



Delta Tributaries Mercury Council

~ Meeting Minutes ~

Thursday, February 4, 2010

12:30 p.m. – 4:30 p.m.

707 4th Street, Suite 200; Davis, CA 95616

Facilitator: Stephen McCord, LWA

Meeting Minutes by: Stephen McCord, LWA

Attendees

In Person

Libby Earthman, Putah Creek Council
Bob Schneider, Tuleyome
Russ Anderson, Clear Water Vision
Steve Dangler, Clear Water Vision & NatureClean
Larry Wolfe and Cindy Keller, Clear Water Vision & NW Remediation
Ivan Sturman, volunteer environmentalist
John Hancock, Clear Water Vision
Lysa Voight, SRCSD
Peter Graves, BLM-Mother Lode
Hason Johnson, Clear Water Vision

Tim Stevens, CA DFG
Bill Whiteside, Blue Sky Water Technologies
Carrie Monohan, The Sierra Fund
Frank Ramirez, The Americas Group
Sally Liu, The Nature Conservancy
Janis Cooke, CVRWQCB
Michael Stevenson, Horizon Water & Environment
Josh Ackerman, USGS
Robin Stewart, USGS
Dave Tamayo, Sac. Co. stormwater program
Shaun Ayers, UC Davis
Charlie Alpers, USGS

Via Teleconference

Patrick Morris, CVRWQCB
Leah Wills, Plumas Co.
Bob Brodberg, OEHA

Sherri Norris, CA Indian Environmental Alliance
Andria Ventura, Clean Water Action

I. Introductions and Agenda Review

II. Project Updates

- Lake Combie dredging study (Carrie Monohan, The Sierra Fund)—USGS has a \$2 million budget to monitor biotic exposure to and uptake of mercury in Lake Combie associated with a sediment dredging and mercury removal project. Funding is being sought for full-scale dredging with mercury removal.
- BLM mine site clean ups (Peter Graves, BLM)—The Mother Load Field Office is planning four cleanup projects for FY2010: Davis mine/mill (south Fork Yuba River watershed), Poison Lake (Mokelumne River watershed), and others.
- AML Forum (Peter Graves, BLM)—The November meeting was cancelled.
- Delta Mercury TMDL (Patrick Morris, RWQCB)—Workgroup meetings are scheduled for Feb.8 and 10, followed by the stakeholder group meeting on 2/24 at the Regional

Board's offices in Rancho Cordova. The Basin Plan amendment hearing for the TMDL is scheduled for April 22, 2010. The DTMC may play a role in future TMDL development and implementation as an open forum for exchanging technical information and discussing policy.

- 303(d) list of impaired waters (Janis Cooke, RWQCB)—The new 2010 list for the Central Valley, which adds 52 new listings for mercury, will be heard by the State Board soon. Requests for data to compile the 2012 list have just been made
- Regional Board WWTP MeHg analysis (Patrick Morris, RWQCB)—Staff are still addressing comments and reviewing the document internally.
- Biosentinel monitoring (Shaun Ayers, UCD)—No monitoring in the Central Valley currently; some monitoring is ongoing in San Francisco Bay as a component of the Regional Monitoring Program
- Cache Creek Settling Basin—Several efforts seem to be starting to address mercury loads and other issues (flood control, fish passage). The DTMC may play an advisory role.
- Several interesting talks from the San Francisco Bay RMP 2010 Annual Mercury Meeting are available at <http://www.sfei.org/rmp/mercurymeeting/>
- Consumption Advisory (Bob Brodberg, OEHHA)—OEHHA recently published a tri-fold brochure consumption advisory for mercury in fish of the Sacramento River and Northern Delta.
- Congressional Field Hearings (Bob Schneider, Tuleyome; Sherri Norris, CIEA; Carrie Monohan, The Sierra Fund)—The congressional Subcommittee on Energy and Mineral Resources conducted an oversight field hearing on "Abandoned Mines and Mercury in California." The hearing was held on November 23, 2009 at 10 a.m., at the State Capitol, Room 4204, in Sacramento, California. DTMC participants Sherri Norris, Bob Schneider and Izzy Martin both presented. Their testimonies and others are available upon request. Because of other budget and water issues, Chairman Jim Costa and members of the Subcommittee on Energy and Mineral Resources will need reminders to keep this issue visible.

III. Presentations

Three presentations were given: two on mercury science and one on a permitting program review for hobby suction dredging.

1 - Understanding the influence of food web dynamics on Mercury Bioaccumulation in Nature, Robin Stewart (USGS)

Presenting preliminary results quantifying how food web processes influence the bioaccumulation of mercury in nature and how we can quantify its influence. Mercury has four dominate types of processes with various levels of influence: load, biogeochemistry, biology, and food web. The complexity of each type and their interactions require an inter-disciplinary approach. In surface waters, mercury levels in top trophic level fish can follow two pathways: benthic (sediment-based) and pelagic (water column based). Nitrogen and carbon isotope fractions can distinguish which pathway dominates mercury bioaccumulation.

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Dr. Stewart presented results quantifying how food web processes influence the bioaccumulation of mercury in nature and how we can quantify its influence. Mercury has four dominant types of processes with various levels of influence: load, biogeochemistry, biology, and food web. The complexity of each type and their interactions require an inter-disciplinary approach. In surface waters, mercury levels in top trophic level fish can follow two pathways: benthic (sediment-based) and pelagic (water column based). Nitrogen and carbon isotope fractions can distinguish which pathway dominates mercury bioaccumulation.

USGS conducted a detailed study of these processes and effects in Camp Far West Reservoir (CFWR) on the Bear River (Sierra Nevada) with the specific goal of understanding the role of upstream mercury inputs from mine waste versus within reservoir production of methylmercury. CFWR has the highest fish tissue mercury levels in the region even though aqueous MeHg is lower within the reservoir than in upstream locations. Reservoir storage levels vary dramatically seasonally, which seems to cause similarly drastic variations in algal species and concentrations, and zooplankton species and biomass. These changes in available food for fish results in diet shifts from pelagic to benthic carbon sources, with the pelagic food chain leading to 40% higher MeHg levels in predator fish.

Comparing CFWR to other study sites across the country, filtered methylmercury explains approximately 45% of the variation in methylmercury levels in fish. However, the bioaccumulation factor (the ratio between mercury in fish to that in water) in CFWR is more than double the national stream average. Suspended particulate matter also plays an important role, as the fraction that is more available to the base of the food web accounts for a small and variable fraction of the total suspended sediment mass. Understanding the way methylmercury concentrations vary with suspended sediment quality is an important consideration for future research.

In summary, many chemical and biological processes influence the bioaccumulation of mercury, and those processes can be site-specific. Consequently, the ecology of the system is important in understanding the fate of mercury and, in particular, understanding the food web base is an important area for future research.

USGS policy does not allow distribution of slides with unpublished data—such slides are excluded from the posted file. For more information: arstewar@usgs.gov, 650-329-4550

2 - Monitoring Mercury Bioaccumulation in Central Valley & Delta Wetlands, Josh Ackerman (USGS)

Josh presented findings from a Yolo Mercury Study in the Yolo Bypass Area, which included monitoring of sediment, water, plant mercury interactions, and bioaccumulation. Questions addressed in this presentation related to biota and were the following:

- 1) Does Hg bioaccumulation in fish and invertebrates differ among wetland types?
- 2) Does Hg in fish and invertebrates increase from wetland inlets to outlets?
- 3) Does Hg in invertebrates change over the rice-growing season?
- 4) Are fish and invertebrate Hg concentrations correlated with MeHg concentrations in water and sediment?
- 5) Are fish and invertebrates Hg concentrations above toxic levels?

Four bioindicator species were monitored: invertebrates (Water Boatmen and Oarsmen), caged fish, and wild fish. Many of the Bypass' one million migratory and resident birds consume these organisms. Mercury levels in caged fish (transplanted from mosquito vector control) increased over 60 days by 12-fold in white rice fields, 6-fold in wild rice fields, and 3-fold in permanent wetlands. Mercury levels in caged fish also increased from inlets to outlets, implying MeHg was produced in rice fields. In contrast, invertebrate mercury varied less among sites and was highest in permanent wetlands and fish levels were not correlated with invertebrate levels.

In terms of dietary effect levels for birds, half to three-quarters of water boatmen (invertebrates) exceeded levels known to cause impaired reproduction in invertebrate-eating birds. And all fish exceeded the TMDL target to protect wildlife of 0.03 µg/g (wet weight) for Trophic Level 2 fish (<50 mm, e.g. silversides), and 52% of caged fish and 26% of wild fish exceeded toxicity levels (0.30 µg/g wet weight) known to impair reproduction in fish-eating birds.

The fundamental conundrum for wetland management is that while methylation is a concern, habitat with methylmercury is often better than no habitat. The Yolo Bypass in particular is great habitat even while it is a mercury hot spot. Future studies will focus on agricultural and wetland management practices that reduce methyl mercury, such as wetland habitat type, rice management practices (baling, discing, or mowing rice straw residues), and seasonal effects (timing and duration of flooding).

Josh and colleagues have published two papers on this study:

Ackerman, JT, and CA Eagles-Smith. 2010. Agricultural wetlands as potential hotspots for mercury bioaccumulation: experimental evidence using caged fish. Environmental Science and Technology, available on line.

Ackerman, JT, AK Miles, and CA Eagles-Smith. 2010. Invertebrate mercury bioaccumulation in permanent, seasonal, and flooded rice wetlands within California's Central Valley. Science of the Total Environment 408:666-671.

For more information: jackerman@usgs.gov, 530-752-0485

3 - Suction Dredging Permit Program—Subsequent Environmental Impact Report, Michael Stevenson (Horizon Water and Environment)

Michael is the lead consultant for a Subsequent Environmental Impact Report for the CA Department of Fish & Game's suction dredging permit program (Fish and Game Code 5653). Although permits issues annually has decreased from over 12,000 in 1981 to less than 3,000 in 2008, a temporary moratorium (SB670) was put on all permits in 2009 pending this review. The SEIR process is running in parallel with the rulemaking process to amend the permit program, such that both are due to be completed in spring 2011.

One environmental issue being addressed is mercury contamination from remobilizing and flouring mercury that has settled and/or amalgamated with gold. Processing or disposal of mercury captured by the suction dredges is an additional concern. Key questions for the impact analysis about mercury include:

- How much is captured by the dredge versus transported downstream? How far does it travel downstream?
- What proportion of Hg would have been mobilized by natural sources (winter storms)?
- For "new" Hg, how substantial is it in the context of background sources?

- Does dredging lead to exceedances of CTR criteria in the water column? What is the extent of methylation and bioaccumulation?

Data gaps in quantifying responses to these questions include:

- Locations/characteristics of suction dredging
- Mercury concentrations in sediments throughout state
- Locations of mercury “hotspots”
- Discharge of mercury from background watersheds throughout state
- Relationship between total mercury loads and methylmercury production

The technical analysis is evaluating several potential permit conditions, including:

- Location: open/closed and seasonality
- Equipment: engine size, nozzle size, etc.
- Operational restrictions: turbidity limits, winching, etc.
- Density restrictions / quota systems
- Restoration requirements

The DTMC and its individual participants can contribute to this study by providing any data that they have regarding the above issues. Participation in the environmental review process is also encouraged through writing comment letters on the Draft SEIR. Please feel free to contact Michael if there are ways you would like to become involved in the process.

For more information: Michael at 510-986-1852, michael@horizonh2o.com.

IV. DTMC Role in TMDLs

For the Delta MeHg TMDL, each discharger (by source type) is required to conduct Control Studies, Discharge Monitoring, Exposure Reduction, and Source Control (only POTWs & MS4s). Broader science / legislative / policy efforts for the same set of stakeholders and more include: Ambient Monitoring, Offsets Policy, and Upstream TMDLs. To accomplish those objectives will require funding, which could come from allocations in state or federal bills or from IRWMPs (see nwww.water.ca.gov/irwm/). Facilitation of these many efforts will require funding on the order of \$100,000/year.

The DTMC (through the SRWP) is the lead applicant on a planning grant proposal to the Federal Nonpoint Source Implementation [319(h)] Grant Program. Meeting participants agreed that the DTMC is an existing, appropriate forum and organizational structure for supporting TMDL-related activities.

Following up on the discussion in the previous meeting about funding opportunities for the DTMC, several additional potential sources were identified:

- Prop. 13: At one time there was \$15M remaining, but that's likely less now. Mary Menconi retired, and she was with DFG overseeing Proposition 13.
- 104(b)(3): Funds available for wetlands planning; managed by NRCS or USEPA?
- Farm Bill: Various programs may apply (EQIP, wetlands, tribal outreach); find contact at NRCS

- Prop. 50: Originally \$380 million, some rollover funds may be available. We are waiting for guidelines from DWR.
- Prop. 84: Draft guidelines for IRWM Planning and Implementation proposals should be available for review next month. DTMC participants could comment that the DTMC could provide an inter-regional forum for the many overlapping IRWM planning areas particularly in the areas of coordinated mercury monitoring, coordinated mercury control studies, and for learning from mercury reduction pilot projects in the Sacramento Valley Watershed. The existing structure of the Sacramento Watershed Program, the Sacramento Valley IRWM regional working group (coordinated by the CABY IRWM group) , and the DTMC shows considerable capacity for undertaking regional communication and coordination on the mercury control program.

Similar ideas were generated in a subsequent meeting for the Delta MeHg TMDL stakeholder group.

V. Upcoming Events

- AML Forum—The next Abandoned Mine Lands Forum and CAMLAG meetings will be held on February 17, 2010.
- Delta MeHg TMDL stakeholder group meeting—February 24
- Delta MeHg TMDL hearing—April 22

VI. Meeting Wrap-Up

Action Items

- Stephen M.: Compile meeting notes and announce availability on DTMC web site.
- Stephen M.: Follow up on funding leads.

Future Agenda Suggestions

- Ran out of time...A survey will be conducted to organize the agenda for the next meeting, prior to the Delta Methylmercury TMDL hearing on April 22. The agenda will focus on the role of the DTMC in implementing that TMDL.

Next Meeting Place and Time

- April 2010
- Larry Walker Associates offices in Davis, unless suitable space in Sacramento is identified.
- It may be an experiment. Maybe schedule a provocative pair of talks to draw people in regardless of the drive—a debate between Sherri Norris and Debbie Webster? The new participants would come through effective advertizing. Savong Lam is no longer with UCF, but she works next door in a sister org and could provide contacts (savonglam@gmail.com).