structures that are at least 50 years old, as well as Cold War structures. GIS provides extensive assistance in the inventory of these structures by visually representing the properties to be evaluated. Digitized locations of historic structures, photos of historic buildings, and database information about buildings are all part of the GIS. Smart maps contain both digitized graphical information, such as roads and structures, and also imbedded photos and database links to the Historic Structures Site Form.

EMH in consultation with the SHPO is in the process of determining National Register eligibility and significance of these structures. The historical structures database was developed similar to the archeological site form to include easy entry menu screens. As information about these buildings is entered into the database, it is linked to the GIS. To assist the base in planning efforts, a Historical Structures web page has been posted on the base Intranet. The Eglin Historic Structures web page provides the status of each historical building on base and connects to both the photo library and the GIS mapping.

The Eglin Intranet's access is limited to the Air Force and contains the Historic Structures Web Site for managing Eglin's historic structures as well as the cultural resources management plan (CRMP) with hyper links for project planners. The Eglin Historic Structures web page provides identification and current status information on all of Eglin's historic structures. Access to this web page allows mission planners to obtain the most recent information pertaining to historic structures, including management decisions regarding long-range mission uses. Each structure's evaluation and status are featured on its own page with links to photos, GIS mapping locations, and their National Register significance. Additional links to a consultation page summarize the SHPO's concurrence or determinations.

Preserving Eglin Air Force Base's rich and diverse history requires education at all levels of the Base community. The Cultural Resource Management Program has implemented GIS and web technology to promote coordination and cooperation within the Air Force command. GIS allows the easy transfer of maps and information, between Environmental Management, Civil Engineering, Test Wing, and other tenants on Eglin AFB. This facilitates the simultaneous goals of preventing mission delays and proactive preservation. Web technology is promoting

information sharing and training by making pertinent information easily accessible. This is especially true with the management and preservation of historic structures.

Note

* *Cultural Resources in the Department of Defense,* R. Christopher Goodwin & Associates, Inc. for Legacy Resource Management Program, (1991), 2.

Newell Wright is the Base Historic Preservation Officer at Eglin AFB, Florida. Dr. Wright may be reached by telephone: 850-882-8454, ext. 203 or by email: <wrightn@eglin.af.mil>.

Vista Stewart is a GIS/Environmental Engineer with SAIC managing the GIS, Web, and EMH databases for the EMH department at Eglin AFB,

Tegan Swain is an archeologist currently working as a cultural resources specialist on contract to Eglin AFB through Colorado State University.

Lynn Shreve is an archeologist and is currently a Colorado state employee on contract to Eglin AFB in the cultural resources division.

Eugene A. Marino and Michael K. Trimble

Stewards of the Past

Archeological Collections and the DoD

For over 60 years, federally-sponsored archeology has occupied itself with one major function—excavation. Excavation has taken many forms, from massive earthmoving ventures to meticulous layer-by-layer scrutiny of the past, and has resulted in the generation of countless artifacts that span prehistoric and historic times. Congress, likewise, has long recognized the importance of archeological sites on federal lands and has passed numerous laws, such as the Archaeological Resources Protection Act of 1979, that are aimed at protecting these resources.

Although collections from public lands have existed since before the beginning of the 20th century, those made prior to the 1920s and '30s were relatively limited in volume. It was not until the Great Depression years (1930s) and again during the River Basin Survey era (late 1940s through the mid-1980s) that federally-funded, compliance-driven archeological projects succeeded in creating both a substantial database for American archeology and a long-term problem that continues to plague the field today; namely, that the amount of professionally-appropriate museum space available for collections storage could not keep pace with the level of excavation that was being maintained throughout the country.

By the early 1970s, the archeological community recognized that outdated storage practices and overcrowded repositories were no longer adequate. However, most federal funding for archeology continued to go toward compliance-driven excavation and not long-term management of collections, even though federal laws call for both. Between 1970 and 1990, many collections became seriously compromised due to inappropriate storage methods, general neglect, and lack of funds.

In September 1991, the National Park Service released 36 CFR Part 79, a regulation that established guidelines to be followed by federal agencies to properly curate prehistoric and historic cultural materials and their associated documents. Shortly after publication of this regulation, the Department of Defense (DoD) Legacy Resource Management Program entered into an agreement with the newly established U.S.Army Corps of Engineers Mandatory Center of Expertise for the Curation and Management of Archeological Collections, located at the Corps' St. Louis District, to identify and locate all DoD archeological collections, assess their condition, and estimate the requirements needed for their long-term management.

Identification began with a blanket literature review of all pertinent written information pertaining to archeological work on DoD land; the hypothesis being that the documents would, in turn, lead to locating the collections. Though