

University of Wyoming Project Description

Nearly 49% of Wyoming's land is federally-owned with 30% administered by the Bureau of Land Management. The BLM is mandated to manage its lands for sustainable use of natural resources. It receives thousands of applications per year for extraction of minerals and other natural resources, each application requiring an environmental assessment. The research objective of this work was to demonstrate how Geographic Information Systems (GIS) technology coupled with Decision Support Systems (DSS) methodology can significantly increase the efficiency of processing applications and providing a structured, objective, and documented means of performing environmental assessments and making related decisions.

DSS is defined as a computerized system designed to help managers make decisions in situations where human judgment is an important contributor to the problem-solving process, but where human information-processing limitations impede decision making. The BLM is often faced with competing objectives: maximization of economic yield versus natural resource conservation. While the GIS provides the data, the decision support environment assists managers with the difficult task of evaluating and comparing environmental and social criteria for multiple objectives, by providing tools for modeling different scenarios and evaluating alternatives.

A prototype GIS/DSS tool, CARAT (Computer-Aided Resource Analysis Tool) has been developed for use in BLM field offices. Using CARAT, resource specialists evaluate a range of factors, from wildlife sensitivity to grazing impact to cultural resources, and compile comments and recommendation in about half the time traditionally required for environmental assessments. As information on individual applications is stored and accumulated within CARAT, it provides users not only with snapshots of specific areas but an overview of what else is going on in a larger-area context. The accumulated comments and evaluations across a region provide an organized foundation for performing cumulative impact analysis. This removes the need for costly and time-consuming efforts to collect data that have been required in the past for this type of analysis.

The prototype of CARAT has been in use by the Pinedale, Wyoming field office for two years. It has received many favorable comments from BLM staff for its ease of use, increase in work efficiency and savings in time for both BLM staff and applicants. We are continuing to work with the BLM towards installation of the tool in other field offices in Wyoming and other states. Beyond the tool's appeal to users in terms of the time efficiency, it has a broader impact through the detailed documentation of decisions it provides. Without a tool like CARAT, when BLM decisions are contested in court, defense must rely solely on the expert testimony of BLM resource specialists, sometimes years after the fact. CARAT tracks exactly what types of evaluations were done for each application, when they were done, what data were used, and what criteria led to the final evaluation. The end result is better decisions both for the public and for the public land.

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