CA Statewide Environmental Flows Workgroup
A Workgroup of the California Water Quality Monitoring Council

MEETING NOTES – November 13, 2018

<u>Meeting Participants</u>

- Alyssa Overster - UCD
- Sarah Yarnell - UCD
- Bryan McFaddin – RB1
- Peter Barnes - SWRCB
- Sam Cole - SWRCB
- Amber Villalobos - DFW
- Jason Hwan - DFW
- Elijah Portugal - DFW
- Monty Schmitt
- Linda
- Belize Lane – USU
- Sam Sandoval - UCD
- Tom Gurbach - TNC
- Nick Martorano - SWRCB
- Dan Worth - SWRCB
- Shirley Birosik – RB4
- Robert Holmes - DFW
- Jenny Toth

- Kaitlyn Kalua – Ca Coastkeeper
- Ted Grantham - UCB
- Arthur Pugsley – LA Water
- Rachel
- Rick Rodgers – NOAA Fisheries
- Cindy Buxton
- Nazzar
- Michael Warburton – Public Trust Coalition
- Nami Tanaka
- Amy Lind –
- Bri Seapy - DFW
- Vincent Gin – Santa Clara Valley Water District
- Doug McPherson - USBR
- Nathan Holste - USBR
- Eric Stein - SCCWRP

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Action items from last time

- Functional Flow Calculator webinar in September went well. Webinar is available on the CEFF web site, around 15-20 participants took part
- California Env. Flows website is up and is being populated. Tools and data page is up. https://mywaterquality.ca.gov/monitoring_council/environmental_flows_workgroup/index.html . There is also a link to the Lyris listserv on the web site
- Charter and Glossary has been finalized – Action Item - Dan will send out a redline version for final review

Updates

- Cannabis -waterboards.ca.gov/cannabis – under what's new. https://www.waterboards.ca.gov/water_issues/programs/cannabis/. Existing flow requirements web page is up –– Includes a geospatial map of existing flow requirements and supporting documents (e.g., Biological Opinion, Water Right Order, etc.) – this web site currently focuses on winter flows (originally developed for cannabis), but will be updated to include year-round requirements. Please review and send any info on any missing flow requirements or misinterpretation of flow requirements to State Water Board, Division of Water Rights staff (contact info is listed on website)
- California Water Action Plan – S. Fork Eel and Ventura models in progress, should be completed by spring. Data collection in Mark West creek is about 2/3 completed.
- UCD – workplan has been completed.   Working on Tier 1 guidelines, which includes glossary of terms. Geomorphic surveys have been completed – Sacramento and Eel river preliminary geomorphic classification is complete
- CDFW – CEFF fact sheet has been completed and is on instream flows web site. https://www.wildlife.ca.gov/Conservation/Watersheds/Instream-Flow. Working on flow criteria and sensitivities to time periods for cannabis. Training for Region 5 and 6 staff on CEFF on Tier 1 – worked on a standard slide deck for Tier 1 with talking points
- LA River case study – scope of work has been finalized and agreed upon and project is kicking off. This will be a Tier 2 case study for reconciling reuse of treated wastewater with instream flows
- RB 1 - Triennial review of basin planning – interest in developing flow objectives. Another flow workshop in mid-April – interest in learning more about CEFF. Cannabis workshop in Feb 20 related to water use associated with cannabis production and instreams flows in Trinity related to cannabis production

Glossary

- Glossary passed out in hard copy by Sam S. at the meeting (updated version sent out in lyris email).
- How to reconcile terms with instream flow council manual. CDFW provided insight.
- Review discrepancy and all final terms for distribution among the workgroup. Functional flow components – fall flush, wet season initiation, peak magnitude, dry season low flows. Sara Y. -

Poff characteristics are magnitude, timing, duration, rate of change, frequency. Quantify with flow metrics (flow per day, number of days, etc). ecological outcomes – management action, not an ecological endpoint, but a desired goal? Measure by physical and biological conditions (metrics are the actual measured ecological outcomes – healthy salmon populations, measure of habitat metrics, age structure, size, population.

- CEFF website now available to help get new folks up to speed.
- Discussion on the distinction between ecological flows, which is focused on developing the science to inform flow requirements based on ecological needs vs. environmental flows, which is where the agencies will use the science to establish policy regarding environmental flows
- Instream Flow elements (from the instream flow council) nest within the CEFF Functional Flow Components. Flow council flow components, geomorphology, biology, hydrology, connectivity, water quality (channel forming flow, habitat flow rearing and spawning, fish passage flows surface continuity, subsistence flows). CEFF functional flow components address the instream flow council elements.   For example, under Tier 2 the instream flow council elements of fish passage, channel forming would be defined for a specific location.   These elements would help define and meet one or more CEFF functional flow component.

Action Item – Distribute, comment, finalize at next meeting and then post to the web site

Statewide Geomorphology Tool – see PowerPoint presentation

- Technical workgroup has built hydrology analysis tool – Tier 1. Geomorphic tool overlaying on top of hydrology to characterize the physical setting.
  - Product = reach scale geomorphic setting for all streams
- Goal is to more rapidly consider geomorphic setting when setting flow criteria an overlay on top of hydrology to better allow for consideration of morphology and sediment type, etc. – this is to support Tier 2 analysis
- Classifies physical habitat of streams – standardized method for conducting geomorphic analysis across CA. This will allow us to:
  - Properly consider the role of geomorphic form plays in influencing hydrologic flow patterns at a given site and relate geomorphic classes to hydrogeomorphic factors, species, riparian functions
  - Constrain the margin of error associated with using geomorphic form data to set flow targets, which will improve precision and reduce reliance on excessively broad or overly conservative targets
  - Provide greater transparency into how geomorphology analyses are used to inform flow target setting
  - focus flow criteria based on ecological suitability given a specific stream type – geomorphic setting modulated ecological response to a specific flow and test flow regimes to reach the ecological goal based on the channel type and geomorphic class.
  - Geomorphic classes can also inform the specific Tier 2 methods that should be used
  - Upscale site-specific information to similar types of sites around the state
- As of now, classifying the Sacramento basin. Rapid method available for refining or use in other basins. 9 types in the Sacramento region.

- Work is occurring along coastal CA, SF Eel, Klamath to provide initial data sets. The hope is to ultimately fill in the other portions of the state that are not currently covered, but no funding is currently available for those areas
  - Initial classification has been completed for the Eel river.
- Two regions are complete, four in progress, and one starting soon. Surveyed north coast, north central coast, south central coast, and south coast.
  - Level 1/Year 1 – capture broad dominant patterns of geomorphic variability in consideration of ranges of slope, area, confinement, sediment supply etc → produce a classification system via extrapolation based on sites that were surveyed
  - Level 2/Year 2 - Characterize sub reach scale patterns and process that can or cannot be provided under different flows, within each stream type. Relate geomorphic forms to ecology in a more precise manner.
  - Timing – preliminary products available in 2020.
- The classification has defined levels of uncertainty so that for reaches that are "between" classes, we can better discern what stream type they should be classified as. – cross-walked to Rosgen where data is available to see how the new data driven approach relates to the Rosgen classes
- Will classify by regions first and then see if we can reconcile across regions to develop a consolidated statewide classification – still to be determined if this will be possible.
- Question on how to address impairments, such as channel incision – initial focus is on less altered or moderate streams. We will come back later and add in some of the anthropogenic features at a subsequent phase. Some elements of alteration are being captured through current work.   However, one of the goals is to use this information to help inform/prioritize sites that are in need of specific geomorphic restoration.
  - Ultimately, we will need to investigate how to bound ranges of each class so that we know when deviations represent an impaired version of a specific stream type vs. a different stream type.
  - This will be an iterative process that will need to be applied over time
- Division of Water Rights is working on a data management system that will allow for folks to provide information on specific areas and relate back to the classified stream reaches and link existing data sets to this effort, e.g. SWAMP data.
- Will develop guidelines for adding data to the hydro-geomorphic classes. Potentially compare to Montgomery-Buffington, but did not want to start with existing classifications, rather, let the data speak for itself and create its own classifications. Planning to prepare webinars for training, etc.

Tier 1 Product Updates

- Webinars (9/11) are available online http://ceff.ucdavis.edu/presentations overview. On 11/9 more technical workshop – modifying the Python code, uploading data. The method for determining water year types was via separating the mean annual flow (MAF) into terciles (p33, p67) for dry, moderate (not normal), and wet. The water year is from Oct 1 to Sep 30. Discussed the use of flow triggers for flow requirements rather than WY types, which is

beneficial from an operator's perspective because WY type is not known until later in the year. Stream classification shapefiles are available online, all NHD segments will have 35ish metrics and ranges for all three water year types. Currently undergoing performance assessment.

- FFC website being updated to allow calculation of metrics by water year type and overlay your gage data with reference data from an appropriate reference gage
- Hydrologic classification available as a .shp file and .kmz
- Developing models to predict FFM in all streams based on catchment properties
    - Not all metrics can be calculated for all types of streams

    ACTION ITEM – future meeting present flow metric modeling to group with recommendations for "how good is good enough" levels based on prediction uncertainty and which metrics can be used in which types of streams – winter 2019

- Three web sites currently online – eventually will be consolidated or linked
    - SWRCB state e-flows workgroup webpage
    - CEFF background information web page
    - FFC website
- Fish metrics – using PICES data set of native fish to identify regional assemblages and identify flow sensitive assemblages for different regions and metric values associated with the assemblages. Cluster the HUC12 PICES by similar fish and indicator fish that are sensitive to flows. From 100's of fish down to 10-12. What conditions have they evolved in. sent to technical fish experts for review, have a layer, species of concern, assemblage native to that area, community based. CSCI for macroinvertebrate, bugs and algae statewide. Four major regions that have 73 flow sensitive fish species. Each region clustered out by similarity using a K-means clustering methodology. Test hypothesis for how flows affect the community. Peter Moyle helped determine which of the 133 native fish species would respond to flow alteration. Working on documentation for outliers.
- Developing relationships between benthic invertebrate (CSCI) and algae (ASCI)and functional flow metrics and also begin looking at individual taxa that are associated with reference vs. non-reference flow metrics.
- Working on first draft of the Tier 1 guidance document.

Sharing and Pairing Data Collection Sites

There are lots of groups in the watersheds that are collecting fish, flow and water quality data. Need a strategy for understanding and track who is tracking what data, when and where? Can we create a clearinghouse for past data collection and coordinating new data collection?

- Discuss how to best track and coordinate data collection sites between multiple groups
- Discuss the idea of collecting different types of data at "Paired Sites"
- Discuss sharing site access permission or knowledge of public lands and cooperative landowners
- Dan Worth collecting data in the South Fork Eel for water quality and fish related data. Best way to collect/track past data collection by geospatial location. Better collaboration for

collecting data and pair collection efforts for sites. Better coordinate on site access permission to share friendly sites. Data management workgroup through the WQMC. Healthy streams partnership – Nick.

- Use existing environmental flows workgroup web-page may be an option. The Water Quality Council Monitoring Council Data Management workgroup may be able to help with this

Action Item – contact Kris J. and Nick M. to follow up on data management issues.

Future Webinar Topics

Planning a brown bag once per month (second Tuesday). Presenting posters at the Water Boards then AGU conference. Description of the geomorphic classification system. Dec 7 11-12pm. Functional flow calculator under the hood on Dec 18. Second round at a CDFW office. Functional flow metric modeling on January 15.

- Functional flow metric modeling – Jan 15
- Natural flows data base -
- FFC under the hood – Dec 18
- Geomorphic classification and extrapolation – Dec 7th

February 12 Workgroup Meeting

- Presentation of natural flows data base
- Rate of depletion from SGMA plans and relationship to environmental flows
- How to translate Tier 1 outputs to environmental flow recommendations – frame through case studies
- Tier 2 decision tree – intro and how to know when to trigger move from Tier 1 to Tier 2
- Drought and extreme low flows – evaluate CEFF into e-flow
- Criteria and policy recommendations
- Salmonid restoration conference. Cannabis