Tahoe Science Advisory Council Threshold Update Support 2017-2018, Project 5

Date revised: 12/22/17

Stream Environment Zone Review

Stream environment zone (SEZ) is a term unique to the Tahoe Region, that the TRPA Code of Ordinances defines as “Generally an area that owes its biological and physical characteristics to the presence of surface or ground water." This definition includes perennial, intermittent, and ephemeral streams; wet meadows, marshes, and other wetlands; riparian areas, beaches, and other areas expressing the presence or influence of surface or ground water. SEZs provide a variety of highly valued services, including water quality maintenance through nutrient cycling and sediment retention, flood attenuation, infiltration and groundwater recharge, open space, scenic and recreational enjoyment, wildlife habitat, and wildfire abatement, among many other functions and values.

In 1982, TRPA adopted the standards below for protection and restoration of SEZ;

> *"Preserve existing naturally functioning SEZ lands in their natural hydrologic condition, restore all disturbed SEZ lands in undeveloped, un-subdivided lands, and restore 25 percent of the SEZ lands that have been identified as disturbed, developed, or subdivided, to attain a 5 percent total increase in the area of naturally functioning SEZ lands."*

The above standards can be divided into four sub-parts, the first of which focuses on preservation of existing SEZ and the later three establish targets for the restoration of SEZ. A more detailed discussion of the standards can be found in the soil conservation chapter of the 2015 threshold evaluation (http://www.trpa.org/regional-plan/threshold-evaluation/). The focus of attention in the region has generally been on restoration standards. The 5% increase in overall SEZ in the region was attained in 2015 and the 25% goal for restoring "disturbed, developed, or subdivided" is likely to be attained in the near future. The peer review of the 2015 threshold evaluation contains a number of recommendations for revising the standard to incorporate best science.

A critical review of the current and options for updating the SEZ standards is warranted. Specific topics to be addressed in the review include:

- SEZ related standards currently reside in a number of threshold categories, including (soil conservation, vegetation, and wildlife) and while the SEZ are often described as being important or providing a number of benefits, this is often not quantified. Development of a conceptual model based of the benefits from SEZ and the stressors on SEZ. The model and associated documentation should include a discussion of how the function and benefits derived from SEZs (and or SEZ enhancement or restoration) vary by type, size and location. A typology, map, and set of values and functions for SEZ can be found in Roby, K, J. O’Neil-Dunne, S. Romsos, W. Loftis, S. MacFaden, D. Saah, and J. Moghaddas. 2015. A review of stream environment zone definitions, SEZ types, field delineation criteria and indicators, classification systems, and mapping – collaborative recommendations for stream environment zone program updates[1].

- Is the SEZ construct still an appropriate and scientifically relevant frame upon which to base our SEZ protection and restoration targets? Are there other frameworks or approaches that better reflect both the functioning of and values and benefits derived from SEZs?

[1] Available at: https://www.fs.fed.us/psw/partnerships/tahoescience/documents/p093_SEZ_FinalReport.pdf

• How appropriate is "area restored" for measuring the benefits of SEZ restoration and the establishment of a new restoration target?

• In 2015 Spatial Informatics Group, developed a GIS layer detailing the extent, location and type of SEZ in the Basin. The map utilized soils and the remotely sensed imagery to delineate the location of potential SEZs today, but does not provide an indication of the extent of historic SEZ in the Basin. Provide outlining options and recommendations on mapping historic SEZ in the basin. Include a discussion of climate change impacts on SEZ in the basin and on the functions and services they provide.

TRPA recently received a grant to advance SEZ management in the region. A technical advisory committee that includes representatives from USFS, NDEP, NDSL, LRWQCB, CSP, CTC, EPA, USBR, and TRPA, will provide strategic direction and guidance for the grant.

Deliverables

The primary deliverables will be a conceptual model and a set of four summary topic briefs. Each brief will be a 4–8 page document that synthesizes the relevant scientific evidence for the topic, and provides references for the literature reviewed. The briefs will also identify general points of uncertainty in the topic area where they exist, and considerations in applying the knowledge to policies and programs.

1. A SEZ conceptual model(s) and report that addresses the different types of SEZs, functions provided by SEZ , and stressors on function. Relative influence of drivers on function and benefits, and linkage to existing standards. For each driver stressor the accompanying documentation should include a 1-2 paragraph description on how the system function is expected to respond to changes in that driver/stressor.
2. Topic Briefs:
    A. The utility of the SEZ construct – Using the conceptual model as a frame, provide perspective on the utility/appropriateness of using the SEZ construct as a frame for managing SEZs.
    B. Tracking SEZ condition - Using the conceptual model as a frame, provide an overview of the benefits/drawbacks of using “area” as a metric to track the benefits of SEZ restoration and costs of degradation/loss.
    C. Mapping historic SEZ – Provide an overview of options/methods for mapping historic SEZs. including identification cost and benefits of different approaches to doing so. Where the conceptual model highlights different types of SEZ the brief should address how well individual options may perform and mapping the individual types.
    D. SEZ and Climate Change - Overview on the potential impacts of climate change on SEZs in the basin and the functions/services they provide.
3. Presentation of the findings and recommendations of the report and topic briefs to the EPA SEZ grant technical advisory committee.

Timeline

Start date: February 1, 2018

Draft outline on SEZ conceptual model approach: February 16, 2018

Draft topic brief A: February 23, 2018

Draft topic briefs B & C: March 23, 2018

Final SEZ conceptual model and report: April 6, 2018

Draft topic brief D: April 20, 2018

Final topic briefs A & B: May 11, 2018

Final topic brief C & D: May 25, 2018

Presentation on topic brief findings to TAC: May or June 2018

Personnel

Project TSAC lead: Dr. Steve Sadro (UCD)

Project TRPA lead: Dan Segan

Contributing scientists: Ramon Naranjo (USGS), Dr. Jerry Qualls (UNR)

Total project allocation not to exceed: $45,000 (UCD, USGS and UNR)

UCD Funding allocation: $6,701

Total cost for this task is estimated not to exceed $45,000 (estimated 300 hours of effort at a TSAC median rate of $150/hour). This includes development of project scope (presented herein), assembling relevant materials, conducting identified tasks, developing draft documents, incorporating revisions based on agency review and comments, producing the final documents. Work will be provided on a Time and Materials basis not to exceed the estimated total.