

Sequoia National Forest and Trout Unlimited

Partnering in the Southern Sierra

Lessons Learned

Testing a New Process

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Sequoia NF I0 Priority Meadows Restoration Project



Background: Sequoia National Forest and Trout Unlimited recognized the need to restore meadows and watersheds based on past watershed inventories. The Forest and TU to develop a prioritized list of 15 meadows based on two primary criteria:

- 1. critical restoration need** due to known continued environmental impacts
- 2. Permitting or implementation readiness** (based on available preliminary evaluations).

To meet make the meadows more relevant to the Proposition I opportunity; this list of meadows was further refined to **10 meadows** by the project partners based on two additional criteria:

- 1. Within endemic trout native range**
- 2. Proximity to existing meadow restoration or aquatic organism passage projects** (i.e., opportunity to create a matrix of hydrologically/biologically connected projects and restored subwatersheds).

FUNDING: In 2016 Trout Unlimited received approximately \$500,000 through CDFW Proposition I funds for planning and permitting

Sequoia NF 10 Priority Meadows Restoration Project



Objective 1: Complete design, environmental compliance and permitting to move 10 priority meadows across Sequoia National Forest into implementation phase within two years.

Objective 2: Streamline environmental compliance documentation to reduce future redundancy and facilitate Forest-wide watershed restoration implementation.

Project Team:

- Trout Unlimited
- Sequoia National Forest
- Todd Sloat
- Plumas Corporation
- UNR – Sabra Purdy
- Annie Overlin
- Funder: California Department of Fish and Wildlife – Watershed Restoration



**Original 10 Sites ~ 261 acres across
2 ranger districts**

South Fork Kern Group

- Troy Meadow
 - Little Troy Meadow
 - Jackass Meadow
 - Powell Meadow
 - Granite Knob Meadow
- North Fork Kern Group
- Upper Parker Meadow
 - Lower Parker Meadow
 - Packsaddle Meadow
 - Last Chance Meadow
 - Little Horse Meadow

Last Chance Meadow removed after initial survey work– feasibility (paved road reconfigured and large culvert replacement)

Jackass Meadow removed at Draft EA – archeological issues would hold up entire project

Example Objective – Hydrology and Geomorphology

Objectives - Hydrology and Geomorphology			
Hydrologic Function	Channel Morphology/ stability	Connectivity to upstream/downstream	Downstream Temp/ Flow
<ul style="list-style-type: none"> • Increase in water table elevation (above baseline) during summer and fall months (June-November) <ul style="list-style-type: none"> ○ (Floodplain extent calculations limited due to lack of topographic data); • Match bankfull channel elevation with historic floodplain <ul style="list-style-type: none"> ○ Removal of inset floodplain; reduction of elevation difference between bankfull and historic floodplain terrace. • Increase in spatial extent (linear feet wetted channel) of surface flow, for a given level of flow, relative to current conditions. 	<ul style="list-style-type: none"> • Continuity in the longitudinal profile: <ul style="list-style-type: none"> ○ Consistent elevation changes between grade control and bank elevation; ○ No increase, growth or migration of headcuts (above baseline); ○ No nickpoint or elevation change in swale features; ○ Consistent slope with riffle (difference in elevation between riffle crest and streambank consistent throughout reach); • Increase in bank stability (measurement of area of stable bank); linear ft. of vegetated bank; linear feet of undercut bank 	<ul style="list-style-type: none"> • Increase connectivity (spatial and/ or temporal) to downstream reaches <ul style="list-style-type: none"> ○ For a given water year type, relative to baseline. ○ Knowledge of connectivity in different water year types prior to current restoration effort is needed for quantitative comparisons. 	<ul style="list-style-type: none"> • Prolonged downstream flows and decreased temperatures during June-November <ul style="list-style-type: none"> ○ For a given water year type, relative to baseline. ○ Knowledge of connectivity in different water year types prior to current restoration effort is needed for quantitative comparisons.
Timeframe 1-5 years after completion of project	1-5 years after completion of project	1-5 years after completion of project	1-5 years after completion of project
Monitoring and Adaptive Management Actions			
<p>Groundwater wells will be deployed in each meadow and measurements will be taken between June and November and compared to the baseline.</p> <p>Measurements of current and (if still relevant) historic floodplain dimensions will also be made. Monitoring and comparison of before and after conditions should be completed immediately after project implementation and again 5 years after implementation.</p> <p>Monitoring and comparison of before and after conditions should be completed immediately after project implementation and again 5 years after implementation.</p>	<p>The channel characteristic definitions and measurements (including channel unit length, depth and width and length (in meters) and percent of unstable banks) as described in the "Forest Service Stream Condition Inventory Protocol" (2010) will be followed. Monitoring and comparison of before and after conditions should be completed immediately after project implementation and again 5 years after implementation.</p>	<p>Flow monitoring as described in the "Forest Service Stream Condition Inventory Protocol" (2010) will be followed. Flow measurements will be taken between June and November and compared to the baseline. Monitoring and comparison of before and after conditions should be completed immediately after project implementation and again 5 years after implementation.</p>	<p>Temperature and flow monitoring as described in the "Forest Service Stream Condition Inventory Protocol" (2010) will be followed. Temperature and flow measurements will be taken between June and November and compared to the baseline. Monitoring and comparison of before and after conditions should be completed immediately after project implementation and again 5 years after implementation.</p>
<p>If after 5 years the floodplain is not regularly inundated, or the bankfull channel elevation does not match the historic floodplain, additional restoration actions (likely in the form of earth moving) will need to be designed and implemented and monitoring will need to continue.</p>	<p>If the percentage of stable channels has not increased, or functional swale habitat is not present, additional restoration actions (likely in the form of earth moving and bank stabilization) will need to be designed and implemented and monitoring will need to continue.</p>	<p>If neither spatial nor temporal connectivity has improved 5 years after project implementation, a meeting with representatives from the organizations involved in restoration activities will take place to discuss project outcomes and potential adaptive management solutions.</p>	<p>If downstream flows have not been prolonged (relative to baseline conditions) and temperatures from June-November have not decreased, a meeting with representatives from the organizations involved in restoration activities will take place to discuss project outcomes and potential adaptive management solutions.</p>

So did we do it?!



Objective 1: Complete design, environmental compliance and permitting to move 10 priority meadows across Sequoia National Forest into implementation phase within two years.

YES (well close) – 8 geographically distinct meadows located across two ranger districts in a single NEPA/CEQA document in three years. - EA

- Primarily written by project partners and reviewed by Forest Service staff thus increasing FS capacity

YES – CEQA compliant NEPA document (joint document)

- Took some finagling with CEQA required sections such as climate change but forest accepted that this was a good way to proceed.

Objective 2: Streamline environmental compliance documentation to reduce future redundancy and facilitate Forest-wide watershed restoration implementation.

YES: State Water Board Permit 401s bundled into two groups (North Fork Kern Group and South Fork Group)

And NO: USACE 404 permits were still required to be submitted individually

Lessons Learned



Forest Service Capacity and Turn over – Significant turn over over the duration of project. Delayed ID team review – NEPA draft review took approximately 10 months

Lesson Learned – Host quarterly or bi-annual meetings with FS ID team so that everyone is apprised of the project

Problematic Meadows Delaying the Package of Meadows – archeological issues on one meadow site delayed project progression

Lesson Learned – Remove problematic sites early on and track independently of group

Other problems solved for the future:

- Required CEQA sections removed from NEPA draft EA due to agency direction (reincorporated as a comment in Final EA to make CEQA compliant). Forest Learned!
- Spoke with interested parties early and moved forward in meeting their intent.
- 45 Objection Period with Final EA (held back CEQA compliance 45 days). Start earlier!
- 30 day CEQA Public Notice Period (notifying the public that the Final EA would serve as the NEPA document) . For another project forest is doing both Objection period and CEQA notice simultaneously!

What's Next – Implementation



Two meadows have funding for implementation summer/fall 2019

- Plumas Corporation/SQF – NFWF ILF Grant, this is a test case
- Powell and Troy Meadows
- Fish Creek AOP passage project (downstream the two sites)

Remaining 6 Meadows – applications submitted across several funding sources

