

**Item 1: Agenda Review, Goals of Meeting [Jay Davis]**

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Jay Davis listed the goals for the day, which included creating the multi-year planning budget. The BOG needed to come up with a general scope and budget for three fiscal years. The overall budget is \$650,000 per year with a constant management cost.

**Item 2: Brief Updates [Group]**

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*SWAMP Update [Richard Breuer]*

Richard Breuer stated that the SWAMP program traditionally used the San Jose State Research Foundation to manage funds and contracts. The Department of General Services recently rejected that approach. Therefore, the data management team and program management team is now in-house; twelve people need to be hired. BOG now needs better accounting and budgeting; the BOG tends to have silos of funds, which is not the best approach. The BOG needs to make clear we are not trying to gain funds, but are spending our yearly allotment.

**Item 3: BOG Workplan, Part 1: Overview [Jay Davis]**

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Jay Davis informed the BOG that the Clean Lakes study is well underway, 18 out of 24 lakes have been sampled. Additionally \$40,000 was set-aside for using satellite imagery to characterize cyanobacteria blooms. The satellite they are planning on using can only measure blooms in lakes 100 hectares or larger. The workplan has been finalized and they are training people on how to complete the image analysis. Thomas Jabusch, Lilian Busse, and Meredith Howard are developing a monitoring strategy to put in front of the State Board. Terry Fleming suggested including Peggy Lehman.

**Item 4: BOG Workplan, Part 2: Sport Fish Sampling [Jay Davis]**

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**Presentation and Discussion:**

Jay Davis discussed BOG monitoring to date; he stated that the total cost of lakes, coast, rivers and streams sportfish sampling was \$3.2 million. He noted that studies generated an excellent data set that resulted in 303(d) listings.

Jay stated that it has been eight years since the first year of the lake survey. He suggested tracking trends of contaminant in sportfish. Minnesota samples prey and sportfish in 130 lakes and rivers per year with a variable revisit schedule. Minnesota observed a decline in Mercury (Hg) concentrations for 10 years, followed by an increase in concentrations. Jay stated that the design allowed the state to detect a trend and a change in the trend. He noted that other trend monitoring programs are observing Hg increases in the aquatic food webs. Jim Wiener suggested that trend reversals may be related to increased bioavailability or methylation potential. The BOG has established a

baseline for methylmercury (MeHg), but there is not much bioaccumulation trend information.

Terry Fleming said that there is an issue of cost; SWAMP will never be able to sample the same amount of water bodies as Minnesota and it will likely take a long time to observe a trend. Jay replied that the public and legislature deserve to know if the statewide Hg problem is getting better or worse. Additionally, characterizing interannual variation in California is important. The BOG could gather trend information by conducting large surveys every 10 years or sampling 50 lakes annually. Annual sampling provides a steady flow of information and a foundation for regressions that look at trends over time. Decadal surveys provide a good snapshot and spatial information. But, it is hard to determine from decadal surveys if the concentrations are indicative of a trend or just interannual variation. Also, it is administratively easier to conduct annual sampling. Jay suggested synthesizing the annual monitoring information every three years.

Terry Fleming stated that he was unsure of committing SWAMP to be the Regional Monitoring Program for sportfish for forever. He does not think it is a good use of SWAMP money to have annual monitoring. Jay replied that SWAMP's assessment questions include collecting trend information. Terry replied that SWAMP is underfunded and the Assessment Framework was created without thinking about how much money was available; it would cost \$600,000 to sample 40 sites per year. It is possible to sample fewer sites and still get some trend monitoring information.

Jay presented two options for trend monitoring:

- 1) Option one includes repeating the large 2007-2011 sportfish effort, but spread over 10 years. Monitoring would include sampling 15 lakes for largemouth bass, 17 lakes for trout lakes and rivers, and six coastal zones. The total would be 38 sites per year and would cost \$424,000 annually.  
Gary Ichikawa said that the total cost may be less because the cost per site for sampling largemouth bass lakes is overestimated.
- 2) Option two would increase the number of largemouth bass lakes sampled. Annual monitoring would include sampling 20 largemouth bass lakes, 10 largemouth bass lakes that would serve as intensive reference sites, 10 trout lakes, eight coastal zones for Gopher Rockfish, and 3 other coastal zones for multiple species.

Harry Ohlendorf suggested integrating the sampling with the upcoming Reservoir TMDL to reduce costs. Chris Foe noted that there is a significant amount of spatial variability across the state; therefore, a stratified random design is needed. Karen Taberski stated that it is not necessary to set up a trend program for everything, a status update is all that is needed for Gopher Rockfish. Richard Breuer stated that fish advisories provide something to the public by protecting the safe to eat beneficial use. He is unsure if

SWAMP should try to understand trend information and whether climate change or atmospheric deposition is causing concentration increases.

### **Item 5: BOG Workplan, Part 3: Portal [Cristina Grosso]**

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#### **Presentation and Discussion:**

Cristina Grosso stated that proposed tasks for the portal include uploading, maintaining, and completing minor portal enhancements; updating the portal code, and completing a UI/UX survey and adding functionality.

#### *Upload, maintenance, minor enhancements \$15k per year*

Every year funding is needed for uploading new fish datasets, for maintenance and bug fixes, and for making minor enhancements to the Data and Trends page. Cristina has developed a script that identifies new datasets in CEDEN. Every quarter Jay Davis will notify the BOG of the datasets that are available and check on which should be added to the portal.

#### *Update the Portal Code*

Cristina stated that the BOG needs to decide whether to transition to open source code or maintain the Google maps API. Open source uses contemporary best practices; SFEI staff have experience in open source tools; it less expensive to maintain in the long term; and there are no limits on the amount of people who can use the portal. However, transitioning to open source requires significant code rewrite and will cost \$30,000.

Staying with Google maps will only require incremental changes to improve the site. The portal will require updating when Google changes the API, which requires the BOG to reserve funding to anticipate the change. Additionally, there are transaction limits and the potential for the Google maps API to become fee based in the future.

The Data Management workgroup recommended that all portals should move to open source when funding is available. Karen Taberski supported moving to open source for the Safe to Eat portal.

#### *UI/UX Survey and Add Functionality*

The cost of completing a survey for user interface and experience would be \$40,000 and was proposed as part of the 2015/2026 budget. The cost includes adding functionality based on the results of the surveys. Bob Brodberg asked if the survey would utilize focus groups or if it would be a “pop up” survey. Jay suggested using focus groups. Bob asked how the BOG will find out who the current users are so they can create focus groups; Jay replied that Google analytics can be used to find out who is using the portal.

Richard Breuer stated that there isn’t any money left to input or store data within the Regional Data Center next year. There is no funding for data management support; therefore, he is unsure that the BOG can afford a user survey.

## **Item 5: BOG Workplan, Part 4: Decision [Jay Davis]**

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### *Cyanobacteria Work*

The white paper of monitoring cyanobacteria blooms will be completed by Summer 2015. Terry Fleming noted that he does not support cyanotoxin tissue monitoring. Jay replied that there is interest in sampling fish tissue for cyanotoxins and it would be helpful to have the lab capacity and funding to collect samples when there are blooms. Terry stated that he thinks it is important for SWAMP to assist in measuring blooms, but he does not think that sampling fish tissue is important. Karen Taberski suggested the the BOG support using satellite imagery to get an idea of where and when blooms are occurring. The use of satellite imagery to measure blooms would cost \$50,000 a year. Additionally, Karen stated the BOG should set aside funds to develop monitoring protocols and to help create a cyanotoxin testing kit that water body managers can use. The BOG agreed to set aside \$150,000 the first year and \$100,000 for the subsequent two years.

### *Portal*

The BOG agreed to set-aside \$15,000 a year to keep the portal up and running and \$30,000 for updating the source code. The group did not support the user survey until data management money becomes available.

### *Sport Fish Trend Sampling*

Jay Davis suggested sampling largemouth bass in 20 lakes annually to obtain trend information. Jim Wiener noted that exposure levels vary based on age; therefore, the BOG may want to consider standardizing for age rather than size. He added that 1 year old prey fish provide a good indicator of trends and interannual variation. Jim also suggested looking at stable isotope changes to see if the Hg is coming from China.

Chris Foe asked Jay if the 20 lakes would be a rotating panel or fixed sites. Jay replied that a new set of lakes would be picked every year from the pool of 150 lakes. The design could be modified to include repeat lakes. Chris said that trend monitoring could be helpful to determine if remedial activities are helping to reduce Hg concentrations. Terry added that the BOG will help inform the monitoring component of the Reservoir TMDL by generating a sampling design.

Harry Ohlendorf stated that it is important to focus on wildlife effects and to have representation across the entire state. He added that it is important to conduct a power analysis to see how long it will take to observe trends. Jay stated that the group of 150 water bodies can be expanded, water bodies can be weighted differently based on how popular they are, and a GRTS design can be used. Terry Fleming added that it makes sense to sample prefish as well.

Richard Breuer asked what other parameters, if any, would be monitored. Jay replied that Hg will be driving the monitoring design, but in certain cases organics should also be analyzed. Bob stated that on some occasions a larger scan of organics could be completed. Jay ended the discussion by saying the power analysis will be ready in four to six weeks.