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1 **STRATEGY FOR COORDINATED MONITORING, ASSESSMENT, AND COMMUNICATION OF INFORMATION ON BIOACCUMULATION**  
2 **FROM AQUATIC ECOSYSTEMS IN CALIFORNIA**

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4 **SECTION 1) BIOACCUMULATION MONITORING IN CALIFORNIA: PROBLEM STATEMENT**

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6 Great strides have been made in the last few years in providing the information needed to manage bioaccumulative pollutants in  
7 California Water bodies.

- 8 • Statewide surveys of contaminants in sport fish have been conducted across all of the major water body types
- 9 • Unprecedented coordination of programs on a statewide scale
- 10 • Annual reports and fact sheets
- 11 • Safe to Eat Portal
- 12 • A centralized database has been established and is being used
- 13 • Plans are in place for the first statewide study of the impacts of bioaccumulation on wildlife in lakes and reservoirs

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15 However, California still lacks the comprehensive monitoring, assessment, and communication needed to fully support protection of  
16 human and wildlife health from risks due to bioaccumulation of pollutants from California water bodies. There are multiple facets of  
17 the problem.

18 **1. Insufficient data**

- 19 • Incomplete coverage of many water bodies not monitored sufficiently to protect public health (support safe eating  
20 guidelines) and aquatic life (including wildlife), or support cleanup efforts; others not monitored at all
- 21 • Lack of information on the fishing beneficial use (fishing pressure and species preferences across water body types)
- 22 • Lack of information on the aquatic life beneficial use (population status and basic ecology of sensitive species)
- 23 • Lack of information on trends in pollutants of concern at a regional or local scale
- 24 • Lack of information on contaminants of emerging concern
- 25 • Lack of information on biotoxins
- 26 • Lack of information needed (especially lake properties and water quality parameters) to understand drivers of patterns in  
27 bioaccumulation across the state

28 **2. Uncoordinated monitoring** - lack of consistency and coordination in:

- 29 • Monitoring (including QA)
- 30 • Data management
- 31 • Assessment
- 32 • Reporting

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- 1 • Peer review
- 2 3. **Insufficient synthesis, assessment, and reporting**
- 3 • Timely development of safe eating guidelines (OEHHA)
- 4 • Interpretation of patterns in existing data to support management
- 5 4. **Insufficient understanding of sources and fate**
- 6 • Understanding of relative importance of different sources and of fate processes that influence bioaccumulation is
- 7 essential to management. Process studies needed to address this.
- 8 5. **Insufficient access to data** for scientists, regulators, and the public. Safe to Eat Portal is a good start, but needs more
- 9 development (including user feedback).
- 10 • Access to **data** for scientists and regulators
- 11 • Access to **information** for anglers and the public
- 12 6. **Uncoordinated and ineffective communication** of important information
- 13 • Coordinated public release of important information
- 14 • Lack of investment in communication – lack of understanding of target audiences, lack of evaluation of effectiveness
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1 SECTION 2) GOALS AND OBJECTIVES

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3 GENERAL GOALS AND OBJECTIVES FOR BIOACCUMULATION MONITORING IN CALIFORNIA

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- 5 • Conduct **coordinated, long-term statewide monitoring and assessment** to generate the data needed to support exposure
- 6 reduction and water quality protection and restoration (TMDLs, etc.)
  - 7 ○ Conduct monitoring needed to support **advisory development**
  - 8 ○ Provide periodic **statewide assessments** of California water bodies that policy makers need to track general status
  - 9 ○ Conduct the **trend monitoring** needed to track effectiveness of specific cleanup actions
  - 10 ○ In support of control efforts, conduct the **studies needed to identify the most important sources** and pathways
- 11 • **Communicate** to the public and provide **public access to information** on fish contamination that the public can use to reduce
- 12 their exposure to contaminants and participate in management processes in an informed manner
  - 13 ○ Develop **safe eating guidelines** for all water bodies where they are needed and communicate these guidelines
  - 14 effectively
  - 15 ○ Maintain and refine the **“safe to eat” portal** as one form of access to fish contamination information

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1 **GOALS AND OBJECTIVES FOR SWAMP WITH REGARD TO BIOACCUMULATION MONITORING IN CALIFORNIA**

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- 3 • Create the **infrastructure** needed to promote coordinated long-term, statewide monitoring to generate and communicate
- 4 reliable and accessible data and information
- 5 ○ Promote **coordination and exchange of information** relating to bioaccumulation monitoring
- 6 ○ Produce **synthesis reports** on bioaccumulation issues
- 7 ○ Further develop and promote the use of a **shared database** for bioaccumulation data
- 8 ○ Provide guidance for other groups on **sampling design and methods** to promote the generation of reliable data
- 9 ○ Promote the use of appropriate and **consistent assessment approaches** across the state
- 10 • **Conduct statewide monitoring and studies** to address the most important data gaps relating to support of water quality
- 11 protection and restoration (TMDLs, etc.)
- 12 ○ Provide **periodic statewide assessments** of California water bodies that policy makers need to track general status
- 13 ○ **Conduct or coordinate trend monitoring** to evaluate general statewide effectiveness of water quality regulations
- 14 ○ In support of control efforts, **conduct or coordinate the studies needed to identify the most important sources and**
- 15 **pathways**
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1 **SECTION 3) RECOMMENDATIONS**

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3 **Coordinated Monitoring and Assessment**

- 4 • Monitoring to support advisory development
    - 5 ○ Regional Boards, OEHHA, and other regional and local partners fund and coordinate monitoring needed to support
6 advisory development
  - 7 ○ OEHHA (lead technical role)
    - 8 ▪ guidance on sampling design, guidance on QA, general synthesis (safe eating guidelines)
  - 9 ○ Council and/or SWAMP (support role)
    - 10 ▪ Information sharing, QA, data management
- 11 • Statewide assessments
  - 12 ○ SWAMP (lead) and other programs partner to conduct statewide assessments on a 10 year cycle
    - 13 ▪ RMP, Bight, Regional Boards
    - 14 ▪ Fill gaps left from regional and local efforts
- 15 • Trend monitoring
  - 16 ○ Higher frequency (every 5 yr or less) monitoring to support trend detection at an appropriate timescale
  - 17 ○ Local and regional partners (lead) fund the monitoring
    - 18 ▪ RMP, Bight, permit holders, reservoir operators, etc.
  - 19 ○ Council and/or SWAMP (support)
    - 20 ▪ Information sharing, guidance on and coordination of sampling design (build a network of trend sites,
    - 21 including reference sites), QA, data management, general synthesis, archiving, overarching peer review
    - 22 ▪ Fund reference site monitoring?
- 23 • Source identification and mitigation studies
  - 24 ○ Local and regional partners (lead) fund the studies
    - 25 ▪ Permit holders, reservoir operators, etc. (e.g., SFPUC)
  - 26 ○ Council and/or SWAMP (support)
    - 27 ▪ Information sharing, guidance on sampling design? Guidance on QA? data management? general synthesis,
    - 28 overarching peer review

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1 **Communication**

- 2 • Exposure reduction
- 3     ○ OEHHA develops, updates, and disseminates safe eating guidelines
- 4     ○ DPH lead role in exposure reduction coordination and communication
- 5     ○ Should be expedited as much as possible (should be better funded)
- 6 • Communication of technical information (regulatory developments, monitoring results) to regulators and scientists
- 7     ○ Council/SWAMP funds and leads
- 8         ▪ Synthesis reports, workshops, trainings to promote information sharing; data access tools (Portal)
- 9             • Example 1: Meeting/Workshop on Methylmercury in California Lakes and Reservoirs
- 10                 ○ A way to engage partners
- 11                 ○ Update on regulations
- 12                 ○ Update on SWAMP findings
- 13                 ○ Information sharing among partners
- 14                     ▪ Monitoring and study results
- 15                     ▪ Management approaches and effectiveness
- 16                 ○ Training
- 17                 ○ Invited experts
- 18                 ○ Could also be open to public and address exposure reduction – concurrent sessions?
- 19             • Example 2: Workshop on Bioaccumulation of Biotoxins in California
- 20             • Example 3: Workshop on Methylmercury in California Coastal Waters
- 21 • Other communication to the public
- 22     ○ SWAMP, OEHHA, DPH, other partners coordinate on media coverage (e.g., possible DPH and new SF Bay warning sign
- 23         coordination with release of final Coast report)
- 24     ○ Council (lead) continued Portal development
- 25         ▪ Assess effectiveness
- 26         ▪ Develop an app?
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1 **SECTION 4) PRIORITY TOPICS FOR MONITORING** – very preliminary list

- 2 • Fishing beneficial use
  - 3 ○ Advisory support
  - 4 ○ General status: done for now
  - 5 ○ Trends
  - 6 ○ Biotoxins
  - 7 ○ CECs?
- 8 • Aquatic life beneficial uses
  - 9 ○ General status
  - 10 ○ Trends
  - 11 ○ Biotoxins
  - 12 ○ CECs

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**SECTION 5) NEXT STEPS** – not drafted yet

**SECTION 6) BUDGET CONSIDERATIONS** – not drafted yet

**APPENDIX 1) BOG CHARTER, MEMBERSHIP, AND ORGANIZATION** – not drafted yet