Project: Restoration Science for U.S. Energy Development and Resource Extraction

Brief Description: Montana State University requests $800,000 to assist in the establishment of a research program that focuses on restoration science as it applies to disturbed lands. This research entity will develop state-of-the-art restoration science to serve the resource extraction industry and regulatory agencies involved with environmental restoration following land disturbances. It will also serve as **the** education resource for training tomorrow's restoration scientists needed for expansion of U.S. mineral and energy development, and bolster the development of a restoration economy, as promoted by the Governor's Initiative to generating national and world leadership in restoration of landscapes and ecosystems.

Executive Summary: To meet current and future energy and industrial needs, it is broadly understood that the U.S. must rapidly expand the development of traditional energy sources while simultaneously transitioning to newer forms that reduce CO_2 emissions. This includes oil and gas energy sources, oil shale, nuclear fuels, wind energy, solar energy, and coal and mineral mining. All such activities involve land disturbance, which by current environmental law will be constrained until restoration strategies are demonstrated and pass a benefit-cost test to be approved. Meanwhile, thousands of hard rock mines in Montana and elsewhere in North America require expertise to mitigate associated pollutants. This reality led the Montana State Science and Technology Committee to conclude in its 2009 report that energy development and environmental mitigation ("Understanding and remediating disturbed systems") should be a primary focus for Montana and its university system. MSU leads the state with a 35-year history of land rehabilitation and restoration research. However, MSU, the state and country are at a crossroads, with the state and nation now readying for explosive growth.

Project Description: The proposed research group will aggressively expand upon MSU's legacy of restoration research to meet our nation's energy and mineral mining needs. With internationally recognized expertise in soil science, microbiology, range and plant ecology, weed science, hydrology, natural resource economics and environmental engineering, MSU is uniquely positioned to become a global leader in land restoration science and technology. The proposed program will organize faculty from 8 departments across 3 colleges engaged in various aspects of allied environmental protection and rehabilitation research. This will formalize an MSU presence that will work closely with industry, and regulatory and land management agencies to offer solutions to major obstacles constraining advances in responsible energy and mining development. Proven MSU models (e.g. CBE, TBI) will be used for converting directed research support into competitive research programs, and partnering with the private sector to develop and commercialize resulting technologies for cost-effective approaches to reclaiming disturbed lands.

Congressional Action Required: An appropriation of $800,000 is requested.

Importance to Montana: Montana is, without question, a mining state. Non-fuel mineral production approaches $1.0 billion annually and thus is foundational to this state's economy. This is now in addition to the energy production industry (~$1.0 billion in Montana) throughout the U.S. that is seeking environmental rehabilitation leadership from academic institutions. This critical period of rapid expansion in domestic energy production finds this country's universities without the needed programs or without background in land restoration. Just as important, there is an acute need for trained professional restoration specialists (both BSc. and MSc. level) to fill the jobs created by this energy and natural resource boon. MSU is in transition with respect to its Land Rehabilitation Program: new faculty hires are replacing retired restoration science faculty to aid the university in stepping into the next decades that promise to be challenging with respect to U.S. energy independence. The proposed RSI will position Montana as a leader in sustainable and environmentally-conscionable energy development.

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