

UPPER TRUCKEE RIVER RESTORATION WORKSHOP PANEL QUESTIONS

I would like to preface my comments by saying there is a tremendous and unprecedented opportunity in the Upper Truckee River basin to achieve real success. The UTR restoration can become the hallmark for management in the basin. The expertise, knowledge, dedication and passion of staff are truly impressive. There is tremendous engagement and interest from the public. And the potential for the UTR to achieve the multiple goals laid out in the restoration strategy is ripe.

An incredible amount of work has gone into getting us where we are today – a **lot** of very good work. This is the time to step back, take a deep breath, and realize that success is at our fingertips– the pieces are in place. However, we are at a tipping point. How the next steps are taken is critical to whether this project truly becomes a shared watershed-scale restoration project or a continued series of individual projects operating in silos.

Leadership and guidance are absolutely key to creating a **watershed scale** restoration project, so that barriers are removed, entrenched ways of doing things are reconsidered/rethought, and that this does become the transparent collaboration staff have worked so hard to create.

From the voices I heard over the 3-day workshop I understood that many view the basin as having many constraints and many impacts. However, what I see is something you rarely see in river systems today – a tremendous opportunity to influence an entire basin that from my experience, has relatively few stresses, threats or constraints. Sure there is a golf course, sewage lines, an airport, roads and a development. But what we have here is something that you rarely see, future threats (with the exception of climate change) have been mitigated for, and there are few stresses currently on the system. Here we are in California and there are no issues of water supply or competition for water; there are no land use practices that need to be greatly altered (such as development threats or incompatible agricultural practices), no regulatory processes holding up the process. Sure there are funding constraints, but for the most part, the opportunities presented here are rare – the potential to restore a watershed in a highly valued part of the world viewed as a national treasure.

I am optimistic because from the lake to the upper watershed here's what I see:

Marsh: Although 1/3 of the marsh was developed in the 1960s, there is still 2/3 of the marsh there just waiting to be restored so it can resume functioning as a filtering sponge, mitigating water quality and flood impacts, providing even more wildlife opportunities than it does now, enhance a native fishery, and provide a link to the Upper Truckee watershed with the public. It is incredible that this land is under the Conservancy's ownership.

Johnson Meadows: an unconstrained and protected floodplain (cannot be developed) with an opportunity for public ownership perhaps through creative private fundraising. The restoration potential to reconnect this river reach with its floodplain is unprecedented in California waterways.

Airport Reach: Numerous miles of river and floodplain in public ownership – with a huge restoration potential.

Sunset Stables: More miles of river in nonprofit ownership.

Golf Course: California State Parks land.

I would encourage the group to rethink the strategy as a series of individual projects and think of the UTR instead as three ecological reaches: the lake influenced marsh at the mouth, the lower gradient reach below the golf course, and the higher gradient section that includes the golf course and above. Viewing the river as ecological reaches provides a framework for developing a vision for the watershed, instead of a series of projects owned by individual agencies.

1. The current Upper Truckee River (UTR) strategy and philosophy focuses the design of projects on the restoration of geomorphic and ecosystem functions. In what ways is this approach likely to be effective or ineffective, as a whole, in achieving the projected benefits?

The focus on “re-establishing natural geomorphic processes and functions” can be an effective one, however, restoring geomorphic and processes and functions for their own sake should not be the goal of restoration– there needs to be end goals/tangible results related to that philosophy. What are we restoring those functions for? Is our end goal more wet meadow habitat? Improved instream conditions for native fish assemblages? Improving water quality (suspended sediment, temperature, etc.)? The river already operates under “natural geomorphic processes and functions,” just not the ones we think they should be operating within (incision, headcuts, disconnected from floodplain, etc.). In short, restoring geomorphic function is a means to getting at some goal, at restoring some target or set of targets. Those targets/goals need to be identified and clearly articulated.

The UTR strategy needs to be adjusted to be more specific, and the restoration strategy designed to clearly articulate quantifiable goals – whether they be geomorphic functions, ecological communities, ecosystem services etc. In general I translate the geomorphic functions and processes as described in the UTR restoration strategy as a strategy to reconnect the Upper Truckee River with its marsh/floodplain. From the golf course to the marsh, the focus of the individual restoration projects seems to be one designed to reconnect the river with its surrounding marsh/floodplain which then restores a variety of functions, processes, and ecosystem services (i.e. restoring geomorphic functions and processes).

Although unstated, the primary intention appears to be returning the surrounding area to wet meadow in areas above the marsh. The UTR approach to achieving reconnecting the river with its surrounding areas involves manipulating the stream channel to varying degrees – restoring channel to its historical channel such as in the golf course and Johnson Ranch, to creating new undersized channels in the airport reaches and Sunset stables – with the intention, to restore the system to a wet meadow system. However, in the face of climate change, maintaining wet meadows may not be viable in the future – these systems may look much different than they do now. Although project proponents said this isn’t a one size fits all – the proposed methods for all projects (with the exception of the marsh) entail one method – create smaller, new channels and forcing the existing channel into the new channels, with the intent being more overbank flooding.

A study completed in 2012 by Ramstead et al. (Have wet meadow restoration projects in the Southwestern U.S. been effective in restoring geomorphology, hydrology, soils and plant

species composition?) conducted for the Centre for Evidence Base Conservation provides an overview of the effectiveness of wet meadow restoration projects in the southwestern U.S. In that review, 26 restoration projects were evaluated with varying degrees of success. That study can be found here and contains evidence on the effectiveness of wet meadow restoration: <http://www.environmentalevidencejournal.org/content/1/1/11>. One of the most important results from the study is how well does geomorphological restoration techniques work in the long-term. Most of the articles and project reports reviewed covered no more than five years of post-project results, yet there were multiple examples of failed efforts to restore stream channels most of which were believed to have failed during extreme flooding events. Given predictions of increased flooding events in the face of climate change are we prepared for the possibility that these projects will result in incision, failure?

In short, I see the restoration philosophy being more about reconnecting the river to its floodplain and marsh. When we view the work in that context -- there is an entire literature to rely on, examples from within and outside the basin to draw on, and a transparent and accessible approach and communication tool with direct and indirect quantifiable objectives. However, by limiting the philosophy to one that is restoring geomorphic and ecosystem functions for its own sake, there is little opportunity to hold the restoration accountable to quantifiable, measureable goals and objectives.

If we are able to rethink the UTR philosophy to be one of reconnecting the river with its floodplain – we begin to make the strategy and narrative tangible, accessible, and living within a vast community of restoration activities instead of one isolated in language and unrelated to quantifiable goals. We certainly cannot lose sight of the fact that this is a unique system – a truly remarkable system – a national treasure. However, drawing on known and tested terminology and methods will help make this project a true success.

In the face of climate change with, as we heard, there is a greater probability of rain on snow events and larger floods. Therefore, reconnecting the river with its surrounding areas makes sense also from a public safety point of view. Reconnecting the river with its floodplain at this coordinated and system-wide approach improves public safety, water quality by reducing fine sediments, and habitat for native fish and wildlife. A focus on geomorphic processes downplays the ecological/biological components of river – with an almost devil may care attitude of “if you build it they will come.” Whether this is true or not is unknown as it does not seem that a systematic, baseline study of current conditions has been completed. At a minimum, such a baseline study should be conducted.¹

I would encourage the groups to reconsider this one size fits all approach to restoring connectivity especially in the case of creating new channels, and look to existing literature

¹ I am happy to share examples of baseline studies we have done at some of The Nature Conservancy's project areas.

and studies to evaluate alternatives. Quite frankly, the method of abandoning existing, incised channels and putting the river into newly created channels, worries me. The long-term impacts of these types of projects in this type of system are unknown and in the short-term, these types of projects destroy existing habitat. I would encourage staff to explore other methods that allow for the restoration of dynamic, self-forming channels, without such large-scale, invasive direct manipulation methods. We have conducted the direct manipulation in the adjacent Trout Creek watershed – yet from what I could tell, have little evidence to evaluate the success (or failure) of those restoration efforts.

By reframing the philosophy as one that reconnects the river with its floodplain/adjacent meadow, the impacts are tangible, the results quantifiable, and better communicated. Narratives can surround the restoration work.

2. How could the overall restoration strategy be improved to provide the most robust, comprehensive, coordinated, and coherent framework for restoring ecosystem function and resiliency within the UTR stream channel and floodplain?

The overall restoration strategy is lacking a vision. Without a vision, it is impossible to create a **“robust, comprehensive, coordinated, and coherent framework.”** I would encourage the groups (including the public) to look holistically at the system, from the forested headwaters to the golf course to the mouth rather than by those smaller restoration reaches. What do we envision for the Upper Truckee River watershed in the next 20/50/100 years, and then begin to restore the system to that vision. We were told that the strategy developers moved away from describing desired future conditions to desired future processes, but I would urge that to be reconsidered. Restoring processes for what ends?

From the information I could gather re aquatic/riparian ecosystems, there appear to be 3 ecological zones in the watershed. From these ecological communities it would be appropriate to look at the lower river as three restorations distinct sections – the lake influenced marsh at the mouth, the lower gradient reach below the golf course, and the higher gradient section that includes the golf course and above. Although the upper watershed was not included in this strategy, it is appropriate to consider upstream activities as those upstream reaches have a large influence on the downstream reaches. How do we envision those three regions functioning in the future? What do we envision the fish communities to look like – are we okay with a non-natives dominating the system? How do we see the marsh functioning in the future? A vision would allow for sequencing projects more effectively.

As stated in question 1, I encourage the groups to view the watershed as a whole instead of a sum of individual projects. Looking at the watershed as a whole allows us to envision that some parts of the system do some things, other parts do other things, but as a whole the watershed achieves a vision of success. Currently, the restoration strategy is a series of individual projects, where projects are expected to do everything at that place! That is just not possible, not every place in the system is the same, and therefore should not be treated as doing everything everywhere.

How do we begin to view the system as a whole – what do the various parts of the system provide ecologically, geomorphologically, for water quality, for the public etc.?

3. The UTR restoration effort involves a wide range of varying landscapes, impairments, constraints, and opportunities. Considering the significant variations in individual project reaches and the potentially different restoration concepts used in specific settings, what additional guidance can the inter-agency strategy incorporate to ensure that the most efficient and beneficial river-wide effort is implemented?

Develop a Vision (and commit to a shared vision): Without an overall vision, the inter-agency strategy assumes that all projects within the UTR are priorities and therefore whoever gets money first should go ahead with their projects. If everything is a priority, nothing is a priority. Decisions are made to capitalize on opportunities. However, do those opportunities prohibit the basinwide vision from being successful? If a vision for the basin was developed, projects could be sequenced and designed to inform the next project.

Create a Science entity: Need a science consortium in charge of data, analyses, reporting, establishing baseline conditions. I encourage the groups to look outside their own agencies – bring in academic/research institutions to help with restoration/research/monitoring questions. This group doesn't have to do everything themselves. A little funding to an academic institution can bring lasting results and more outside funding. I've seen this happen on a number of TNC projects – where academic/research institutions set up shop at a project and were able to provide answers to questions we did not have capacity to explore.

Leadership: Who owns the strategy? What are the mechanisms for evaluating trade-offs? Who decides which projects will be implemented and in what order? How is funding being coordinated? Without leadership, the UTR strategy will continue to be approached as individual projects and not as **A** watershed scale restoration project.

Someone needs to make the hard decisions.

Staff is doing everything they can to make this watershed-scale restoration a reality. They – like the 7 individual restoration projects in the basin – should not be asked to do everything. Without leadership there can be a tendency to become entrenched in individual mindsets – such as “this is the way we do things”. Regardless. To step outside those boxes and work in partnership requires leadership.

Engage Local Community in Process: It is striking that the people who will be most directly impacted by the restoration activities planned – private property owners near the golf course and around the marsh -- do not feel heard and we saw that first hand. Private landowners in the basin have a stake in the restoration and future of the watershed – this should be looked at as an asset – not as a negative. The public feels that the agencies have made decisions without their interests or input heard, and that deepens divisions.

I would encourage those involved to form a stakeholder group and involve the public in the process. This again requires leadership to coordinate and capitalize on existing resources.

Share information:

Set up recurring, regular meetings to ensure transparency.

Step outside the “Basin Box:

I see a real need for those involved to look outside the basin and individual group thought for examples of how this has been done in other places. There is a wide literature to draw from – many examples of watershed-scale restoration out there to learn from. I would encourage groups to reach out to academic or other research entities and listen and learn from other points of view, and evidence. Make this an evidence-based restoration project that can be amplified to other parts of the Basin and beyond. Make this a learning laboratory!

4. Does the monitoring, analysis and reporting as described in the UTR strategy document, adequately provide guidance for measuring success in achieving the stated goals and objectives? In what ways can the monitoring, analysis and reporting be improved?

The monitoring, analysis and reporting in the UTR strategy document is not linked to quantifiable goals, and therefore does not provide mechanism for measuring success.

Pages 25-27 lay out the goals of the project, however many of those goals are not quantifiable and therefore difficult to measure. For example, Goal 2 is to improve aquatic and wildlife habitat/populations with the objective being “to increase or enhance aquatic and terrestrial wildlife habitats.” This is vague.

I would encourage the group to rethink the goals of the UTR strategy as a set of targets (this gets back to a vision) and develop quantifiable goals that can be measured. For example in the case of improving aquatic and wildlife habitat: reduce temperatures to XX degrees in such and such area to improve conditions for native fish assemblages. The group can look at the current goals and restructure those as targets, and then identify the key attributes of those goals. For example, what are the **key** attributes of goal 1 “restore properly functioning geomorphic channel configuration?” Here the key attributes are listed as floodplain inundation, pool and riffle dynamics etc. Are those key attributes and are they measureable?

A lot of the pieces are scattered in the strategy here and there – a bit more work is needed to better organize and get a handle on quantifiable goals which then leads to a monitoring plan². This does not mean that you need to measure everything everywhere! Specific components need to be identified that will be monitored to determine the impact of restoration activities based on goals. And a comprehensive baseline assessment would provide a reliable representation of the ecological and hydrological conditions prior to restoration. Monitoring needs to be linked to specific goals and without goals, there can be no evaluation of whether or not you are meeting goals.

Right now I see the groups have been collecting a lot of data but have not been able to translate those data into information. What do the data tell us? Are we measuring the right things?

And one thing in particular, there is a glaring need for temperature monitoring!

² TNC’s Conservation Action Planning framework could be helpful. Happy to provide information.

5. Ecosystem resiliency is an overarching restoration goal. How do we more effectively communicate to the public and local government representatives the technical processes undertaken to select project approaches to achieve this goal, such as balancing risk of potential short term construction related impacts of restoration projects with the long term benefits to ecosystem function and resiliency?

I think this goes back to my comments about creating a vision for the basin. Developing a narrative around the vision for the UTR will allow for more effective communication to the public and local government representatives. Currently the UTR strategy lacks a communications strategy.

In terms of process, there needs to be more transparency and a commitment to communication and transparency. And a need to the public in the visioning process.

Restoration is a social process too. Communicate how many jobs it creates in basin and importance of restoration to economy as well as the ecological/biological benefits.

Our key recommendations under COMMUNICATION provide some suggestions on how to better communicate what you are doing in the watershed to the public through better signage, collaboration with local schools and businesses. A key to this communication is developing an effective communications strategy that focuses on agreed upon set of messages about the UTR vision and actions to achieve that vision.

6. How should new scientific information and technical advice that is obtained as part of program or project development be incorporated to improve and expand the river-wide restoration strategy?

As stated above, I think we need to step back from the project scale approach to a real watershed scale approach and think of the whole as a sum of its parts. Work as a team. Foster leadership. Develop hypotheses. Collect data to test hypotheses. Consult the literature. Develop a baseline assessment. Define quantifiable and measureable goals. Develop a vision.

Because of the need for restoration action in the basin, and the uncertainties regarding the system, a real *adaptive management* approach is needed. Adaptive management will allow for restoration strategies to follow an iterative process: plan, act, monitor, evaluate, and then again to plan, act, monitor, evaluate. This will allow experimentation and results of monitoring to guide and determine the best management strategies for this complex system. This is an important restoration approach for the UTR watershed because it allows for flexibility and emphasizes the importance of monitoring the results of actions for the purpose of adjusting plans and trying new or revised approaches.