



The Sierra Meadows Partnership

Collaborative meadow restoration and protection

3-year Work Plan

I. Introduction:

Background and link to Meadow Strategy.

The overarching goal of the Sierra Meadows Strategy is to increase the pace, scale and efficacy of mountain meadow restoration across the Sierra Nevada and Cascade mountains of California. In December 2016, the Sierra Meadows Partnership formally adopted the Sierra Meadows Strategy to focus our efforts with the aim of restoring 30,000 acres of mountain meadows by 2030. In recognition of this ambitious goal, the Partnership went to work addressing critical needs to accomplish this task.

One critical need identified was to increase dialogue and build capacity specific to meadow restoration plan design and implementation throughout the state. The Plan Design Workgroup was formed with a primary goal of developing comprehensive standards and guides for meadow restoration design and implementation. An additional goal was to develop a meadow restoration apprenticeship among partner agencies and organizations to provide applied restoration experience under the guidance of seasoned practitioners.

These goals will be achieved through the development of a restoration plan design toolbox that presents a comprehensive list of design alternatives and appropriate applications of each alternative for use by upcoming designers and for setting the standard for process-based restoration plan design in the State. The work group will simultaneously provide apprentice-mentor working relationships where the toolbox can be applied thus build critical capacity deficits specific to restoration plan design within the Sierra Meadows Partnership.

The Plan Design work group will create standards and rationale for data collection and analysis specific to restoration plan design. These data are meant to complement data collected in the WRAMP/Monitoring work group.

Goals & Objectives:

The work group's goal is to build capacity for implementing effective meadow restoration projects in support of the Sierra Meadows Partnership Strategy. We will do this by developing, and educating others to develop ecologically sound process-based designs and implementing meadow restoration projects throughout the region based on the best available science. Objectives based on this goal include (1) to develop standards and guides to help practitioners develop restoration plans and help managers review them, and (2) to describe approaches and provide criteria for selecting appropriate approaches to meadow restoration while keeping in mind the diversity of stakeholder goals and practitioners' perspectives and approaches. To accomplish these objectives, the work group will (1) identify common

assessment methods and measures of success, (2) review past projects and summarize outcomes including past reviews that have been completed, and (3) field truth criteria and approaches by conducting a collaborative design. When implementing the design, we will include interested agency partners, students and tribal partners and incorporate several workshops to provide applied restoration experience.

Deliverables:

Products of this effort will include a peer-reviewed Sierra Nevada meadow restoration planning and implementation guide. The guide will include (1) a literature review that summarizes foundational papers and effective measurements of success (2) an addendum to the Guidance for Stream Restoration (Yochum 2018) and the Great Basin meadows document edited by Chambers and Miller (2011), among other relevant literature reviewed, that is specific to Sierra Nevada meadows and discusses processes, disturbances, assessments, and restoration techniques (3) a risk assessment method for weighing the risk of alternative restoration approaches, (4) use the combined resources and expertise to compile a Meadow Restoration Framework for Ecological Design (MRFRED) that provides guidance for the design process and (5) completion and summary of a collaborative design and eventual implementation of a meadow restoration treatment from beginning to end that utilizes and tests the resources and processes compiled above including working with other Sierra Meadow Partnership Subgroups to collaboratively work through tasks and protocols developed such as site prioritization, monitoring plans, permitting, and outreach.

II. Task list:

Task		Completion Date
1	Define Workgroup Purpose and Process	
1.1	Identify workgroup leads and process for progress	November 2018
1.2	Define Goals and Objectives	June 2018
2	Identify Sierra Meadow Partnership Meadow Restoration Plan Design Site Assessment Information	
2.1	Develop Meadow Restoration Literature Review from identified foundational papers and build a Resource Library	July 2018
2.1a	Library of meadow condition assessment techniques.	
2.2	Discuss and decide upon accepted terminology (design principles vs. standards as an example) for the mz. fred toolbox/framework based on literature review and group experience. List of problematic terms by end of June.	October 2018
2.2a	List of problematic terms that require definition	June 2018
2.2b	Review and finalize definitions	October 2018
2.4	Consult/work with other SMP breakout groups to identify redundancy or gaps in data needed and identify further collaborative efforts.	Ongoing
2.5	Identify assessment data required by benefit type claimed in collaboration with WRAMP group	Ongoing
3	Review relevant literature and resources to provide update to meadow restoration design that is specific to Sierra Nevada Meadows	
3.1	Define design principles and criteria for process-based design based on relevant literature. Identify and incorporate processes that form and maintain meadows that are Sierra Nevada specific	September 2019
3.2	Identify and incorporate historic and continued anthropogenic disturbances to meadows that are Sierra Nevada specific	September 2019
3.3	Identify and incorporate common assessment methods, analysis of assessment, and measures of success in meadows that are Sierra Nevada specific and summarize. This includes identifying essential and ancillary Plan Design Assessment Data.	September 2019
3.4	Identify and incorporate restoration implementation tools/techniques specific to Sierra meadows	September 2019
3.5	Incorporate any additional information from previous reviews of meadow restoration success	September 2019
3.6	Complete draft addendum if necessary	October 2019
3.7	Determine if follow up science-based publication—a review paper that incorporates more recent science within the sierra Nevada—is necessary	Ongoing
4	Define Risk/Develop Meadow Restoration Specific Risk Matrix	
4.0	Communicate with permitting group to identify overlap of topic	December 2018
4.1	Identify and compile relevant risk matrices	April 2018
4.2	Identify different types of risk while addressing various audiences	April 2018
4.3	Reconstruct Risk Matrix specific to meadow restoration work	December 2019
5	Assemble completed tasks 1-4 above into a <u>draft</u> comprehensive meadow restoration design mrfred framework that defines basic site assessment needs, tools and techniques, principles and criteria, and risk.	

	5.1	Coordinate sub-group efforts and compile first draft of toolbox: Meadow Restoration Framework for Ecological Design (MRFRED)	December 2019
	5.2	Incorporate lessons from testing toolbox through in- field collaborative design process and initial group site visits of previously restored meadows	March 2020
	5.3	Draft Meadow Restoration Framework for Ecological Design (MRFRED)	December 2020
6	Test the framework/toolbox by working collaboratively on a range of meadows		
	6.1	Identify sites and work with landowners, managers, stakeholders site visit dates (includes informal and potentially grant funded visits)	July –December 2018
	6.2	Create budget/Scope/Workplan specific to project planning	January - April 2019
	6.1a	Coordinate with all other SMP work groups to bring into collaboration	January - March 2019
	6.3	Identify project specific roles and responsibilities	May - July 2019
	6.4	Apply for project funding	Ongoing
	6.5	Assemble project Stakeholder Group	January - March 2019
	6.6	Define Goals/Objectives/Concerns of Stakeholders/Landowner(s)	March - June 2019
	6.7	Convene necessary site visits and apply framework/toolbox	June - October 2019
	6.8	Develop Conceptual Plan Design Alternatives	October 2019- January 2020
	6.9	Document lessons learned, revise toolbox based on application	January - March 2020
	6.10	Work with landowner and permitting group to complete NEPA/CEQA and all necessary permitting	March - December 2020
7	Implement Project		
	7.1	Create budget/Scope/Workplan specific to project implementation	October 2020- December 2020
	7.2	Identify lead agency and apply for funding	October 2020 - January 2021
	7.3	Implement Design	August 2021
	7.4	Revise MRFRED based on applications	October 2021
	7.5	Monitor Performance	August 2022
	7.6	Document Lessons Learned through process	Oct 2022- Dec 2022
	7.7	Grant Administration and Reporting	January 2023
8	Publish the revised comprehensive meadow restoration design toolbox/framework (<u>MRFRED</u>) that defines basic site assessment needs, tools and techniques, principles and criteria, and risk.		
	8.1	Draft comprehensive meadow restoration design document (MRFRED) based on lessons learned from Tasks 6 and 7.	October 2021
	8.2	Solicit comments from workgroup, incorporate and finalize.	October 2021
	8.3	Publish and print SMP approved MRFRED, a restoration plan design toolbox.	December 2021

III. Task Descriptions:

Task 1: Define Workgroup Purpose/Goals and Process

This task includes the following: define mutually agreed upon group goals and objectives, develop a detailed workplan, identify workgroup leads, organize individual workgroup activities, set up meeting protocols, and track group progress. The design group will work collaboratively to outline mutually agreed upon group goals and objectives. The goals and objectives will be used to provide focus for the overall design workplan and guide development of individual tasks and subtask. Work group leads will be identified to organize and track workplan deliverables. Meeting protocols will be agreed upon and incorporated into subsequent meetings to facilitate successful completion of agreed upon tasks. Target dates for each task will be identified and tracked by project lead and individual workgroup leaders.

Deliverables		Date
1	Group Goals and Objectives	June 2018
2	Workplan Tasks/Subtasks	June 2018
3	Identify Workgroup & Task Leads	November 2018
4	Workplan Schedule	June 2018
3	Meeting Protocols	June 2018

Task 2: Identify Sierra Meadow Partnership Meadow Restoration Plan Design Site Assessment Information

There is a wealth of existing information on restoration design, assessment, and implementation for rivers and streams available in the form of primary peer-reviewed literature, agency reports, and technical memoranda. However, this information is not necessarily easily accessible and new information and research is being generated on an ongoing basis from many sources. Creating and maintaining a stream and meadow restoration reference library with core foundational literature, tools, and resources is a critical component of meadow design. This literature will contain key texts that will be used as the framework for assessment, design, and implementation approaches. In addition to the references provided, the meadow restoration design technical team will compile a standard list of essential data and information needs that provide the basis of design for a meadow restoration. This data will provide the critical information required in order to create a sound and well thought out restoration taking into account all potential factors that influence the site that should be taken under consideration when creating a design for a given site.

Deliverables		Date
1	Restoration Plan Design Resource Library	June 2018
2	List of essential and ancillary Plan Design Assessment Data	June 2018

Task 3. Review relevant literature and resources to provide update to meadow restoration design that is specific to Sierra Nevada Meadows -

Based on the literature review in Task 2 we will identify processes, disturbance, assessment methods, and restoration techniques that may be unique to Sierra Nevada meadow ecosystems. Suggesting process-based restoration and particularly what that means within the context of Sierra Nevada meadow ecosystems will hopefully lead to more successful meadow restoration projects. There are numerous methods for collecting effective data for restoration design purposes at the basin and reach scales. Most entail some level of direct field measurements. Practitioner consistency in assessments, data collection and analysis are important in determining project design effectiveness over time. The intent is to provide a suite of customarily used assessment/analysis tools and restoration techniques for the restoration community’s reference and use.

Deliverables		Date
1	Establish process based design principles and criteria based on relevant literature	September 2019
2	Establish appropriate assessment and interpretation methods based on design principles and criteria	September 2019
3	Addendum to current literature detailing meadow restoration design considerations that are specific to Sierra Nevada meadows	October 2019

Task 4: Define Risk/Develop Meadow Restoration Specific Risk Matrix

The Meadow Restoration Framework for Ecological Design (MRFED, Task 5) will include a risk assessment or screening approach for projects. Various collaborators and stakeholders including regulatory agencies, funding agencies, Tribes, and private organizations have a diverse view on project risks. These risk attributes should be factored early into the design when restoration projects are publicly funded. The matrix or assessment process would attempt to incorporate the various risk attributes from the input of the various stakeholders. This will ensure a broader consistent analysis of project risks and allows for making agreed upon adjustments on what constitutes risk level. General categories may include potential risks to endangered species and habitat, level of habitat or cultural resource disturbance, public cost, and adaptability of the action. The intent would be to accelerate the implementation of actions that are considered to be on the lower end of the risk spectrum. Foundational to ecological process-based restoration is implementation of actions that relax human constraints and have an adaptive learning component. A risk screening process should have the effect of streamlining regulatory and funding review processes and therefore increasing the pace and scale for the implementation of lower risk actions.

Deliverables		Date
1	Meadow Restoration Risk Matrix	December 2019

Task 5: Assemble completed tasks 1-4 above into a draft comprehensive meadow restoration design framework that defines basic site assessment needs, tools and techniques, principles and criteria, and risk.

The Meadow Restoration Framework for Ecological Design (MRFRED) will discuss the principles of process-based restoration as they pertain to Sierra Nevada meadow ecosystems, address assessment needs to understand impaired processes within the meadow, describe restoration techniques available to address impacts to meadow processes, and offer a risk matrix to best decide on meadow restoration approaches based on tasks 1-4 above. The framework will be informed by initial collaborative site visits to meadows to discuss assessment methods for determining meadow restoration needs and identifying impaired processes.

Deliverables		Date
1	Draft of MRFRED (Meadow Restoration Framework for Ecological Design) based on Tasks 1-4 and in field site visits.	December 2020

Task 6: Test the framework/toolbox by working collaboratively on a meadow restoration design(s)

The design group would identify a site, after visiting several meadows, to test and refine the framework. After selecting the site, the group would invite the other groups and stakeholders to collaborate on the project. The framework would be tested on the site to develop one or more plan designs through this collaboration. Lessons learned through this process would be documented and the framework revised. Once a design is chosen, the group would embark on collaborating with the landowner and other stakeholders in pursuing funding, and permitting to implement the project.

Deliverables		Date
1	Site visits to several meadows	September 2018
2	Secure funds to apply toolbox through conceptual plan design (30%).	June 2019
3	Developed Conceptual Plan Design and Alternatives	January 2020
4	Revise Framework based on lessons learned	March 2020

Task 7: Implement project piloting designs based on MRFRED

Based on collaborative design approach and following guidelines of MRFRED, the final restoration plan, and the securing of necessary permits, the design group will apply for implementation funds to restore the selected meadow. This will require identifying the appropriate agency funder and securing funds in time for a summer implementation. We expect restoration implementation to occur during the summer of 2021. Documentation of the lessons learned through this process will be shared with the restoration community and used to update MRFRED if appropriate.

Deliverables		Date
1	Secure Implementation funds to apply MRFRED through 100% plan design.	October - December 2020
2	Completed Meadow Restoration	October 2021

Task 8: Publish the revised comprehensive meadow restoration design /framework that defines basic site assessment needs, tools and techniques, principles and criteria, and risk.

The Meadow Restoration Framework for Ecological Design (MRFRED) will utilize the combined expertise of the Meadow Design Technical Advisory Team to assemble guidelines for meadow restoration design beginning with site assessment, data collection needs and analysis, assessing and managing risk in design, criteria for success, and essential components and considerations for designing ecologically sound, dynamic, and self-sustaining restoration designs in order to support the goals of increasing the pace, scale, and efficacy of restoration in Sierra Nevada Meadow ecosystems. The final product will be available online with active links to reference materials as appropriate.

Deliverables	Date
1 Updated and SMP Approved Restoration Plan Design Toolbox/MRFRED	December 2021

IV: Budget

Task #	Hours/Units	Avg. Billing Rate/Hr	Task Total Cost	Task Lead
1	40	65	\$2,600	
2	100	\$65	\$6,500	
3	100	\$65	\$6,500	
4	100	\$65	\$6,500	
5	300	\$65	\$19,500	
SubTotal 2018 Budget Request			\$41,600	2018
6	600	\$65	\$39,000	All
7	400	\$65	\$26,000	
8a	200	\$65	\$13,000	
8b	200	\$15/Copy	\$3,000	
Budget through 2020 (Funded by Project)			\$81,000	2018-2020+

V. Plan Design Work Group Participants

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