Proposal to Academic Program Reorganization, Consolidation, Reduction and Discontinuance

Wyoming Reclamation and Restoration Center (WRRC)

College of Agriculture and Natural Resources

December 1, 2020

Overview: This proposal is for restructuring the Wyoming Reclamation and Restoration Center (WRRC), which has been proposed for elimination. The Center has functioned as a critical research, extension, and education focal point at the University of Wyoming and bridged the academic mission of the University with needs of the State of Wyoming.

Over the past decade, the center has focused heavily on the restoration and reclamation of drastically disturbed lands, particularly those affected by energy development and other forms of resource extraction. The WRRC has worked closely with coal, natural gas, and oil companies to identify key areas of research, and have developed a wide range of methods used by extractive industries to restore ecological function to disturbed lands. The Center has relied primarily on partnerships with energy companies, and as a result has seen diminished impact over the past several years as this economic sector has diminished in the state.

In this proposal, we will identify mechanisms to reorganize the Center such that the University maintains its regional pre-eminence in ecological restoration but extends its mission to a wider one relating to ecological health better positioning the Center to take advantage of partnerships in research, foundation, and extension. The intention of this proposal is to revitalize the Center and align it with initiatives being put forth by the College of Agriculture and Natural Resources and the University of Wyoming.

Background and Success of the WRRC

The WRRC is a self-supporting Center that receives no direct funding for operations. The Center is funded entirely from foundation resources, grants, and faculty commitments. The WRRC serves as the nexus for research, education, and extension in natural resource restoration and reclamation and houses a certificate program in ecological restoration.

Foundation funding provided to the Wyoming Reclamation and Restoration Center has been used primarily for 3 activities: expansion of both graduate and undergraduate education in Land Reclamation and Ecosystem Restoration at the University of Wyoming, creation and presentation of outreach programs throughout the state of Wyoming to increase knowledge of professionals in this field as well as other interested citizens, and finally, to fund research through graduate assistantships on critical Wyoming reclamation issues to advance reclamation methods and improve outcomes of restoration projects in Wyoming.

Over 400 students have taken the Introductory Land Reclamation Class (REWM 4200) since 2010 and over 100 students have earned the undergraduate minor in Land Reclamation since 2010. More than 30 students have obtained graduate degrees (11 PhDs, 20 MS) and the UW Graduate Certificate in Reclamation during the same period. Two of our graduates are Professors of Land Reclamation and Restoration Ecology, one at North Dakota State University and one at Tribuhvan University in Kathmandu, Nepal. Other WRRC graduates can be found working at coal mines in the Powder River Basin, the Jonah gas field, or as regulators working for the Bureau of Land Management. For many years during the last oil and gas boom, all of our graduates were obtaining jobs in Wyoming and the Rocky Mountain region. Jobs are now more difficult to find as the price of oil, gas, and coal have dropped to very low levels. But it is safe to say the WRRC has supplied many well-trained professionals to the job market. One company, KC Harvey Environmental of Bozeman, MT, has informed us that they go out of their way to find graduates of the WRRC to hire as employees because they are so well prepared. Wyoming State match funds have provided WRRC resources to improve our undergraduate teaching program and to fund 12 graduate assistantships since 2010. Hundreds of students at the University of Wyoming have been positively impacted by education programs delivered by WRRC as a result of funding provided by the Wyoming State Match.

Outreach activities conducted by WRRC over the years reached all parts of Wyoming and include organizing Reclamation Workshops held in 12 towns around Wyoming, hosting the 2013 Annual Meeting of the American Society of Mining and Reclamation in Laramie, organizing the Wyoming Wildlife Habitat Restoration Symposium held at the Casper Events Center in 2016, publication of 10 Extension Bulletins on topics important to reclamationists, organizing and housing reclamation data for oil and gas fields around the state. Reclamation Workshops were presented to audiences throughout the state of Wyoming. Many of the people attending these workshops were professionals working for mining companies, oil and gas companies, environmental consulting firms, reclamation contractors, and state and federal regulatory agencies, including the BLM. Faculty and students working with WRRC are regular participants and speakers at the Annual Petroleum Association of Wyoming Reclamation Conference in Casper. WRRC once provided funding to a group of elementary education students at UW to develop teaching materials to teach young school children the importance of Land Reclamation. Funding provided by the Wyoming State Match has been critical in funding these outreach activities, many of which have ended as funds from the state match have been spent. Through these outreach activities, the WRRC has built a strong reputation around the state as an authority on Land Reclamation that welcomes requests for information and advice.

Current WRRC Status

Over the past several years the WRRC has seen a significant drop-off in support from industry partners, and a more challenging grant environment has resulted in a drop-off in Center activities. Student engagement remains high, but the diminished status of extractive industries in the state has had a concomitant negative effect on annual

funding. The Center is inherently interdisciplinary, and works closely with faculty and partners in soil, plant, insect science, watershed hydrology, economics, community development, and energy resources among others.

The Center currently has a Director (Dr. Peter Stahl) and relies on the Department of Ecosystem Science and Management for office associate and accounting support. The Center Director reports directly to the Dean.

In addition to grant funding, Center activities are funded primarily from the L. Jean Martinez Wyoming Reclamation and Restoration Center Excellence Fund, which is valued at approximately $950,000 and spins off a small but valuable expendable fund annually. Due to inefficient systems, we have historically been unsuccessful in tracking grant funding resulting from partnerships with the Center, and it is effectively impossible to fully identify all research funding that has resulted from WRRC involvement, but the Foundation funds alone are in excess of $1.3M. We will use the improved financial systems at UW to establish financial controls that identify funds originating from Center activities and track the impact of the Center.

Proposed Restructuring

Several steps are recommended to restructure the Center to improve outcomes and ensure that it is a regional leader in reclamation and restoration.

- Step 1: Rename the Center to “Center for Ecological Restoration”. The original center name resonates with industry and research partners who focus on reclamation, and the Center will still maintain part of its portfolio in reclamation. Dropping “reclamation” from the Center name supports our proposed shift in focus, and is more in line with modern phrasing.
- Step 2: Change Center governance structure. Dr. Stahl will step down as Center Director, and a competitive search will be held to identify the next Director.
- Step 3: Formation of an internal faculty advisory board. This board will be composed of faculty from across the University, who will be selected for their interest in restoration and willingness to facilitate interdisciplinary programming in the center. Faculty candidates hail from School of Energy Resources, Environment and Natural Resources, Geology, Law, Botany, Agriculture and Natural Resources, and other departments.
- Step 4: Formation of an external advisory board, composed of interested parties in the region, with a focus on Wyoming stakeholders. We anticipate identifying board members from energy companies (e.g. coal, oil and gas, renewable energy), environmental consulting forms, agricultural interests, state and/or federal management partners, and NGOs.
- Step 5: Engage faculty, staff and students to increase research, education, and extension activities across campus. The Center will intentionally build partnerships across campus to facilitate interdisciplinary

activities, facilitate faculty research in Wyoming through engagement, and build stronger connections between stakeholders in the state and interested parties in the University.

- Step 6: Increase funding. By broadening the mission of the center (explained in more detail below), we will enhance funding opportunities through both grants and foundation support. One of the mandates given to the incoming Center Director will be to increase connections across the state and raise nontraditional extramural funding to support student projects as well as research and extension activities. One goal is to build a funding stream sufficient to re-build and directly fund office staff.

Re-Envisioning - The Center for Ecological Restoration

The WRRC was originally formed in recognition of the significant gaps in science needed to effectively restore ecological functions of disturbed lands. Center–affiliated faculty and students have made great contributions to this discipline and should take pride in facilitating the recovery of Wyoming landscapes after they have been impacted by people. It is clear that there is still a lot of work to be done in the field of drastically disturbed land reclamation and restoration, and energy extraction remains a potent force of disturbance across the West. However, there are significant opportunities for restoration-related research that should be added to the Center's portfolio, and by refocusing on emerging issues the Center will be well positioned for success in competitive grants and securing private funding from regional partners. Specifically, we aim to broaden the Center to come into alignment with the College and University emerging research initiatives by highlighting ecological restoration with a focus on the assessment, management, and restoration of healthy soils and plant communities in Wyoming's managed ecosystems.

There is a heightened focus on the restoration of managed lands across Wyoming and the West that the University is well positioned to address, due to our existing faculty expertise and emerging initiatives. Wyoming is predominately a rangeland state, and there is a significant opportunity to better address the restoration of many of these managed lands, and we propose an expansion of the Center to address the restoration of managed rangelands, targeting soil and rangeland health. Examples of emerging research in this area include soil carbon management and economic valuation, adapting to changing climate, and extension-related work with land managers and private owners including large ranch operations. Significant federal funding has been set aside for these fields, and it likely grow in importance over the next several years with new administration. There are large opportunities for extramural funding and foundation support related to emerging issues in ecological restoration.

Forest fires, drought, and effects of changing land management in Wyoming (e.g. ranch ownership, subdivisions, federal land policies) are transforming our rangelands and forested systems. These impacts, both natural and anthropogenic, threaten the ecological health and sustainability of Wyoming's natural lands. Historical strategies

to deal with restoring landscapes after large-scale and intensive change may not be effective moving forward, and the Center will address areas of major concern to key partners within the State including the National Resource Conservation Service (NRCS), Wyoming Department of Agriculture (WDA), Wyoming Department of Environmental Quality (WDEQ), and statewide conservation districts. Several Extension Specialists have worked with the WRRC, and we intend to expand Extension and Outreach activities, including the development of new funding streams in these areas, to work with both public and private partners.

The Center's restructuring will align with the goals of the Center Of Excellence In Sustainable Extensive Rangeland Agricultural Systems In High Altitude Headwater Areas and the College's emerging Ranch and Rangeland Systems programs, the UW Institute for Managing Annual Grasses Invading Natural Ecosystems (IMAGINE) initiative on invasive plant species and the Governor's Invasive Species Initiative (October 2020). The University has demonstrated strength in high altitude agriculture and working with the private sector in the complex environment of private/public land management. There is demonstrated interest in this field in the State and region, as illustrated by recent highly successful Foundation fundraising in excess of $2M to support natural resources programs. Other states across the West have developed or are developing soil health programs, and UW is well positioned to partner with those programs and provide leadership.

The WRRC has always had a core academic mission, including supporting several courses in the Rangeland Ecology and Watershed Management (REWM) degree, the Soil Science Minor, and the Restoration Certificate. These academic priorities will be maintained, and we will investigate opportunities to expand online courses, summer delivery, and additional certificates or micro-credentials. At present, courses and extension activities are primarily through the Ecosystem Science and Management Department, but the restructured Center for Ecological Restoration would be charged with helping to grow student numbers, the research portfolio, and entrepreneurial engagement across the University with the expectation of adding online courses, certificates, and supporting mid-career professional development.

Summary

The WRRC has served a valuable role in increasing the scientific knowledge and technical transfer relating to the reclamation and restoration of disturbed lands. To maximize impact in Wyoming and attend to emerging large-scale restoration challenges, we propose that the WRRC be restructured in such a way as to provide leadership in the science, management, education, and extension activities for Ecological Restoration. The proposed changes will modernize the Center, increase interdisciplinary activities on campus, lead to increased extramural funding, and support student learning. Wyoming is an optimal field laboratory for restoration research, and the University should provide leadership in the restoration of its magnificent environment. We have outstanding faculty expertise across campus, and a revitalized Center for Ecological Restoration will serve to magnify impact and serve an important role in facilitating partners in the sustainable management of natural resources.