

## Status and Trends

### 1) Selenium Status and Trends and the Selenium TMDL - Barbara Baginska, San Francisco Bay Regional Water Quality Control Board

#### Key Points:

- Almost two decades of data indicate that selenium concentrations in Bay biota have changed for the better
- Human health impairment is no longer an issue
- Petroleum refineries' selenium loading to the Bay has been reduced by more than 50%
- The RMP selenium strategy team is working on developing special studies and monitoring efforts to fill in remaining information gaps

### 2) PCB Status and Trends and the PCB Synthesis - Jay Davis, San Francisco Estuary Institute

#### Key Points:

- The potential for PCB impacts on humans through consumption of Bay fish is significant, and there is evidence of PCB exposure to a degree that may be reducing health and survival of fish, birds, and seals.
- PCB concentrations in sport fish, the key indicator for the TMDL, show little sign of decline, although other matrices do suggest declines.
- An updated conceptual model for PCBs describes two broad habitat categories with food webs that are largely distinct: the margins and the open Bay.
- More thorough sampling of fish and sediment on the Bay margins will help focus attention on the areas where the need for action is greatest, and will provide an important performance measure for load reduction actions taken in local watersheds.

### 3) Adapting Status and Trends Monitoring - Phil Trowbridge and Don Yee, San Francisco Estuary Institute

#### Key Points:

- The Status and Trends Design has been changed multiple times since 1993 to improve efficiency and address new challenges. The latest change was to stretch out the frequency of sediment sampling from every 2 years to every 4 years as well as other small adjustments.
- The shallow margins of the Bay are an important habitat that has been left out of RMP Status and Trends sampling.
- A randomized design for the margins has been developed to address this gap and answer management questions.

## Small Tributary Loads

### 1) PCB and Mercury Source Areas and Control Measure Opportunities - Lessons Learned in the Bay Area During MRP 1.0 - Chris Sommers, EOA, Inc.

#### Key Points:

- TMDLs call for significant (50-90%) PCB and mercury reductions from stormwater.

- Progress was made during MRP 1.0 on identifying high opportunity areas and performance of control measures.
- PCBs and mercury are dispersed throughout older industrial or other urban land areas in Bay Area.
- MRP 2.0 emphasis on focused implementation, further identification of source areas, and developing long-term green infrastructure plans.
- Updating of assumptions in TMDLs is likely necessary.

## **2) Small Tributaries Loading Strategy: Phase 2 (EMC Synthesis)** - Lester McKee, San Francisco Estuary Institute

### **Key Points:**

- Over the past 15 years we have amassed a substantial dataset to address evolving management questions.
- Innovation has resulted from annual reevaluation of sampling and interpretative methods.
- In 2015, we will focus on “high leverage” watersheds and will test more cost-effective sampling technologies.

## **3) Green Infrastructure Planning in the Bay Area** - Matt Fabry, San Mateo County

### **Key Points:**

- Distributed green infrastructure is emerging as a long-term approach to address water quality drivers for urban runoff.
- This will require a multi-decade transformation of flood-control based drainage systems to those that manage runoff more sustainably.
- To be cost-effective, green infrastructure must be integrated with future climate change and transportation investments, leading to multi-benefit projects.
- Urban communities will need a significant increase in state and federal water funding to achieve this regional vision, with cooperation from all agencies and stakeholders who will benefit from green infrastructure.

## **Nutrients**

### **1) Nutrient inputs and ecosystem response in southern San Francisco Bay** - David Senn, San Francisco Estuary Institute

### **Key Points:**

- Increasing chlorophyll in the South Bay from 1995 to 2005 raised concern that the Bay's historic resilience to high nutrient concentrations may be weakening. Chlorophyll levels appear to have reached a new higher 'steady-state'
- Low dissolved oxygen appears to occur with sufficient frequency/duration in shallow margin habitats (e.g., sloughs) in southern San Francisco Bay that it requires further monitoring and investigation into its severity, potential impacts on aquatic organisms, and underlying causes

- A recently completed report by regional scientists identifies a set of highest priority nutrient-related issues requiring further investigation, including:
  - Identify the underlying causes of increased algal biomass (chlorophyll) in southern San Francisco Bay, and forecast future conditions
  - Evaluate the severity of low dissolved oxygen that occurs in shallow margin habitats, its potential impacts on aquatic organisms, and its underlying causes
  - Characterize the risk from harmful algae and the occurrence of algae-produced toxins, and evaluate their link to elevated nutrients in San Francisco Bay

## **2) Algal Toxins - Raph Kudela, University of California - Santa Cruz**

### **Key Points:**

- Potentially harmful organisms are present about 35% of the time.
- Freshwater and marine toxins are detectable nearly all the time.
- We do not (yet) know the risk posed by toxins at observed concentrations, or the degree to which they are transferred to higher trophic levels, although on-going work is exploring this issue.
- RMP and other funding will address trophic transfer monitoring needs.

## **3) Nutrients in Suisun Bay and the Delta- Emily Novick, San Francisco Estuary Institute**

### **Key Points:**

- A large portion of the nutrients that enter northern San Francisco Bay (i.e., Suisun Bay) come from the Delta, and derive from wastewater and likely agricultural sources. The importance of these Delta inputs to Suisun Bay vary seasonally.
- Wastewater treatment plants that discharge directly to Suisun Bay also contribute substantially to nutrient inputs to Suisun Bay, especially in dry weather months.
- The essential nutrient nitrogen appears to undergo a substantial degree of transformation within the Delta and within Suisun, resulting in both changes in nutrient forms and losses of nitrogen from the system

## **Contaminants of Emerging Concern (CEC)**

### **1) Strategy Update - Rebecca Sutton, San Francisco Estuary Institute**

#### **Key Points:**

- The RMP strategy to address contaminants of emerging concern (CECs) has three elements:
  - 1) Targeted CEC monitoring; 2) Learning from other CEC monitoring programs; and
  - 3) Monitoring using non-targeted methods.
- Contaminants of moderate concern for the Bay (Tier III) are the subject of government and industry pollution prevention strategies. For PBDEs, RMP monitoring indicates a

significant decline in Bay contamination as a result. For PFOS, levels in Bay biota remain high, indicating a need for further study.

- The RMP is conducting monitoring Special Studies on moderate concern CECs including PFOS (and other PFCs) and fipronil, and possible concern CECs (Tier I) including alternative flame retardants and microplastics.
- A comprehensive reference describing our CEC strategy and the CECs detected in San Francisco Bay may be found in our 2013 Pulse of the Bay:  
[http://www.sfei.org/news\\_items/pulse-bay-contaminants-emerging-concern](http://www.sfei.org/news_items/pulse-bay-contaminants-emerging-concern)

## **2) Bioanalytical Tool Development - Nancy Denslow, University of Florida**

### **Key Points:**

- Bioanalytical methods are complementary to chemical analysis and can be useful to monitor for chemical contaminants in different types of waters.
- Bioanalytical assays are relatively easy to perform and relatively inexpensive and can be used as a screening tool.
- Good coverage of biologically active chemicals can be achieved with a defined set of high throughput assays.
- It is important to make linkages between bioanalytical assay endpoints and adverse outcomes in the health of aquatic organisms at the population level.

## **3) Fipronil and Current Use Pesticides – Ellen Willis-Norton, San Francisco Estuary Institute**

### **Key Points:**

- There are over 1000 current use pesticides used in agriculture and urban pest control.
- Observed concentrations of fipronil and its degradation products in sediment have exceeded effect thresholds, suggesting these compounds may pose risks to Bay aquatic life.
- Fipronil concentrations in Bay Area urban creeks have exceeded the USEPA's chronic aquatic life protection benchmark and Fipronil has been found in Bay Area WWTP influent and effluent.
- Agricultural Current Use Pesticide (CUP) use is concentrated in Napa and Sonoma counties; therefore, a screening level CUP study in the Napa River would be worthwhile to determine if CUP concentrations exceed any effects thresholds.