EAST BAY MUNICIPAL UTILITY DISTRICT

Delta Update

Board of Directors
November 10, 2015

Agenda

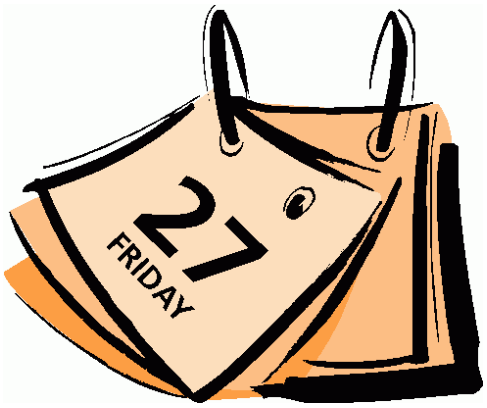
- BDCP EIR/EIS update
  - Schedule
  - EBMUD comments
  - DWR/USBR change petition to add North Delta points of diversion
- Delta Stewardship Council
  - Single-year water transfers
  - Delta Levee Investment Strategy

BDCP Alt 4A Overview

- Three intakes of 3000 cfs each
- 30 miles of tunnel
- $15.5 to $15.8 billion capital cost
- $1.6 billion O&M costs over 50 years
- No longer a conservation plan

Alt 4A Schedule

- December 2013 – Draft EIR/EIS
- July 2015 - Partially Recirculated Draft EIR/Supplemental Draft EIS
- October 30, 2015 - Comment deadline
- 2016 – Final EIR/EIS, ROD/NOD, Biological Opinions, other permits (very optimistic)



EBMUD comments

- Absence of operations plan
- Mokelumne fishery impacts
  - Delta Cross Channel operations
- Impact on FRWA operations
  - Reverse flows on Sac River
- Aqueduct crossing
  - Structural concerns: Potential impacts on existing aqueducts
  - Long-term concern regarding potential EBMUD tunnel

Change Petition for New Points of Diversion

- DWR & USBR filed petition on August 26
  - To add 3 new points of diversion in North Delta between Clarksburg and Courtland to divert 9,000 cfs in total
  - Purpose – to allow SWP & CVP to move water through Alternative 4A Delta Tunnels
  - Omits detailed information on how the project would be operated
  - Asserts consistency with State policy & environmental benefits without support of science
  - Will result in contentious water rights hearing before State Water Board

Petition – Schedule

- Oct 30 – State Board formally noticed petition
- Jan 5 – Protests due
- Jan 28 - Prehearing conference
- March 1 – Written testimony due
- Water rights hearing could last 1 - 2 years
- Board's Bay-Delta WQCP update will be on a separate track
- Final BDCP Alt 4A EIR/EIS certified and forwarded to Board during hearing

Delta Stewardship Council

- Delta Plan & "Covered Actions"
  - Exemption for single-year water transfers sunsets in December 2016… DSC action pending
  - BDCP -> Alt 4A will be a covered action and subject to appeal
- Delta Levee Investment Strategy
  - DSC & Delta Protection Commission are working on a Delta levee investment strategy

Next Steps

- Nov & Dec 2015 – Prepare protest to petition
- Jan – File protest and follow pre-hearing
- Dec 2015 - Comment to DSC if necessary regarding single-year transfer exemption
- 2016 – Follow progress of BDCP/Alt 4A

EAST BAY MUNICIPAL UTILITY DISTRICT

San Francisco Bay Stewardship

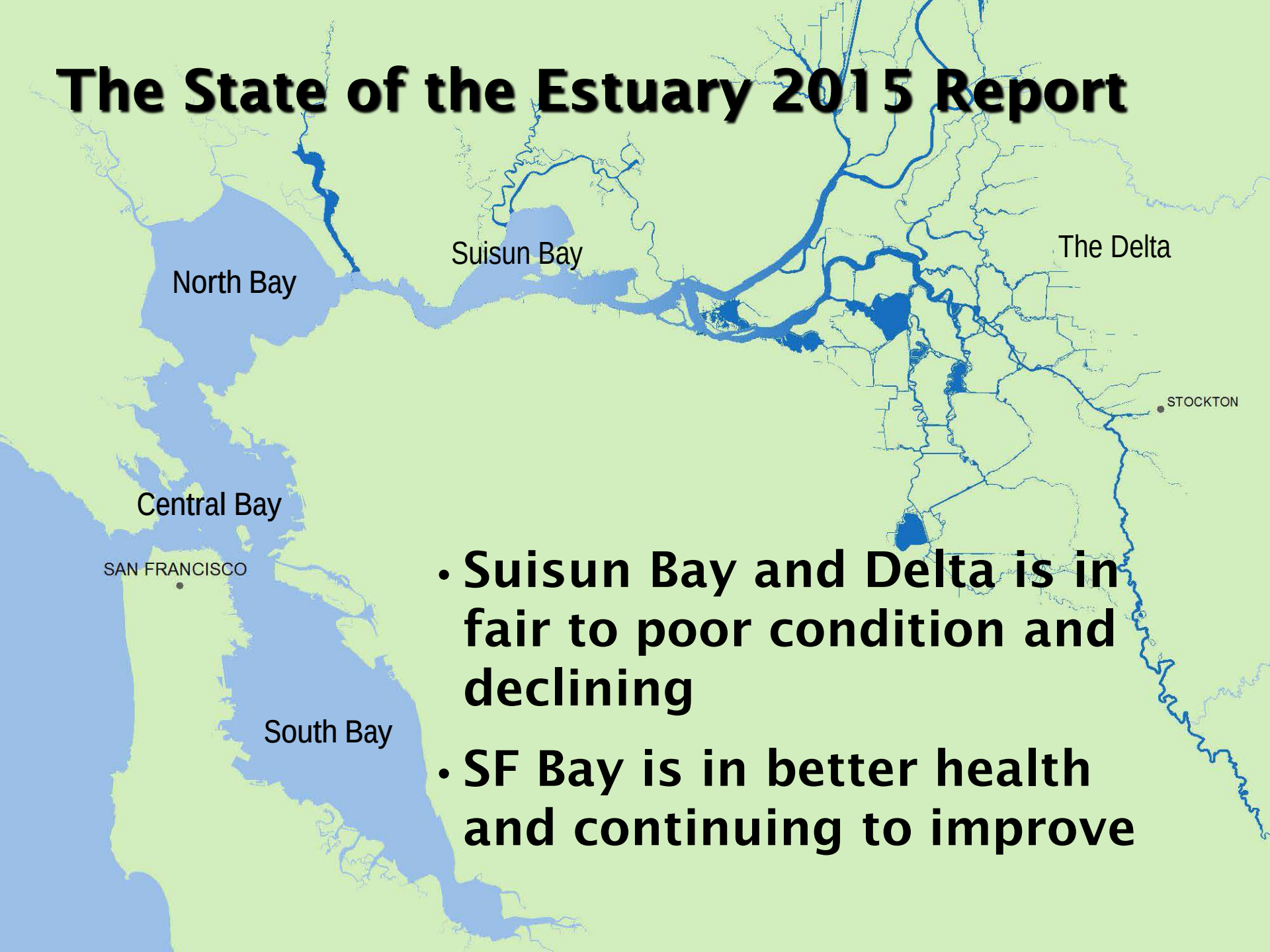
Board Meeting

November 10, 2015

Outline

- Water Quality in SF Bay
- Key Pollutants Pertaining to Wastewater Dischargers
  - Microplastics
  - Toxic contaminants
  - Pathogens
  - Nutrients
- Next Steps

The State of the Estuary 2015 Report

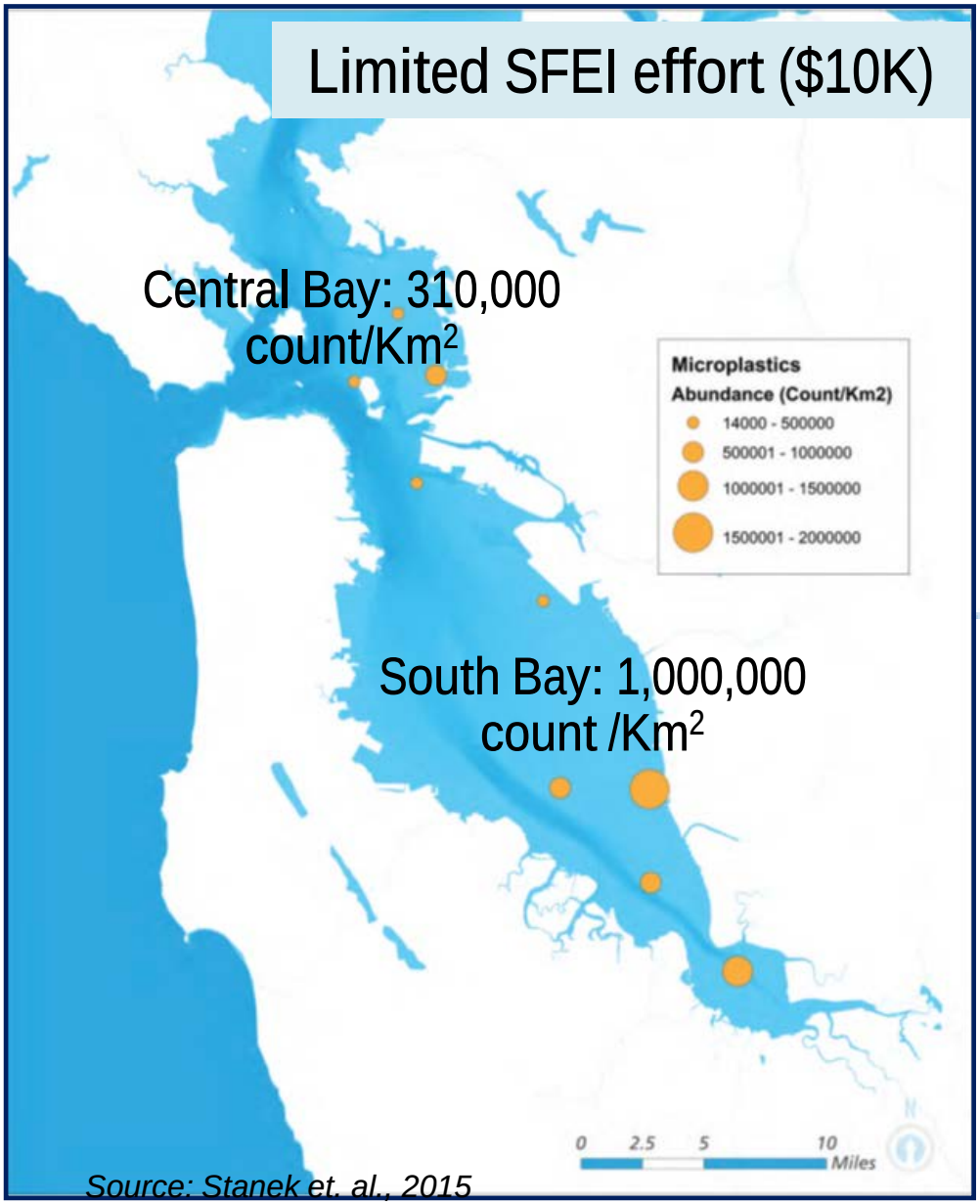


- **Suisun Bay and Delta is in fair to poor condition and declining**
- **SF Bay is in better health and continuing to improve**

- Tidal marsh areas increased due to restoration efforts
- Eelgrass is making a comeback
- Birds and mammals are increasing

- **Key Pollutants Pertaining to Wastewater Dischargers**
  - **Microplastics**
  - **Toxic contaminants**
  - **Pathogens**
  - **Nutrients**

Recent SFEI Study: Microplastics in Bay Surface Water



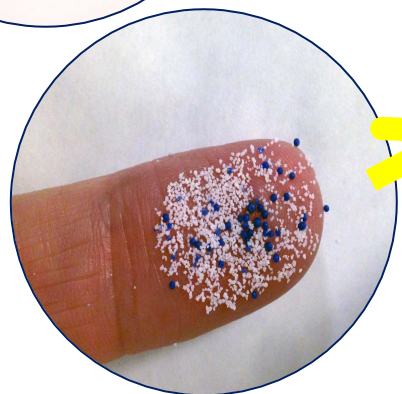
Source: Stanek et. al., 2015

Dominant microplastic types

- Fiber type: 27%
- Fragment type: 55%

Major Sources

Fragment Type



MICROPLASTICS (≤ 5 mm)

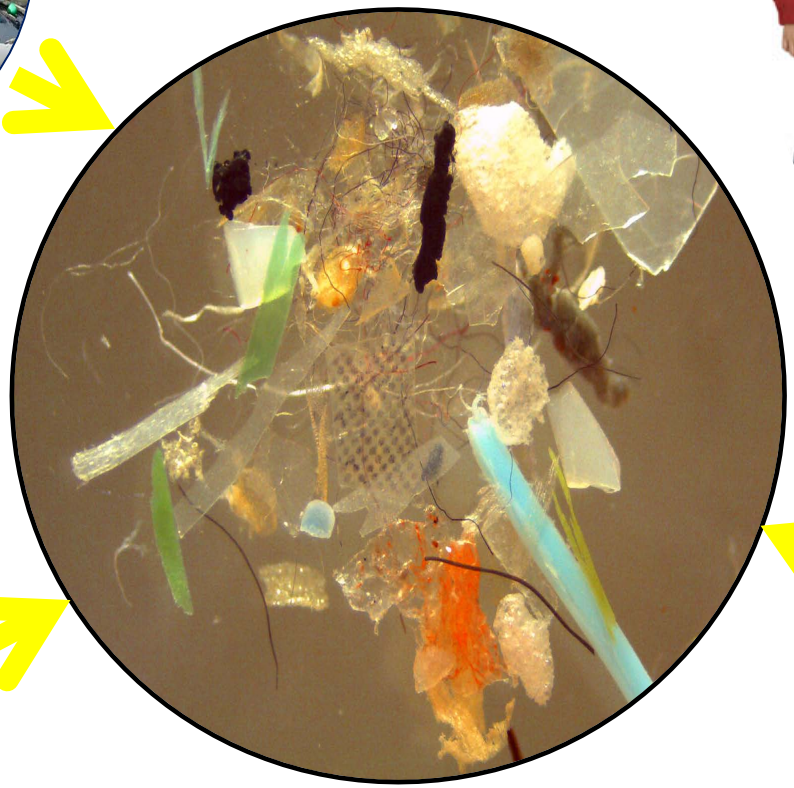
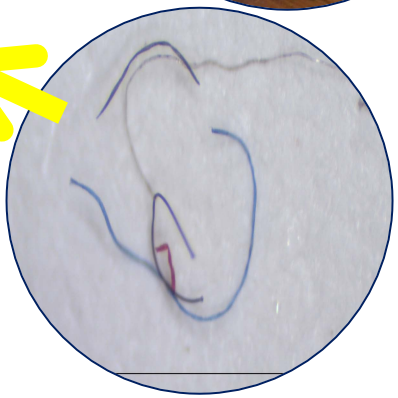
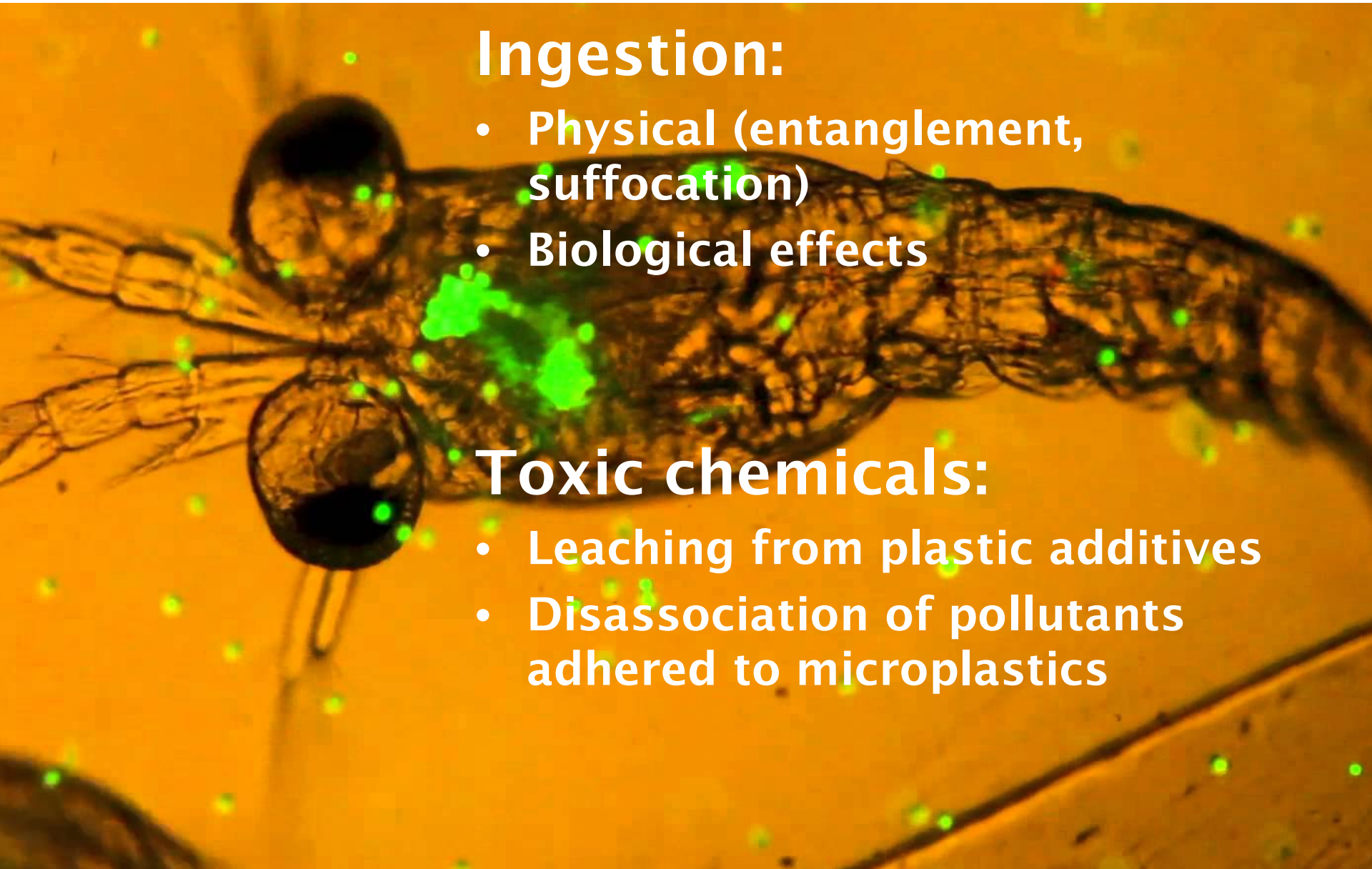


Photo: SFEI, microplastics in SF Bay surface water sample

Fiber Type



Impacts on Marine Environment



Ingestion:

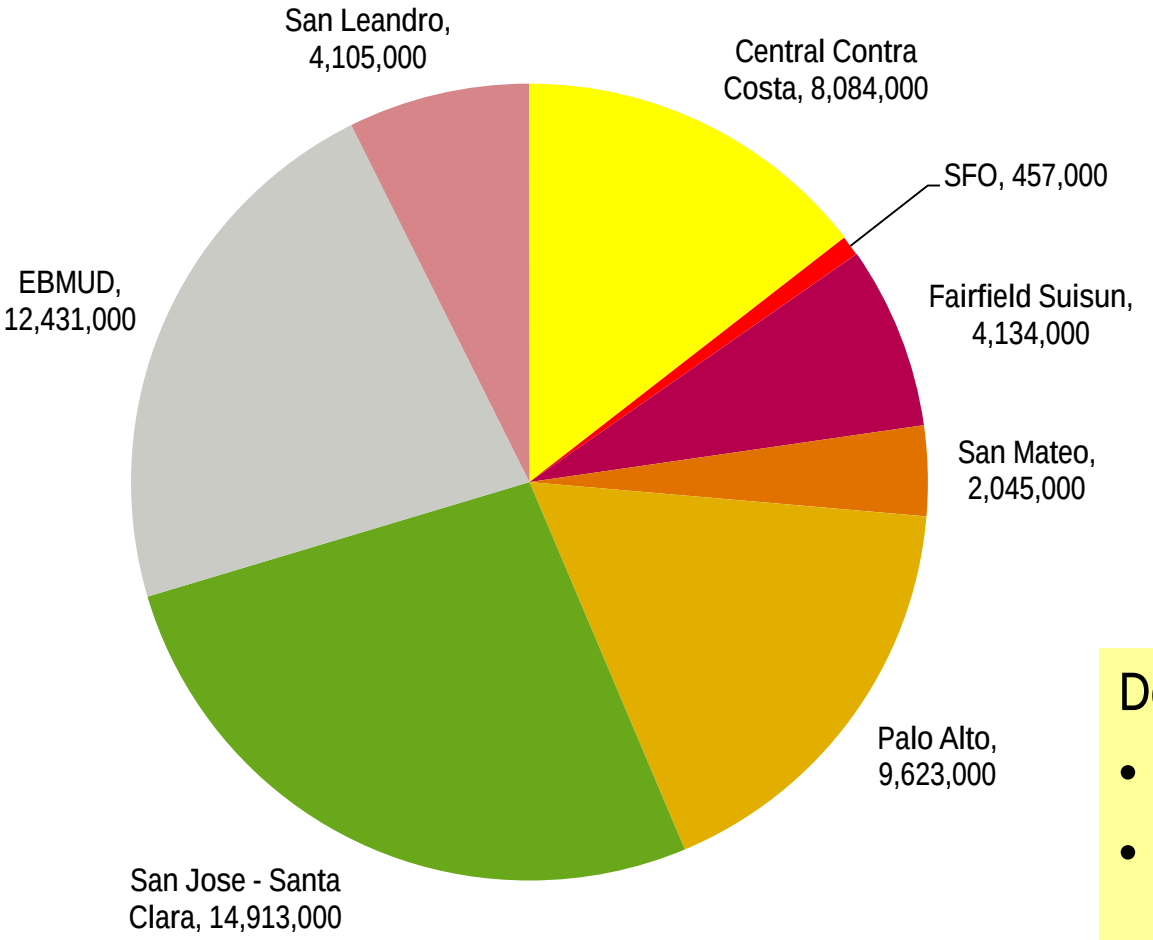
- Physical (entanglement, suffocation)
- Biological effects

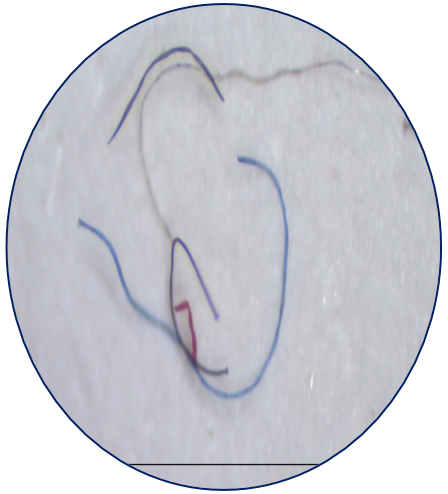
Toxic chemicals:

- Leaching from plastic additives
- Disassociation of pollutants adhered to microplastics

Recent SFEI Study: Microplastics in WWTPs Effluent

56 Million Counts per Day





Dominant microplastic types

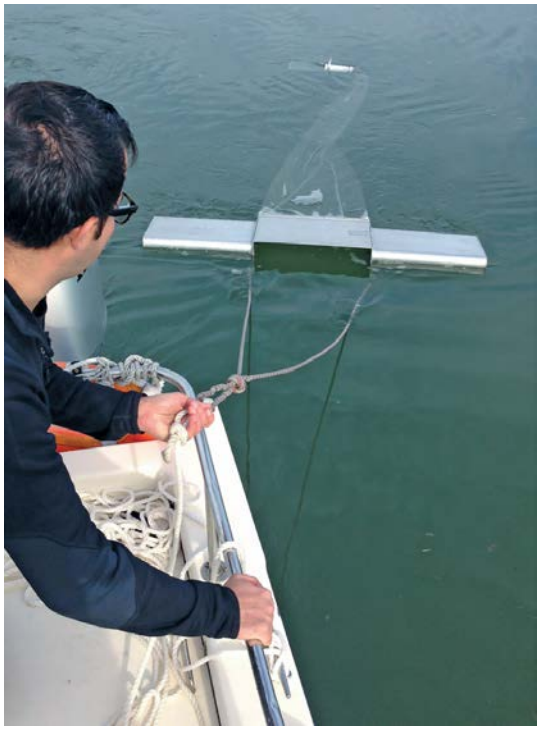
- Fiber type: 80%
- Fragment type: 17%

Microplastics
Wastewater Perspectives

- **WWTPs are not designed to remove microplastics**
  - Although a significant amount appears to be removed from the liquid stream
- **Membrane filtration may be effective**
  - Uncertain benefit of concentrating microplastics in filtration reject
- **Pollution prevention may be the most sustainable solution, although seemingly difficult when dealing with microfibers**

Further Work is Necessary

Improve Analytical Methods



Define Originating Sources

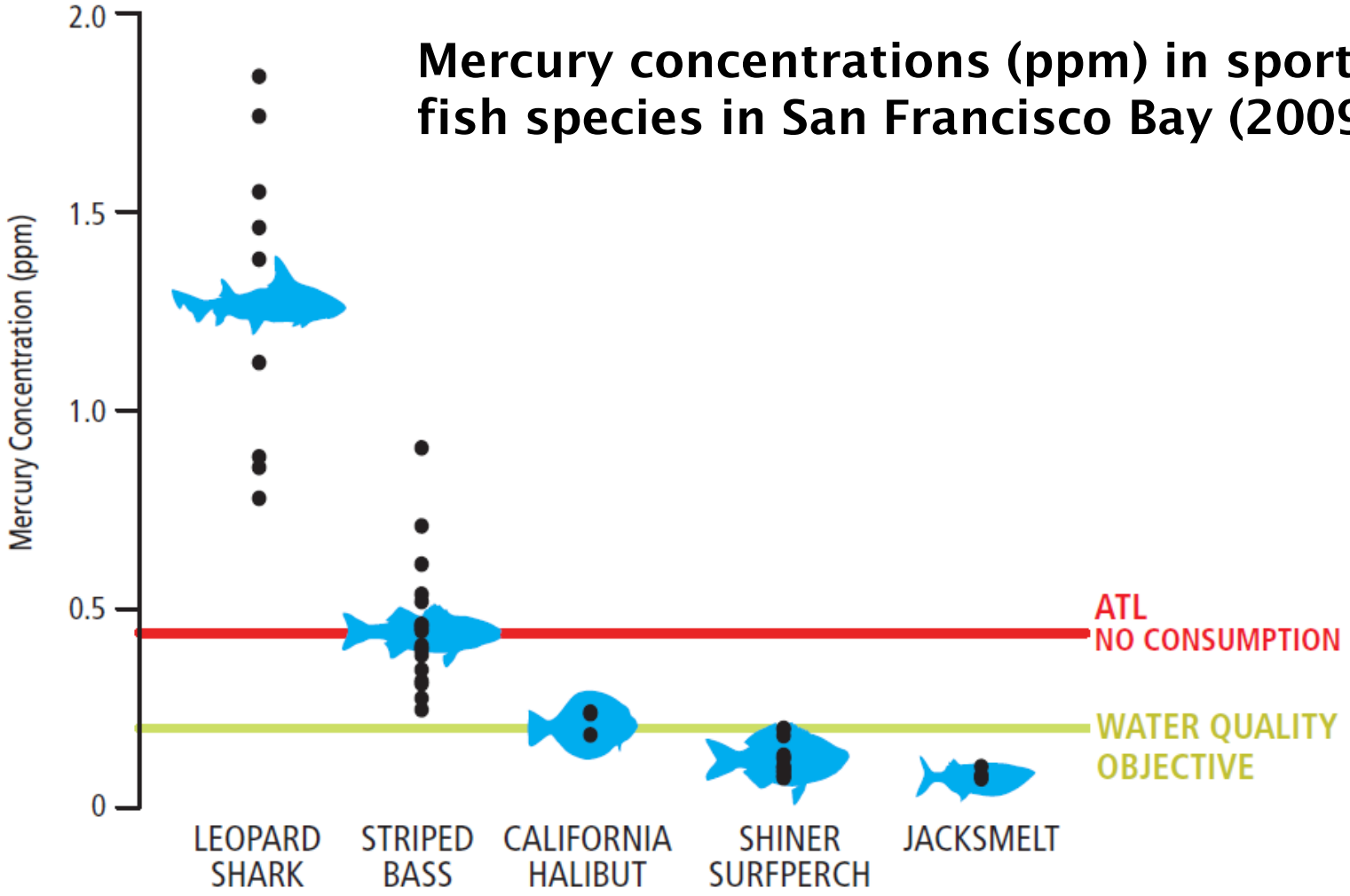
Develop Pollution Prevention Strategies

Identify Treatment Options

Key Pollutants Pertaining to Wastewater Dischargers

- Microplastics
- Toxic contaminants
- Pathogens
- Nutrients

Fish consumption advisory of some species due to mercury and PCBs contaminations



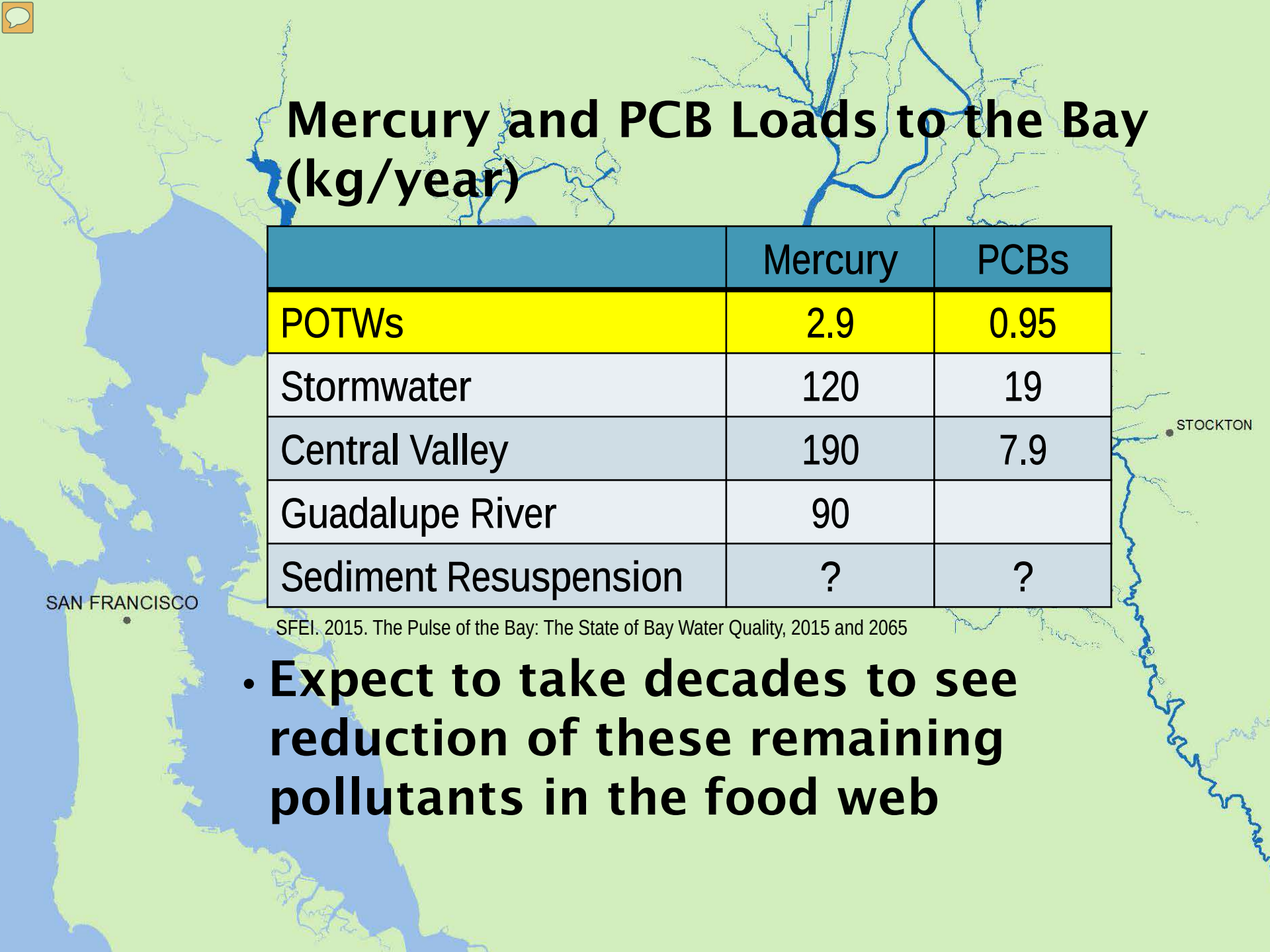
SFEI. 2015. The Pulse of the Bay: The State of Bay Water Quality, 2015 and 2065
ATL by California Office of Environmental Health Hazard Assessment (OEHHA)

Mercury and PCB Loads to the Bay (kg/year)

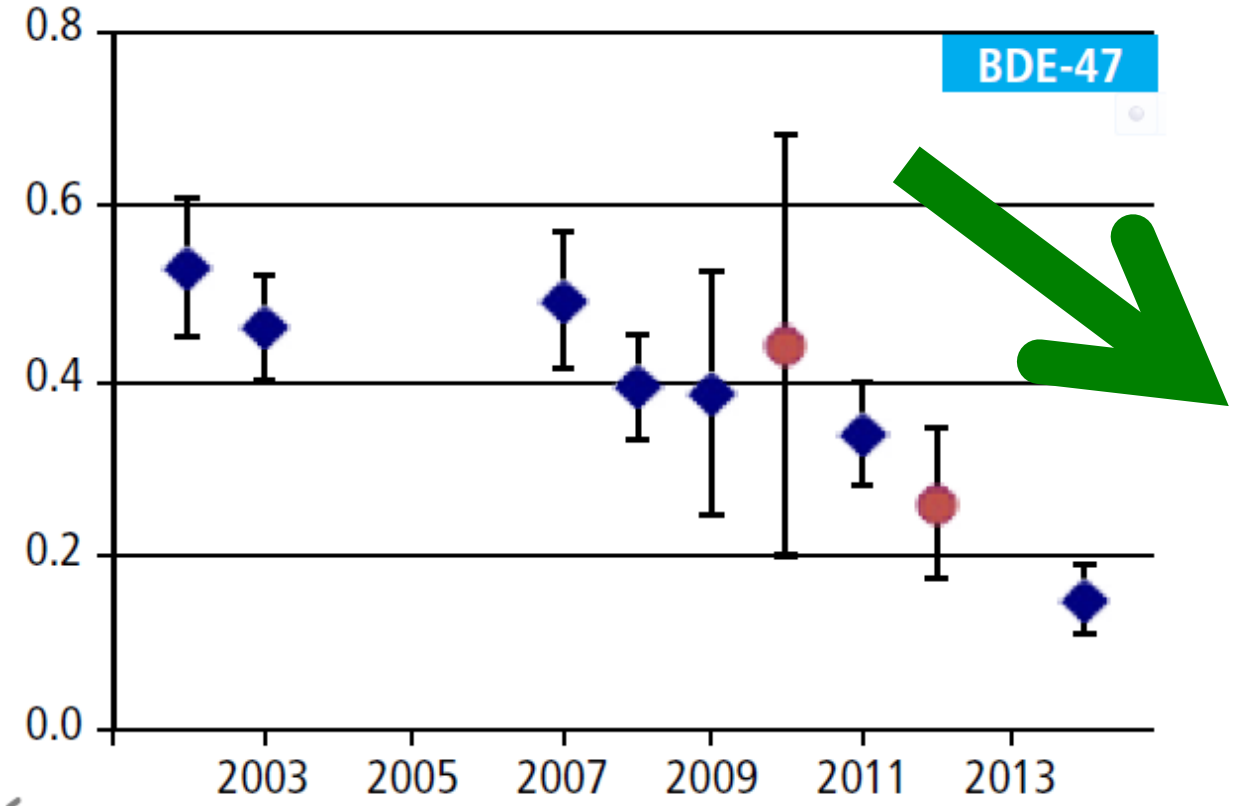
	Mercury	PCBs
POTWs	2.9	0.95
Stormwater	120	19
Central Valley	190	7.9
Guadalupe River	90	
Sediment Resuspension	?	?

SFEI. 2015. The Pulse of the Bay: The State of Bay Water Quality, 2015 and 2065

- **Expect to take decades to see reduction of these remaining pollutants in the food web**



Polybrominated Diphenyl Ethers (PBDEs) In Bay Sediment (ppb)



SFEI. 2015. The Pulse of the Bay: The State of Bay Water Quality, 2015 and 2065

- **Declines of toxic flame retardants (PBDEs) in Bay sediment and wildlife following a halt in US production**

Key Pollutants Pertaining to Wastewater Dischargers

- Microplastics
- Toxic contaminants
- Pathogens
- Nutrients

Excellent conditions for swimming at most of the 28 Bay beaches

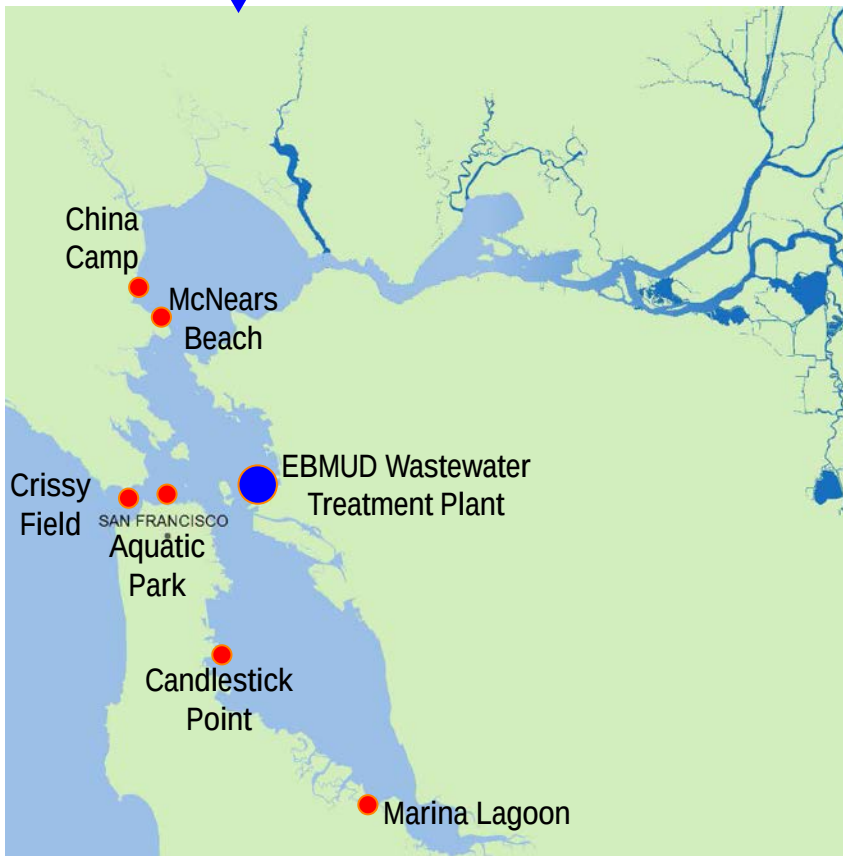
Photo: https://deltasuntimes.wordpress.com/2012/06/04/rick-pierce-of-discovery-bay-1st-in-bridge-to-bridge-race/

Avoid Sewer System Overflows

Minimize Blending

Wet Weather Facilities

Minimize Wet Weather Discharges



Key Pollutants Pertaining to Wastewater Dischargers

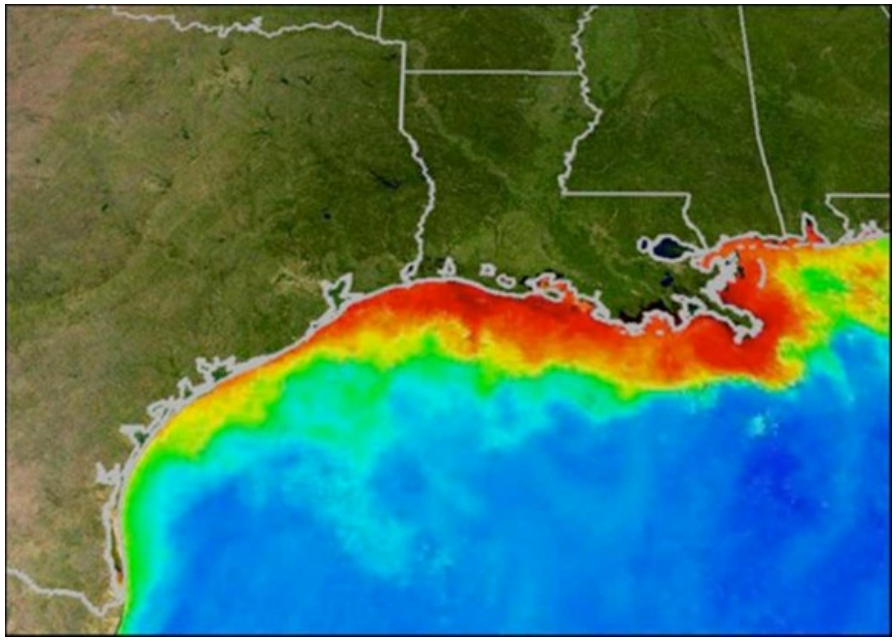
- Microplastics
- Toxic contaminants
- Pathogens
- Nutrients

Potential Impact of Excess Nutrients

Excess Nutrients (N and P)

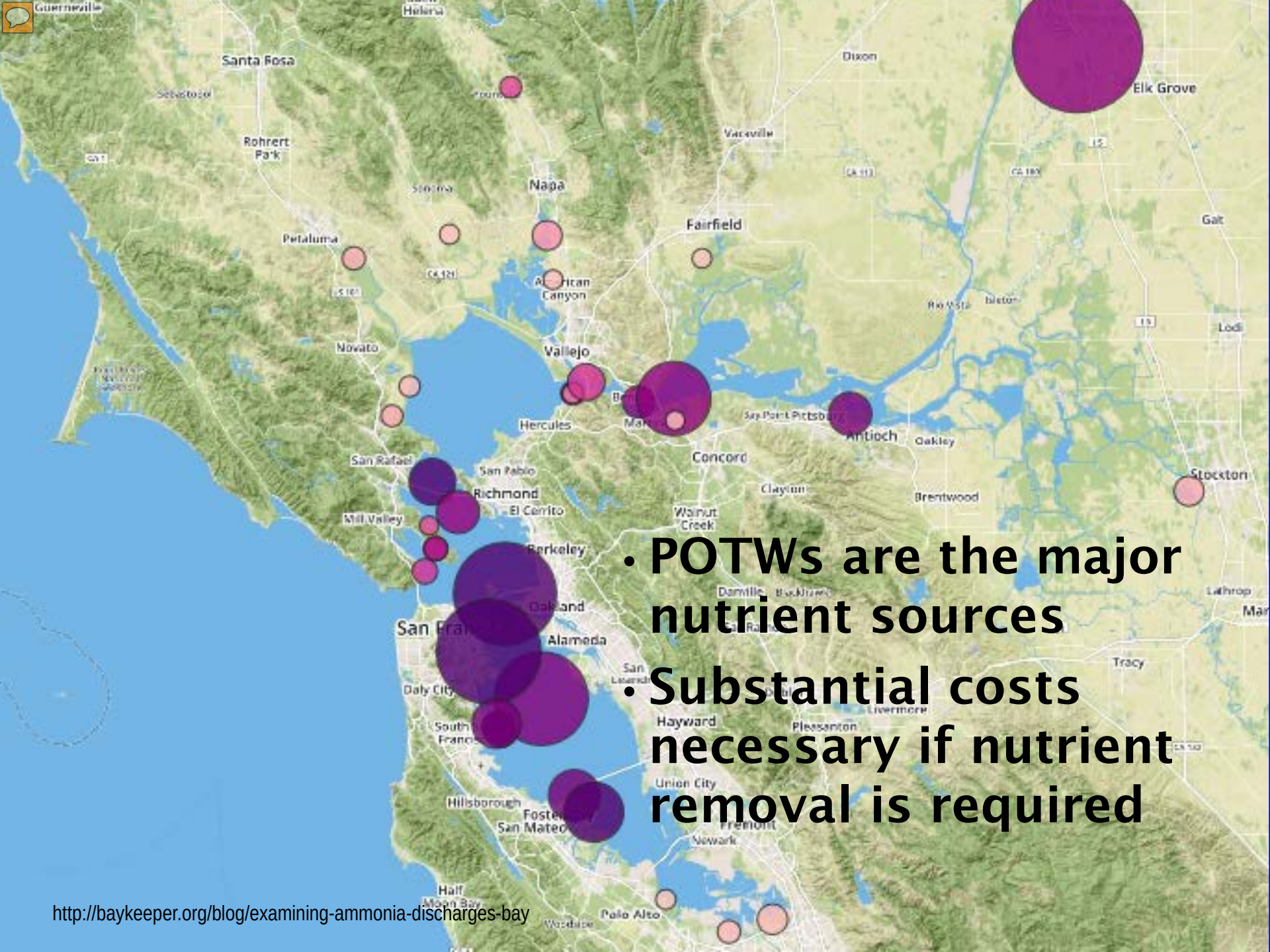
- Excess algal biomass (eutrophication)
- Low dissolved oxygen
- Harmful algal blooms

- Aesthetics
- Recreation
- Habitat
- Fisheries



Gulf of Mexico – Deadzone

Chesapeake Bay



- POTWs are the major nutrient sources
- Substantial costs necessary if nutrient removal is required

http://baykeeper.org/blog/examining-ammonia-discharges-bay

The Central Bay Discharge Location

- Lowest nutrient concentration compared to other embayments
- But emerging concerns of coastal impact

CBSNEWS Video | US | World | Politics | Entertainment | Health | MoneyWa

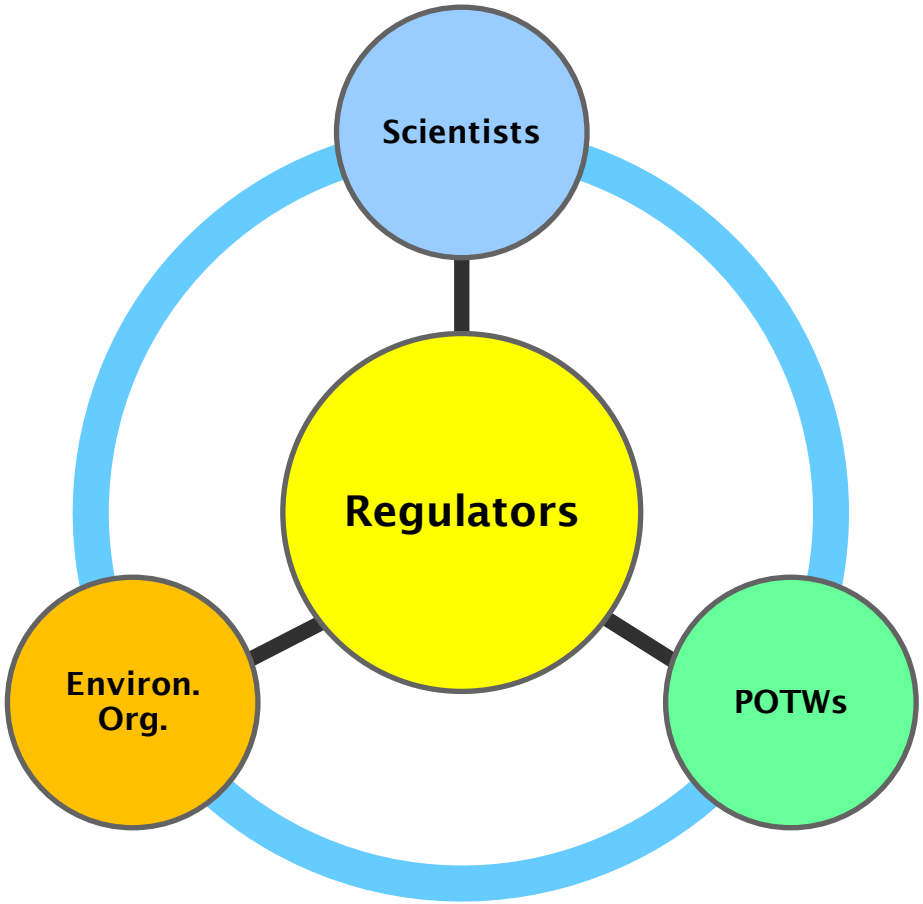
AP / *November 6, 2015, 12:53 PM*

High toxin levels delay California crab season

Fishermen load crab pots onto a fishing vessel at Fishermen's Wharf ahead of Friday's opening of the commercial Dungeness crab season, in San Francisco, California November 14, 2013. / **REUTERS/ROBERT GALBRAITH**

Nutrients
District Actions

- Support regional scientific studies
- Develop District's nutrient work plan
- Maintain leadership role in regulatory and permitting strategy development



Next Steps

- Monitor emerging data on the status of microplastics
- Continue engaging with stakeholders on regional nutrient efforts
- Keep the Board updated

EAST BAY MUNICIPAL UTILITY DISTRICT

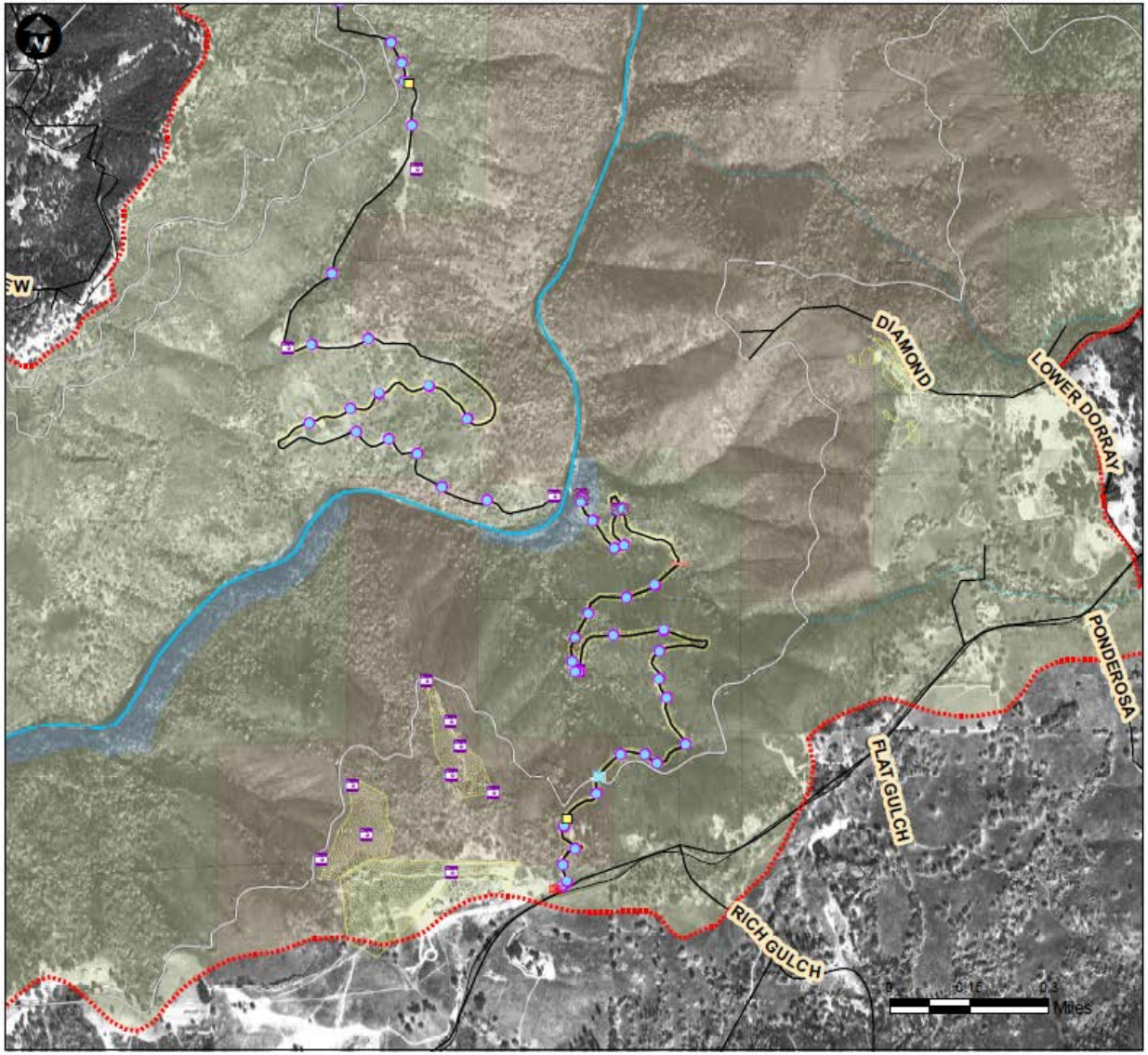
Butte Fire Response Update

Board of Directors
November 10, 2015

Butte Fire Response Overview

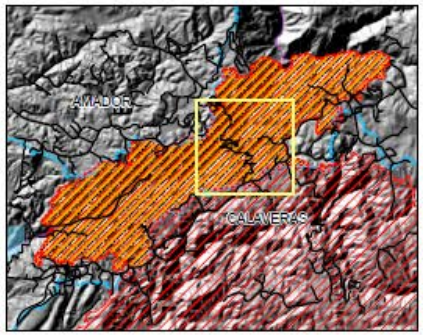
- Monitoring
- Staff
- Resources
- Collaboration & Funding

Culverts and Treatment Areas



Butte Fire Mokelumne Watershed Recovery Treatment Areas

Prepared: November 2015



Location: Upper Mokelumne Watershed
Detailed View: Mokelumne Watershed Fire Recovery Zone

- BLM
- PG&E
- Mokelumne Hill
- Private Landowners
- Mokelumne Watershed Fire Recovery
- Secondary Roads
- Primary Roads
- Utility Ditch / Canals
- Mokelumne River
- Creeks
- Culverts
- Bridge
- Penstock
- Gully Rocked Up
- Cattlegurad
- Gate
- Recovery Treatments

- Mokelumne Watershed
- Mokelumne Watershed Fire Recovery
- Butte Fire
- EBMUD
- Counties

Absolute Scale: 1:12,000
Relative Scale: 1 inch equals 0.19 miles

Natural Resources Department
Vanessa Stevens
2015

WQ Results to Date

STATION	TDS (mg/l)	TSS (mg/l)
N. Fork Moke	37	1
Mid. Fork Moke	68	6.5
S. Fork Moke	81	1.2
Electra	38	13
Highway 49	5.5	2

Calaveras Grown

Ponderosa Way Amador County

Straw Mulching

BLM ESR Draft

- 2,765 acres Moderate to High Burn Severity
- Approximately ½ on 20-40% slope
- Propose to treat approximately 1,600 acres
- $3.5 Million

BLM CALIFORNIA POST-FIRE RECOVERY PLAN

EMERGENCY STABILIZATION AND BURNED AREA REHABILITATION

PLAN TEMPLATE 2010

BUTTE FIRE FIRE (LF22)

BLM CENTRAL CALIFORNIA DISTRICT

CALIFORNIA STATE OFFICE

FIRE BACKGROUND INFORMATION

Fire Name	Butte Fire
Fire Number	LFESLF220000 / LFBRLF220000
District/Field Office	CENTRAL CALIFORNIA DISTRICT
Admin Number	LLCAC00000
State	CALIFORNIA
County(s)	CALAVERAS, AMADOR
Ignition Date/Cause	09/09/2015 Under Investigation
Date Contained	10/02/2015
Jurisdiction	*Acres*
BLM	12058
Private	58810
Total Acres	70868
Total Costs	$4,201,000
Costs to LF2200000 (2822)	$3,849,000
Costs to LF3200000 (2881)	$352,000

Funding

- Calaveras County Applying
- Approximately $588K
- Mitigate Hazards including erosion
- Approximately 147K local Match Req
- EBMUD Assist

FMAG Hazard Mitigation Grant Program

Cal OES
GOVERNOR'S OFFICE OF EMERGENCY SERVICES

Questions

EAST BAY MUNICIPAL UTILITY DISTRICT

Long-term Water Supply Recent Activities

Board Meeting
November 10, 2015

Outline

- CVP Municipal and Industrial Water Shortage Policy
- Los Vaqueros Reservoir Enlargement
- Potable Reuse Studies

EBMUD Central Valley Project (CVP) Contract

- Long-term renewal contract with USBR executed in 2006
- 40-year term
- Deliveries via Freeport
- Eligible to receive CVP water when September 30 total storage projected below 500 TAF
- Maximum delivery of 133 TAF in single year, not to exceed total of 165 TAF over 3 consecutive years
- Supply availability subject to cutbacks per the Municipal & Industrial Water Shortage Policy (M&I WSP)

M&I Water Shortage Policy

- Allocates water between irrigation and M&I water service contractors during water shortage conditions
- Protracted efforts to complete environmental review and finalize policy
- In September 2015, USBR released a Final Environmental Impact Statement with a preferred alternative
  - Step-down approach for allocating water
  - Preference for M&I needs
- Record of Decision expected by the end of 2015

Folsom Lake – January 16, 2014

Proposed M&I WSP

(Reference: M&I WSP FEIS Preferred Alternative, September 2015)

Irrigation Allocation (% of contract entitlement)	**M&I Allocation** (1)
< 100%	100% (contract total)
95%	100%
90%	100%
85%	100%
80%	100%
75%	100%
	M&I Allocation (% of historical) use)
70%	95%
65%	90%
60%	85%
55%	80%
50%-25%	75% (1)
20%	70% (1)
15%	65% (1)
10%	60% (1)
5%	55% (1)
0%	50% (1), (2)

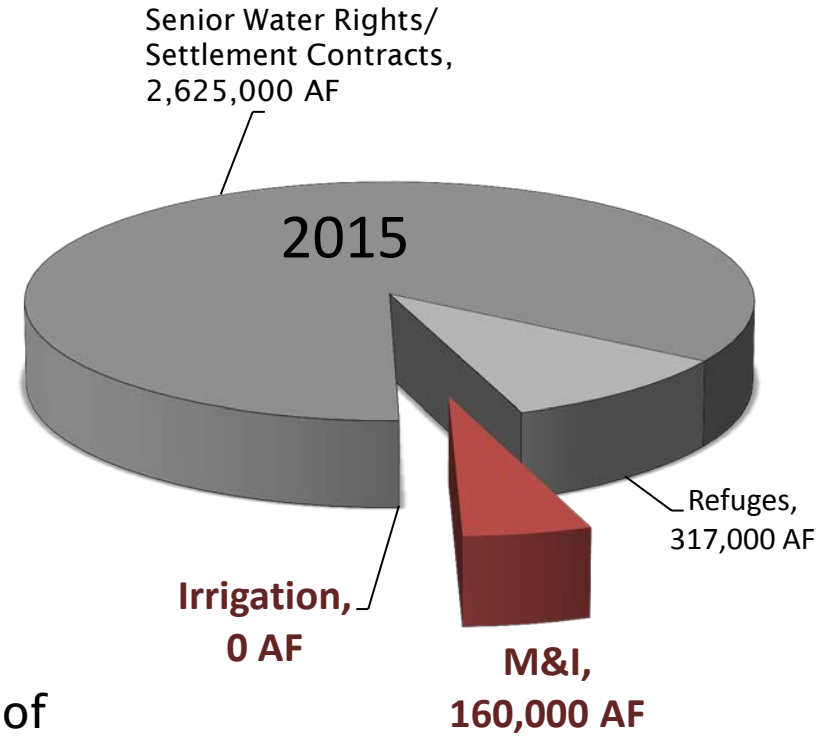
(1) Subject to PHS considerations described in Implementation Guidelines.

(2) Nothing in this policy prevents M&I allocation from being reduced below 50% if CVP water availability is insufficient to meet the 50% allocation

Current Drought Allocations

CVP Allocations and Deliveries			
Year	**South of Delta Ag. Allocation**	**M&I Allocation**	**Total CVP Deliveries (AF)**
2011	80%	100%	6.3 million
2012	40%	100%	4.6 million
2013	20%	75%	4.8 million
2014	0%	50%	3.2 million[1]
2015	0%	25%	3.1 million[1]

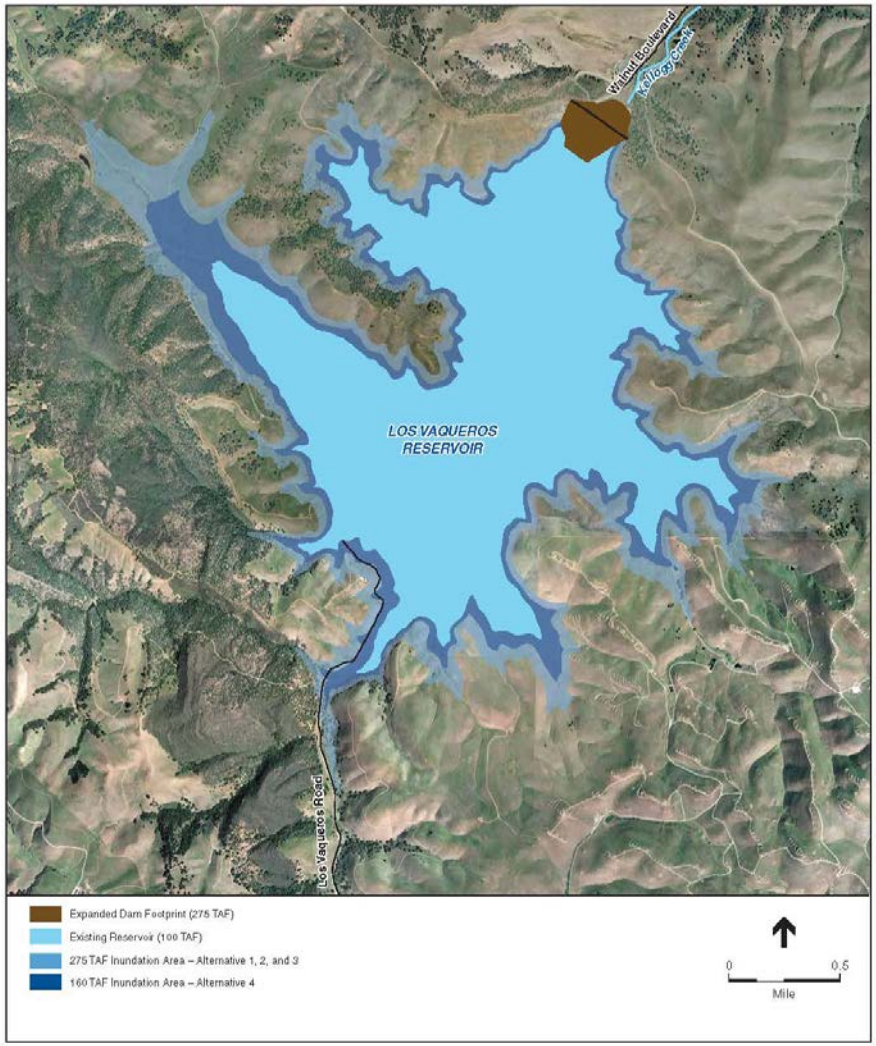
[1] estimate based on allocations



- EBMUD allocated 25% of contract maximum of 133,000 AF or 33,250 AF in 2015
- Re-evaluating CVP reliability
- Considering ways to optimize CVP supplies

Los Vaqueros Reservoir Update

- Initial expansion volume (2012): 160,000 AF
- EBMUD and CCWD have discussed sharing capacity in the 160,000 AF Los Vaqueros and Freeport
- Future expansion volume: 275,000 acre-feet
- Future phases: regional intertie, improved conveyance, additional dam raise



Los Vaqueros Storage

- Part of WSMP 2040 Portfolio
- Potential Benefits of Los Vaqueros Storage
  - Increased storage potentially allowing EBMUD to store excess supplies for drought periods.
  - Increased west-of-Delta emergency supplies
  - Increased regional water supply reliability
  - Utilization of existing infrastructure (EBMUD-CCWD intertie, Freeport intake)
- Next Steps
  - Continue discussions regarding shared capacity in the current Los Vaqueros and Freeport
  - Further define opportunities for EBMUD involvement

Future Los Vaqueros Expansion

- Schedule
  - Supplemental Draft EIS/EIR & Draft Federal Feasibility Study, April 2016
  - A state grant application to the California Water Commission, fall 2017
  - Construction of the future phase could be completed within 5 years
- EBMUD continues to discuss storage opportunities in the current, 160,000 AF Los Vaqueros while monitoring the proposed future expansion

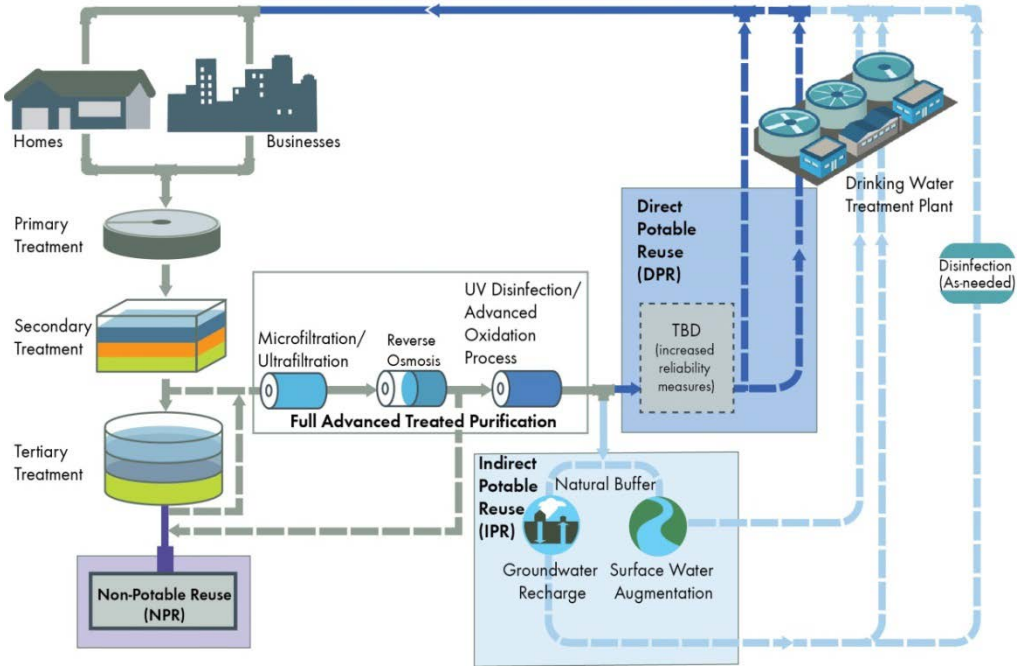
Potable Reuse

Direct Potable Reuse (DPR)

Highly purified recycled water introduced into the raw water supply feeding a water treatment plant or into the distribution system.

Indirect Potable Reuse (IPR)

Highly purified recycled water introduced into an environmental buffer (groundwater or surface water) before being further treated for potable use.



Potable Reuse

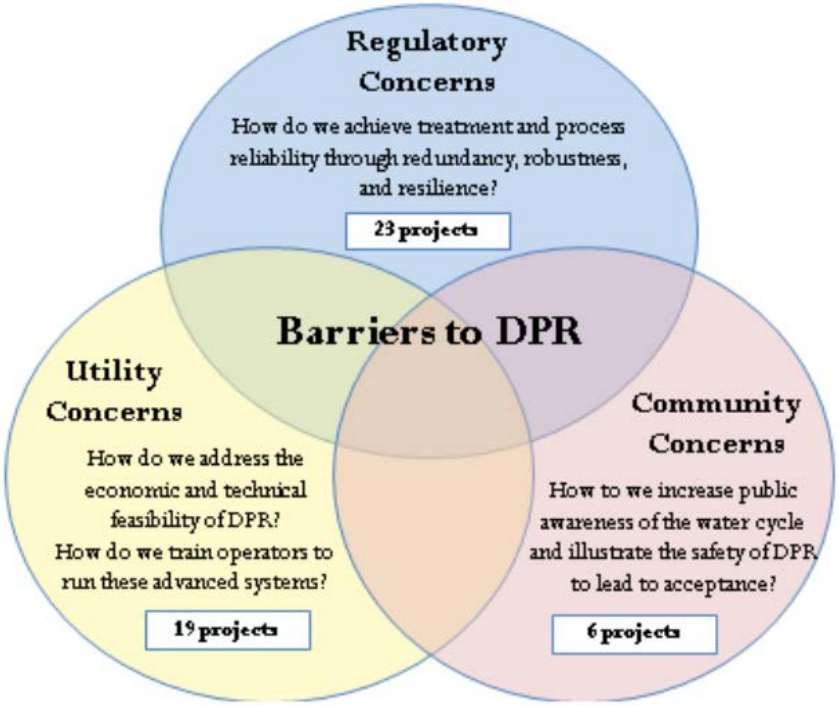
Around California

- Groundwater IPR taking place for nearly 40 years through Orange County Water District's Groundwater Replenishment System/Water Factory 21.
- Regulations for IPR through groundwater recharge have been in place for many years.
- No regulations currently in place for IPR through surface water augmentation or for DPR.
- City of San Diego and Santa Clara Valley Water District among those developing potable reuse projects.

Potable Reuse Studies

WateReuse Research Foundation/WateReuse Association/ Water Research Foundation

- 34 studies to be completed by 2016
- State Water Resources Control Board to approve new regulations based on this research by end of 2016.
- EBMUD is supporting two research studies:
  - Techniques for evaluating safety of Direct Potable Reuse
  - Blending requirements for Direct Potable Reuse treatment facilities



WRRF studies: 34 funded

Potable Reuse Local Studies

- Oro Loma Sanitary District
  - SWRCB grant to evaluate:
    - Reservoir augmentation
    - Groundwater injection
    - Direct reuse
- CCCSD
  - Potential options to be evaluated:
    - Connection to EBMUD Aqueducts
    - Reservoir augmentation
- SD-1
  - District staff identifying options for treatment improvements, including potential for future potable reuse

EBMUD has not yet evaluated individual DPR/IPR projects, but is closely tracking the ongoing research and work of other agencies