

Meeting Notes  
Tahoe Science Advisory Council  
Thursday September 19, 2019  
10:00 AM – 2:00 PM  
Tahoe Center for Environmental Sciences, first floor Rm 119  
291 Country Club Drive  
Incline Village, NV 89451

Expected Participants: Sudeep Chandra (UNR), Alan Heyvaert (DRI), Geoff Schladow (UCD), Steve Sadro (UCD), Pat Manley (PSW), Ramon Naranjo (USGS), Paul Work (USGS), Jason Kuchnicki (NDEP), John Melack (UCSB), Robert Larsen (CNRA), Alison Toy (UCD), Adrian Harpold (UNR), MyLinh Nguyen (NDEP)

Agency participants: Jim Lawrence (DCNR), Dan Segan (TRPA), Jack Landy (EPA), Jason Kuchnicki (NDEP), Mark McDaniel (NDEP)

Draft Agenda

1. Welcome, agenda review, introductions (Alan) 10 minutes
2. Bi-State Executive Committee Meeting Overview (Geoff/Alan) 20 minutes
  - Alan gives a recap of who is represented in the Bi-State executive committee meeting: resource agencies, VPRs from each research institute, etc.
  - Geoff gives recap about the August Bi-state executive meeting.
  - Alan says Dan spoke about the thresholds. Talked a little about the clarity. Talked about work products. Most are familiar with S2A framework, finalized in document accompanied with an easier to read 4-page document presented to the executive committee. Definitely read this 4-pager as it highlights the TSAC primary products.
  - Any comments? None.
  - Jim pleased to hear that Geoff thinks it went well and agrees. It was Crowell's second meeting and he also thought it was successful as well. Thinks of it as the next step, and looks forward to continue to participate as a NV resource agency, both him (Jim) and Lizzie have an opportunity to grow the council. Getting the materials out in advance and having a summary were key for having a conversation in Carson prior to the meeting. More productive discussion. Good job to Geoff, Alan, and Bob. Never got stuck anywhere, it flowed well.
  - Bob adds with the change in administration it was a good opportunity for Crowfoot to get up to speed and learn about what the council is all about. Feedback from Sacramento was that it was successful. Involved tangentially, limited budget from operations budget, impressive amount of work with these resources. Looking forward to programming a larger amount of resources. Gratifying to present some tangible products and this was a great opportunity to demonstrate the utility of this group.
  - Alan thinks this success is because of the involvement of council members. As well as engaging perspectives from agency colleagues. A model for continuing forward. We have to schedule time into these projects. Take the time to do it right.

- Ramon asks given that agencies had time to review materials, were there indications that things are progressing as usual, what will help them decide the funds that will come later.
- Geoff says there is a secretary and a director, institute, agency members, but the ones with resources are the secretary and director. They liked what they heard. But USGS are not pledging money but they are there asking question, academically holding our feet to the fire.
- Alan says we want them to recognize the resource we are dedicating to TSAC and get continued support. Opportunity to bring them up to date and in agreement to what we are doing and understand the management questions we are grappling with.
- Geoff announces that one thing they have failed to mention to everyone is that in the last few months, we have developed a regional management team. Several members of the executive committee, basically the representatives of the CA secretary and NV director, the TSAC co-chairs, and Bob have met to have continually meaningful exchanges. Our executives are really busy and it is difficult to keep them engaged in a variety of ways.
- Alan says we will bring everyone in once we have it figured out how this will work.
- Bob says another meeting is scheduled for early October and they will bring back discussions from these meetings.

3. Nearshore research projects review (Alan) 60 minutes

- Bob introduces the upcoming presentations by talking about the California bill set resources aside for nearshore research. In an effort to spend those monies well, periphyton was identified as the priority of the nearshore. There was a target study done by UNR and USGS, identified questions to be addressed in terms of drivers. Proposals to review and selected projects to move forward. UCD, UNR, USGS is a prioritization exercise.
- Alan says it is worth mentioning that this is from over the last two years. The council will be more engaged as the research continues. We have additional resources; how do we have this conversation as to where we are going?
- Ramon, proposing use of multi-isotopic ratios collected from groundwater samples. At about 10 different sites. Picture taken in May. Flying drone to get spatial idea of how much growth is happening during peak periphyton growth. Seems to peak earlier in March and stays like this for a few months before periphyton is sloughed off. Photo bleaching from green to white color, so chlorophyll-a is the measurement. A measure shows a reduction, but the biomass is still high. Collected from NS3 site, 3 other locations 2, 3, and 5. NS 5 Pineland near mouth of Ward creek, stays constant, found concentrations in relation of proximity to Ward creek. How nutrients can stimulate growth, associated growth ones that are non-detect because the nutrients are being taken up. Pulses happen because of the removal of periphyton and very low concentrations. We see an increase of chlorophyll-a with the lake concentration. See concentrations and comparison with lake level and concentration. Large increases in periphyton biomass, there is a change occurring within landscape etc. More variable with an exception to the few drought years, Concentration of nutrients coming into the nearshore and feeding periphyton, might need some management action to limit

nutrient inputs. Use multiple isotopes to identify the N and P sources that lead to algal growth. Analyzing samples of periphyton itself.

- Couple working hypotheses. Elevated nutrient concentration related to anthropogenic enrichment.
- Sources in groundwater are similar to the role it plays in the transport.
- More frequent sampling and isotope analysis
- Sample for nutrient and isotope analysis
- QA/QC and data entry into USGS NWIS
- Correlation and spatiotemporal analysis
- Design 10 monitoring sites, most on west shore, most are either hot spots identified from UCD collection, Low frequency sampling twice in January and April, collect groundwater samples, look at the monitoring network that was a part of the LTMP program. Normally  $<2\text{ microg/L}$  of N in groundwater, but wells that have been sampled have been much higher to see how things have changed.
- 3 Ward creek sites, looking at biomass, nutrients, and isotopes
- Instrumentation using shallow piezometers, intended for long-term collection, also intend to use seepage meters to measure water coming out, at places like ward We can do slug tests to measure gradients to have a continuous record of groundwater discharge rate. Specific conductance is useful to find where water is being discharged.
- Paul wants to know about the temperature in wells and the impacts of the nearshore. Bob says hopefully it will be discussed more in Sadro's presentation.
- Watershed monitoring locations, there aren't wells at those locations, we use ones that exist to understand what sources exist in water.
- Kendall plot, depending on variability of concentrations during time, look for trend of nitrification or de-nitrification
- With isotope you can find indicators of fertilizers, chemicals, look collectively and looking at different ratios, use to collectively show the presence of a specific source.
- Looking at installation and sampling in October, one-year data collection, reporting required is a publication.
- John Melack asks about the Granmar model for seepage data. Ramon says the focus is what are the sources. We can put together a groundwater flow but we didn't have the resources at the site. Had proposed periphyton linked to an active groundwater transport model. Does this have an impact on the biomass growth on the rocks? Something we have wanted to do.
- John say this model shows chemical reaction and groundwater. Can at least calculate flow into lake rather than include the chemical reaction portion. Ramon says that is the intent. Alan says we did do it, but it did not get funded. Perhaps through landscape linkage.
- Ramon says that the groundwater gradients are steepest, moving a lot during winter, and more severe the drought. It is going to contribute more additional resources, even in the winter.
- Jim says all sites on the West shore, one site on Nevada near Edgewood, any idea for monitoring here near incline creek and third. That go through urbanized areas, ball fields. Why were these site chosen? If we are going to start limiting from TRPA and

from land manager perspective wants to know, but seems like Incline seems like a good site.

- Ramon says the original proposal had a lot more sites, wanted to look more broadly around the lake, but it came down to resources.
- Bob says on the West shore there was a clear signal, and money was put forth for that area and there seemed to be pulses. Then what are the sources and then is this something that happens elsewhere? A more lake-wide assessment.
- Geoff says that one of the benefits that Incline Village is that the area enjoys a strong downward wind, you get the waves that break up any potential periphyton growth. Maybe what we see in Ward is happening, but it's getting washed away.
- Alan wants to know how will we scale up to make it more basin-wide. Ramon says that proposals all start off as good ideas, if we get good info from the study, then we can think about other locations. Things like fertilizers won't impact certain areas. The East shore doesn't receive as much snow/snowmelt. Alan says then we can bring wind and hydrodynamic model, build response to these different factors and then you can predict where it will be bad.
- Ramon says what are these sources and then if we can identify then we can expand and look at all areas of the basin. Could be issues that still persist.
- Sudeep points out to group there is a strong seasonal dynamic, winter and spring growth is important when thinking about groundwater flux, when looking other factors sustaining growth. Long-term UC Davis data collection during certain spring run-offs we see peaks. Peak discharge at Ward creek, or rain on snow events, is there a correlation of rain versus rain on snow? Second part, study from UC Davis 15 year ago, collected periphyton along nearshore, didn't see fertilizer level signatures within periphyton community, is there something that might mask signals? Ramon plotted data for that study, against conceptual models for community respiration, carbon-13 on x-axis and N15 on the Y, data itself, N15 by itself, it is hard to determine source without O18. Was not looking at sources but when compared with the conceptual model, the N15 values are in the range of the fertilizer, the figure is in the proposal and can be shared.
- Sudeep presents on the role of crayfish. Report that can be shared, but has not been peer-reviewed, that conceptual model along with this proposal has led to this project. Important to understand the predator. The crayfish increased population since 60's, work was done in the 70's by Goldman's grad student, looking at ammonium excretion stimulating algal growth. We know through these food web changes, bottom invertebrates from 80-100%. Found that they alter benthic invertebrate structure. Using crayfish as a keystone species, direct and indirect influence either through consumption of algae or consuming prey that eat algae. Look at longer-term data of lake, Sunnyside population doubled and then dropped, highly variable. Crayfish can be altering over time and we don't have consistent biological monitoring with periphyton. At Crater Lake correlate to increase of periphyton biomass. Experiments manipulate. Most of the change is through the snail grazing pressures on the lake. Periphyton and chlorophyll-a. Project through park service and a grad student. 3) Role of invasive crayfish in controlling periphyton dynamics. 4) Water quality characterizations at the bottom-water interface. Total P, N, and C. 5) Quantify seasonal distribution of crayfish from Spring to Fall and identify energy sources. Some of these will make migrations from deep water

to shore, dependent on location. 6) Quantify periphyton community composition and structure, look at soft-bodied algae, determine relative abundance. Reaching out to Ramon and Sadro's team to get a collaboration going. 7) Literature review of other large lakes exhibiting nearshore nuisance periphyton blooms and their potential drivers of productivity in the nearshore. Maybe simple social science questionnaire is needed.

- Have received support from NSF and Agencies, why pristine lake bottoms are greening?
- Targeted <5m for divers, not enough funding for deeper areas.
- Why exclude lakes that are less than 5m, find where the equipment can be safely placed without being messed with. 10mx10m exclusion zone. No interference for funding for best available data. Hoping 2-3 times per year. How to sample 30-40. Used minnow traps and count. This will great confirmation of size structure and populations.
- Sensors for measuring Total N and Total P and Total C will be done by grab sampling, not by sensors.
- Does TERC or UNR have a long-term data set on benthic density? UNR has a data set 2010-2012, then 2013 snapshot of nearshore.
- Steve with small lakes sampling, we have noticed a large difference between ones with fish and ones without. Top down and bottom up controls of periphyton likely. Crayfish introduced 3 times since 1980s two different subspecies, those three times. Populations have been well-established. If they have been there for this long, why wasn't there this affect. It has only been in the last few years where their populations have doubled. There's an iterative quality with temperature. We are incubating them at lake temperature. Ideally we would do that with varying temps. Changing temperature would also have a difference on periphyton and chemical composition of water. Cold temp drops increase mortality in certain parts of the lake.
- Ramon says the crayfish study that Goldman did in the 70's as a transect out to 50m depth. One conclusion they reached, less than 3-5 m. Density of crayfish is minimal, did not see the numbers. If crayfish were contributing to nutrients associated with periphyton, how might the population get high enough for those sources. Different types on composition but concentration is pretty consistent. Sudeep says those 1970 studies were pretty coarse and N-limited, different lake structure from today. Distribution of crayfish in Nearshore is the first step. It looks uniform but go back to grab samples and UCD long-term data there is high variability. Not ruling out food web interaction, but look at highly variable despite appearance. I expect to find food web interactions to be important in certain nearshores but maybe not so much in other.
- Foraging crayfish, thousands of crayfish out of your study sight. High mobility along nearshore bandwidth. Need to find time-scale dynamics. What is the internal cycle contributing to next year's growth? Addressed for all projects.
- Steve Sadro presents the objective of constrained study. Effects or things affecting periphyton metabolism. How does water temperature affect periphyton growth? Sample periphyton 3 times a year, each incubation to give growth rates, and net production rates. Repeat at two site. Proposed repeating at Ward and Pineland. We are open to amending the actual site, chosen to correspond to UCD long-term study and the understanding we have at Ward. Uncertain about how many repeats needed. Measuring nutrient uptake rates associated with incubation rates. If we need fewer replicates, we might add interactions with spiking nutrients as well. Goal: model

periphyton growth rate, nutrient cycling rate under increasing temps. Ties in with the in-situ work that Sudeep is proposing. It's worth coordinating on methods being use. Coordinate in a community structure at least understanding community structure. This project we are hoping with prelim sampling in Nov. or Dec at the end of this year. Make measurements across the year 6 quarters, incubations quarterly.

- John asks question. Look at nutrient stoichiometry, N, P and C. Might develop into periphyton model later. Is it feasible for that the isotope work that Ramon is doing to be merged? There is overlap as to when the measurements are being made. It isn't long enough to look at the stable isotopes. John is talking about the composition, not the lab but the field measurements. The composition that Steve is talking about informs the lab incubation.
- Sudeep gets excited about all 3, water sources, and then the role of biological change. This metabolic rate is important, you're looking at a combo with hard rock and soft substrate. Some of this depends on how well we can collect hard rock. Find size range for whatever incubation rate. Productivity rates tend to be higher on soft substrate. Have some interesting rates off bacteria metabolism, that will leave to successive community structure. It will be very important when we think of different areas within the lake. Dev. Baseline of rates, has not been done comprehensively.
- Alan related to that, how do each of these projects interacts, links to the long-term periphyton monitoring. Sudeep, microscopy counts that will be analyzed taxonomic composition, site selection, other than that don't see using that dataset. Steve says underlying question, how does study scale-up understanding. How much noise there is when comparing metabolic rates?
- Geoff says at 2m depth at 11 sites around the lake. There's a 1-2 degree diurnal temp change. In the context of metabolism, do fluctuations like that play a role. Steve is not sure, but thinks it would. Is it worth incorporating that fluctuation in your chamber? It's certainly something that could be done. We could do in an exploratory way to see if we get a signal, and if the signal is the same just by ramping temp. Periphyton production is so high, we get great change is DO which is being measured.
- Stepped out for lunch\*

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| 4. | Council Operations   | (Alan)       | 30 minutes |
|    | <ul style="list-style-type: none"> <li>• When to come back and hear from the nearshore team? What is a good time frame to touch base? If something is interesting, report back.</li> <li>• Is it strange that we are singling projects that aren't TSAC projects?</li> <li>• This helps people realize there is more coming through than us. Lake Tahoe West isn't TSAC, but has involvement and a 3min summary of the science going on would be great.</li> <li>• Jim agrees, when California legislation coming out. There is an entity that has that central awareness about what science effort is happening basin-wide.</li> <li>• Some sort of overall view is useful. We will incorporate some of this work and the council for next exec meeting.</li> </ul> |              |            |
| 5. | Lunch Break  |              | 30 minutes |
| 6. | Council Operations (continued)   | (Alan/Geoff) | 60 minutes |

a. Some of the things that we will be doing over the year and where the funding is coming. (Alan)

b. Bob – funding, highlight with executive committee meeting, \$500k from CA work plan identified a series of tasks for that. SNPLMA coming in for a sustainable recreation and clarity. Basic operational resources still available particular the threshold work and threshold update support. Bringing forward resources to provide opportunities for council to expand work. Great deal of work on a relatively short time-frame. How to identify leads for projects if in council, council institution or outside of that? Direct, coordinate, and guide work. There are resources and work to be done.

c. Upcoming Council Tasks

i. Water Quality Threshold, Dan is eager to get started and it has been sent out to council a couple of times. Alan and Ramon have worked on in the past and will be doing it in the next couple of months hoping to be done by December. Issues with federal funding, so might push a project end date out. Some iterations on that, nothing like S2A. If you have any questions, ask Dan, Alan, and Ramon.

- Geoff asks, what's the process? Draft a report prior to the final to have the council take a look and incorporate feedback and make adjustments with Dan. Then send out final draft, it will be a TSAC review. Not sure how to represent that. If it's an effort of 2-3 people, acknowledge the people and then say it's a TSAC product. The role of USGS in terms of peer review, in this particular project? Ramon says it is dependent on who you are talking to, stringent review if it's USGS product. Maybe if there are some publishable products, then it has to enter the review, this applies to things that goes on within USGS. Shouldn't require too much effort, but it depends on who you select and their supervisor. But things associated with TSAC doesn't necessarily have USGS authorship, have not had any issues. Paul agrees if it's USGS document it takes a little longer. As long as it doesn't say Ramon Naranjo, USGS product on the website, then that's an issue. Alan says we will try it out, as long as we have an extended timeline we can deal with it. Just get draft final product before Christmas. \$20-\$25k over the next 4 months.

iii. VMT Threshold – Something not specifically on work plan. Dan elaborates on project, the council has contributed before, vehicle miles traveled, from a 1981 baseline, most controversial standard right now. Before it was focused on air quality impacts, initially adopted to reduce nitrogen contributions on the lake. Drastic N reductions, but has not eventuated on reductions of Nitrogen on the lake. Work done by DRI for how reducing VMT and taking all cars off the road, what effects it has on lake. Work we are interested in engaging council, understanding the drivers why VMT has fluctuated (10% band), roughly been about the same as 1981. Alan asks so then you have hit the VMT standard? Traffic counts starting to approach 1981. Even if we didn't have VMT standard core measurement and standard for California policy whether or not there is a hard cap or not. Beyond threshold update and where do we want to go for future thresholds. Seen a decline in gaming revenue, down about 50%, corresponding decline in the casino corridor. Development over the period. Disaggregate these various drivers and

which ones are dominant drivers and how they have changed in the last 10-40 years? Massive spikes during snow season or when it's really hot in the valley. Timeframe is tight, ideally tomorrow. In terms of the project, 5-6 months, the earlier the better. Doing regional transportation plan/sustainable... investing in transit, bike trails, etc. this kind of analysis can inform this plan. Needs to be adopted by July 2020. In order to give agency to analyze data we want 3-4 months ahead of time.

- Jim between the 2 states, transportation has been highlighted as a key issue. Two states are really focused on this. Over 18-months is a key with stakeholders, no consensus as what the traffic is. Efforts for a 1 billion source for transportation, but feel like we don't have enough information. We have a long-term strategy for NV to bolster fees. Buoy fees (2-3 years down the road), working for NDEP and state lands what can we do in the near-term? Use fees from license plates to collect data for VMT. Cost of study and all that to be discussed with TRPA. See that with a threshold issue and inform what a regional transportation plan looks like. If we could figure out more buses, more ride share, etc. hard to make decision without baseline info. The funding is there, but more conversations needed, 5 million study we don't have the funding, if it's a \$50k study we have the funding, it's a starting place. Basic foundational information to get everyone on the same page. Do you have these data specifications that you want the council to take a look at? Or is it that we have VMT and we want the council to aggregate all the other issues?
- Bob says that people have this expertise. Is this a council issue? It's a multi-variable regression issue. How the council can guide and identify the appropriate people to do the action? Alan agrees, we need to be careful about what we take on. Limited crew here, we represent resources of our institution, but limits as to what we can do as a council. If we take anything on, we want to do a good job so that it is respected and valued. Think about potential resources within institution and then a council member to oversee and orchestrate to make sure the right things are happening and on time.
- Paul wants to know what gets measured to estimate VMT. It's an input variable. Estimated with a travel-demand model. Visitors and residents and calibrated against transport counts. 12k trips at echo summit, what fraction of those are visitors and residents, through a suite of surveys, parameterize this model. 1-day resolution. To avoid calibrating against a single day it was done in early summer, with school and a higher level of visitorship. Attractiveness of different recreation sites. What fraction is going to sand harbor and emerald bay? Paul says to look at the sensitivity of the model in specific variables, that's your first cut. Dan says it might be, this might be just a TRPA project, both controversial nature of project, which means that we want guidance from real expertise. Generally, grows as population grows, which has not been the trend in Tahoe. We have hypothesis as to why it stays flat, transition from gaming community to otherwise. Tease out those factors rather than coming from us. We think we are compiling the necessary data set, but people in this field may have advice about things we aren't looking at such as microeconomic trends.
- Geoff asks about mobile phone data. Dan says in they are in the middle of a second acquisition of phone data in the next few months, only goes back 5 years, won't be



able to tease out everything with just cell phone data. Geoff suggests using that with traffic data. Couple had proposal with professor in Berkeley, share info with Dan. ITS came into mind immediately, because of the works the State bill aims at reducing VMT growth. Would they be interested in this project?

- Bob proposes, Geoff can lead coordination with ITS. Bob to work with Dan to get a work order. Capacity and interest they have and this should be on the right track.
- Jim, listening to conversation, what is a TSAC project, what isn't? It is confusing. A central entity, all to coordinate through this group. Not necessarily that TSAC does all the work, but they can suggest for example, the department of wildlife. Hope that's where we are going. It's still a TSAC product, it is still coming through here. Not sure if I'm hearing that. Having hard conversations, NV was upset because spent 2 years on regional work. California's governor's office went through the roof. Don't want TRPA to be accused of funding research to bolster their own regional plan.
- Alan says it's an important part to separate power. How do we do that effectively and efficiently? Find someone to work with Bob and Dan to find various capabilities available. ITS with UCD available with what UNLV people have done. Identify the potential players and then figure out who can contribute what. Those individuals would produce a work plan. IS there an interest for the short-term project, don't know, first identify people and work plan. Dan knows what we need, is the work plan established? Part of the question is, do we have the data and how does what we do tie in with policy? General identifies but want to develop in conjunction with the work plan.
- Bob says coming up with general framework then having the back and forth.
- Alan says it's not a back and forth. Which expertise is available and which one is what Dan is looking for?
- Bob, we will bring back to this group, this group doesn't meet for every 2 months, so will engage group through email.
- Geoff, who is interested in part of it. But may or may not stay depends on where it goes.
- Alan says it is time sensitive. Geoff to take lead and reach out to different members, check in with Paul and Alan for UNR and USGS contacts.
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### iii. Periphyton Peer Review

- Alan says it wasn't in the work plan, but has been on the books for a while as an issue. Has been going on in the basin for a while. Incentive to look at what we are doing, what we could be doing, evaluating best way to evaluate monitoring periphyton monitoring. Peer review committee, to give people from periphyton, time to put together a document of their vision and recommendation of what it should look like going forward. Current vision about what should be done.
- Geoff says it has to be an external review because of the number of internal people doing periphyton work.
- John thought it was for a more formal review, would find people to find the people to do the external review. There are people that do this for a living. Would be relatively straight forward to do.

- Yes, straight forward, what isn't straightforward is getting the materials ready for peer-review.
- John says it's like finding review for document.
- Bob says that there was a peer-review document. Couple of ranges, get questions a lot, can TSAC weigh in on this questions? Can we use this peer-review committee to get these relatively simple question answered and guide that? Peer-review charges. Here how it needs to be reviewed, how it will be answered, etc.
- Contacting and herding, could be Bob offers Geoff. If this were to start 2-3 months looking at monitoring from the last few decades, the protocol will be changing this starting year. You are starting a review of something that has changed. Can you hold off for a year?
- Bob says it is a question for the people funding it? Review what was done, what the new plan is, the methodology, state of practice, and does it make sense? It's not about the data being collected, is it the right way to be collected.
- Alan says that needs to be expressed in the charge. There is value in having developed a new approach and sending out to get feedback to figure out what we will start doing with caveat that recommendations may suggest changes will happen. If there are good reviews, we want to incorporate that.
- John says the charge to be developed, would that include nearshore processes. Alan and Bob say I don't think so. Geoff says you're measuring biomass but not necessarily what is contributing. If you wait a year or two you might have results.
- What is going out represents that, changing protocol to address this. Things we would like to do but due to funding restraints, etc...
- Paul are we talking about reviewing both documents?
- Narrowing management approach and feedback. If you start measuring process, is this appropriate way of investing money to monitor periphyton.
- Alan says it's also dependent on what the team wants to include
- Geoff says it's naïve to look at contract and procedure, it looks good. But without seeing the data, you realize a good plan may not work. Doesn't mean streams of raw data, have to see that. Just seeing a year of data from these other projects can help to assess success of projects.
- Suggestions for a path forward.
- Adrian went over the paper, independent peer review, then a peer-review an engaged review, outside input etc. which is what it sounds like you want to do. Less formal.
- Geoff asks John, been on many peer-review. TMDL review was something like that. Bob says it was more formal, here are questions that need to be answered. Needs to have access and enough context to inform discussion.
- Adrian says to make a deliberative decision, 30 days after review, it will be publicly available.
- Alan says it's good, which means we need a process so that we end in the correct time.
- Adrian says 28 days from initiation of review. Then peer-review committee works with it for a week to work with it. Engagement happens during those four weeks. Conversation happens over the 4 weeks.

- Alan wants to be expedient, engaged peer-review sounds right. Whatever documents that Geoff wants to put together, the product is coming from periphyton team. We work through peer-review committee. Takes a while to put together
- Adrian says co-chairs, could be an external person or council member. Whoever. Everyone is constrained for time.
- Alan says this a test case to figure out what works well. Geoff to work with Adrian and John to work with reviewers of Periphyton. Will hear back from November at least figure out how to do it.

#### iv. Summer/Winter Clarity

- Summer clarity decreasing, winter is stable. What is the deviation and drivers? In lake process, watershed processes? Asks Ramon
- Part of the approved work plan says Bob part of CNRA funds from 500k state of NV is contributing funds immediately. Those funds will support, the catch is that it needs to get started and funds spent before the end of June with option to extend to Sept.
- This was a bigger project (Alan) need to run quickly with this. Looking for council members interested in participating, Geoff and Ramon interested. Anyone interested?
- Paul thinks there are lots of ways to investigate at, but Geoff says looked at available lenses of data, algal counts, lake stratification, not doing new data collection. This is doing the analysis.
- Identification of data gaps, etc. Jason
- Geoff says it would not be good, if at next bi-state exec meeting we did not have answer.
- Alan recommends that Geoff or Ramon, Ramon working with Geoff, put together an idea of how this would proceed, put together a preliminary work plan with Dan. To be sent out to entire council. Works for Dan and Bob.
- Interest with NV engaging on this, contract language and has led to what a work order might look like. Part of crafting work plan to develop an initial task that we have a starting point. Don't want to make this too detailed.
- If you change your mind, reach out to Bob, Geoff, or Alan. If the work plan comes out and you see a role, you can reach out.
- John agrees with this, clarity so central to TMDL, whoever does bulk of work, look forward to having updates to the committee like we did today so that we get feedback. These issues are enjoyable to talk about and we benefit from learning. Encourage as part of work order you say explicitly, loop TSAC into the feedback.
- Geoff says it will be a TSAC product. Make sure you agree with it.
- Bob agrees with John to see as all these products unfold, what is the status of these different efforts.

#### v. Sustainable Recreation

- Alan currently is sitting LTBMU to work on contract with TRPA will come back to Bob with draft work plan look for input, already look for expertise, first work thru contract

#### vi. Water Quality Data Analysis

- Starting a little later, related to summer/winter clarity. Take data as it comes in and work with scientist to provide regular update about regular analysis. Will come back in November.

vii. Forest Management impacts on clarity

- Land-scape scale, secondary SNPLMA, working on getting contracted through PSW. Start some projects that are more relevant to the type of work we do in the basin. Sending out notes so people know.
- Develop draft work plans send to Alison for group-wide distribution and feedback. (Action)

b. Soliciting Task interest

7. Terrestrial, Forest Health, and Wildfire Subcommittee (Pat/Adrian) 10 minutes

- Maybe next meeting we can get a presentation about what TSAC is doing.
- We have chatted about many other things, both in a good position to launch this as a joint effort and make progress. Have a 3-part approach and content. Content: Well-informed by our work Adrian, Pat, and dozen scientists, opportunity to trans-disciplinary approach to managing forests. Forest health, drought resilient, biodiversity, air quality, water quality, economics, recreation benefits. What was done for Tahoe West, not the end all. Good understanding of what we can do, basin-wide, the next information to garner. What tools would we be able to access and approaches to bring to managers in the basin. Content like what is happening with wildfire, what we are concerned about? Holistic system, over multiple decades look at this suite of things as a whole host of things.
- As a council we need to focus on terrestrial as well as aquatic. Have similar goal S2A for terrestrial and aquatic upland ecosystem. Move to same progress. Hopefully have draft by 2020. Question on the council who wants to work this group. Other perspectives to bring to this. It's not scoped to Tahoe West but don't want to be too tightly linked to that effort. Let Adrian or Pat know and will send notes as S2A plan is developed.
- Alan says yes, that is exactly what we want to know. Bring us up to speed in November. (ACTION) similar procedure to today's meeting hopefully Max or Adam to make useful contributions.
- Lake Tahoe West covers 2 different topics. Different from plans. Hear about Lake Tahoe West and then yours and Adrian's vision for a plan. Then it will set the stage for participation in different.
- Dan wants to know, is that akin to taking the landscape scale and identifying key science question for basin-wide forest management. Pat doesn't think it's the assessment but the whole. Much broader suite of metrics and forest resilience, many results from modeling efforts are basin-wide.
- Fire, forest response, 100-year time frame for two climate paths and scenarios and 5 management scenarios. Seeing some of this in November.
- Bob agrees it would be great to see the suite of what has been done and gaps, and how that informs the council moving forward. Very much looking forward to that conversation

- Important to get stakeholder input, not sure how council did that for the first S2A clarity plan. Planted seed for conversation in November and how we want to go about accomplishing that. Do that fairly soon, before December.
- Adrian thinks it is a unique time, very few land-scape scale models, this is a chance to get in front of the science and be a leader.
- Bob points about how to support holistically.
- In May, we put this on the table as a new subcommittee. Time to expand horizon because the lake has previously always taken priority. Looking forward for a similar format for the next meeting.
- November 21<sup>st</sup> next meeting
- End