

CMANC Winter Meetings

TMDL Panel Discussion:

*Port of San Diego Implementation Approach for the
Dissolved Copper TMDL in Shelter Island Yacht Basin*



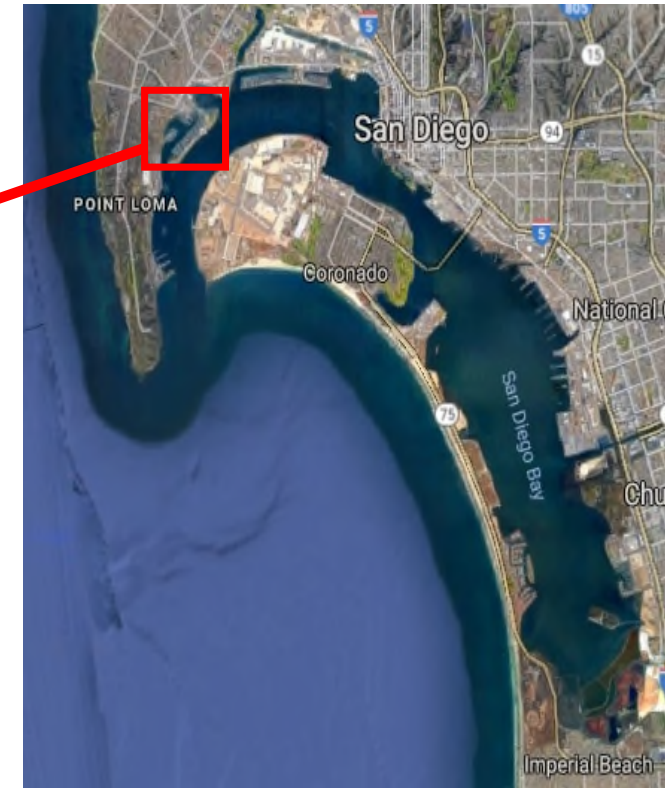
January 16, 2020

Karen Holman

Director | Environmental Protection

Overview of Shelter Island Copper TMDL

- Water in Shelter Island exceeds $3.1\mu\text{g/L}$ regulatory standard
- TMDL adopted in 2005
- Requires reductions in copper loading
- Approx. 2,300 slips in SIYB
- Main source identified as copper anti-fouling hull paints
- Required annual progress assessments



Implementation Approach

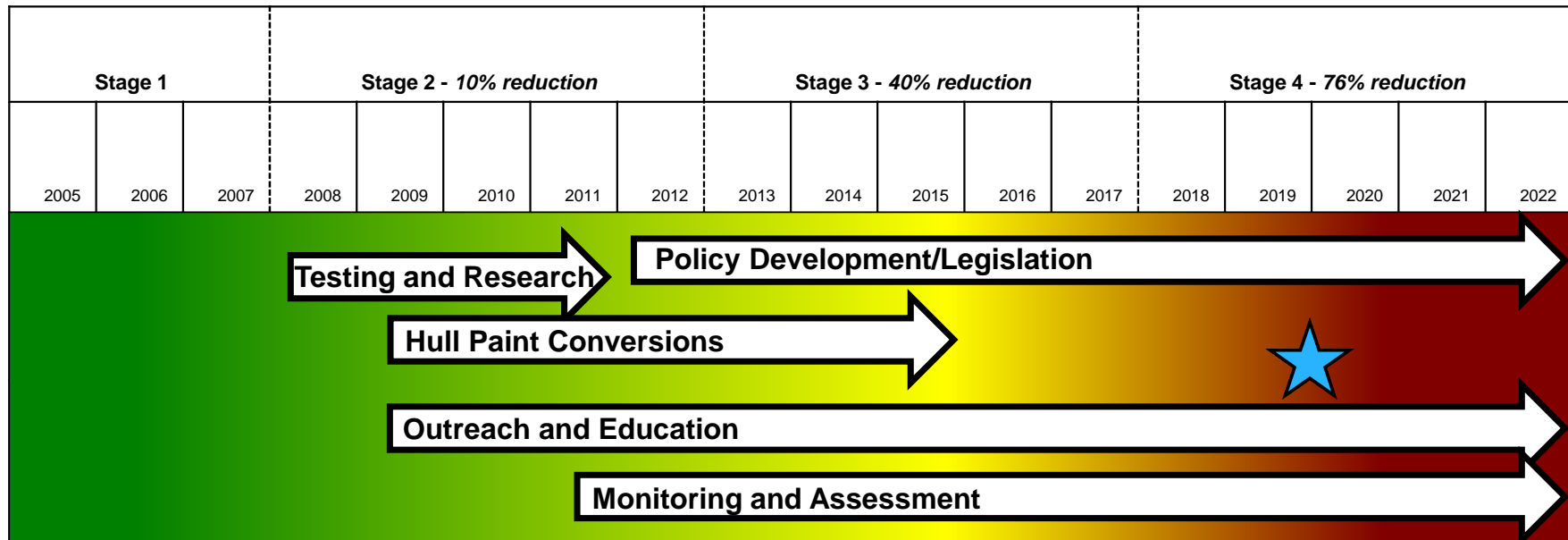
TMDL Compliance Schedule

Stage	Years	Loading Reduction	Load Target (kg/yr)
1	2007	0%	2,163
2	2012	10%	1,900
3	2017	40%	1,300
4	2022	76%	567

1. Find Permanent Solutions to Reduce Copper
 - ✓ Advocate and support change at state/federal level
 - ✓ Evaluate & identify new alternative products
2. Use a Phased & Integrated Approach
 - ✓ Assessments based on TMDL interim targets
 - ✓ Educate boating community
 - ✓ Incorporate regulation, when appropriate
3. Consider an Adaptive Strategy
 - ✓ Regularly evaluate & assess activities
 - ✓ Incorporate new monitoring information, when available
 - ✓ Use new and emerging technologies

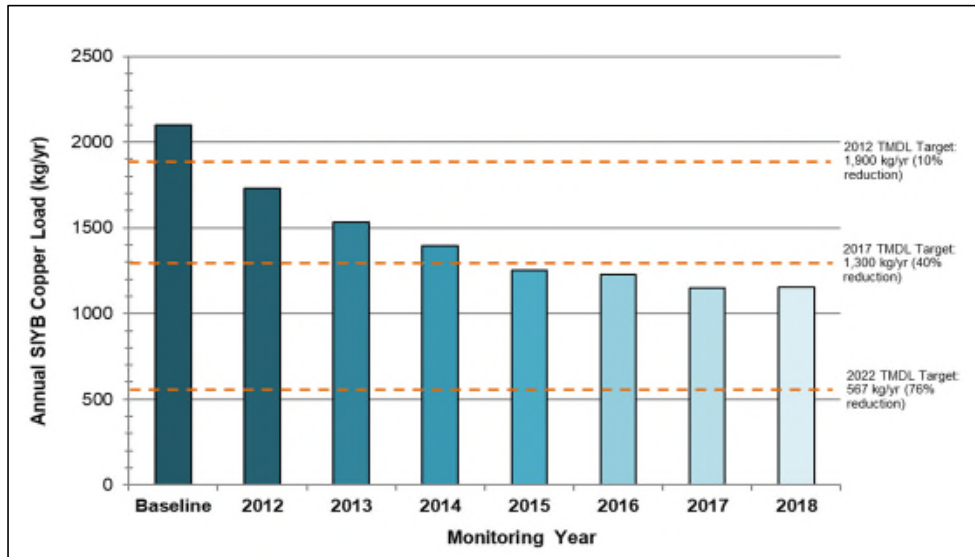
Journey Towards Compliance

- Shift management efforts over time based on data-driven results
- Efforts modified based on trajectory and trends
- Use “pause points” for program assessment and refinement

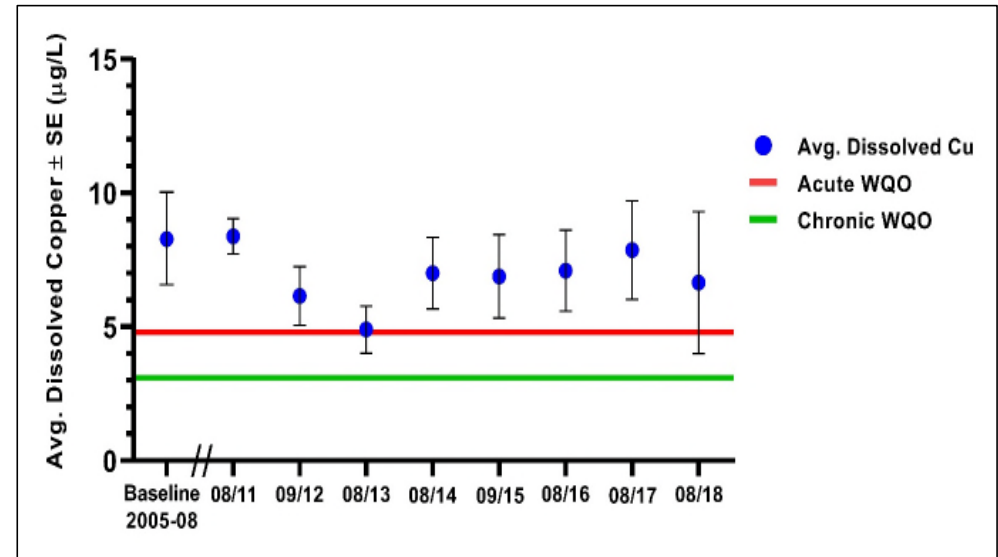


Implementation Progress

Copper Loading



Water Quality



Challenges Encountered

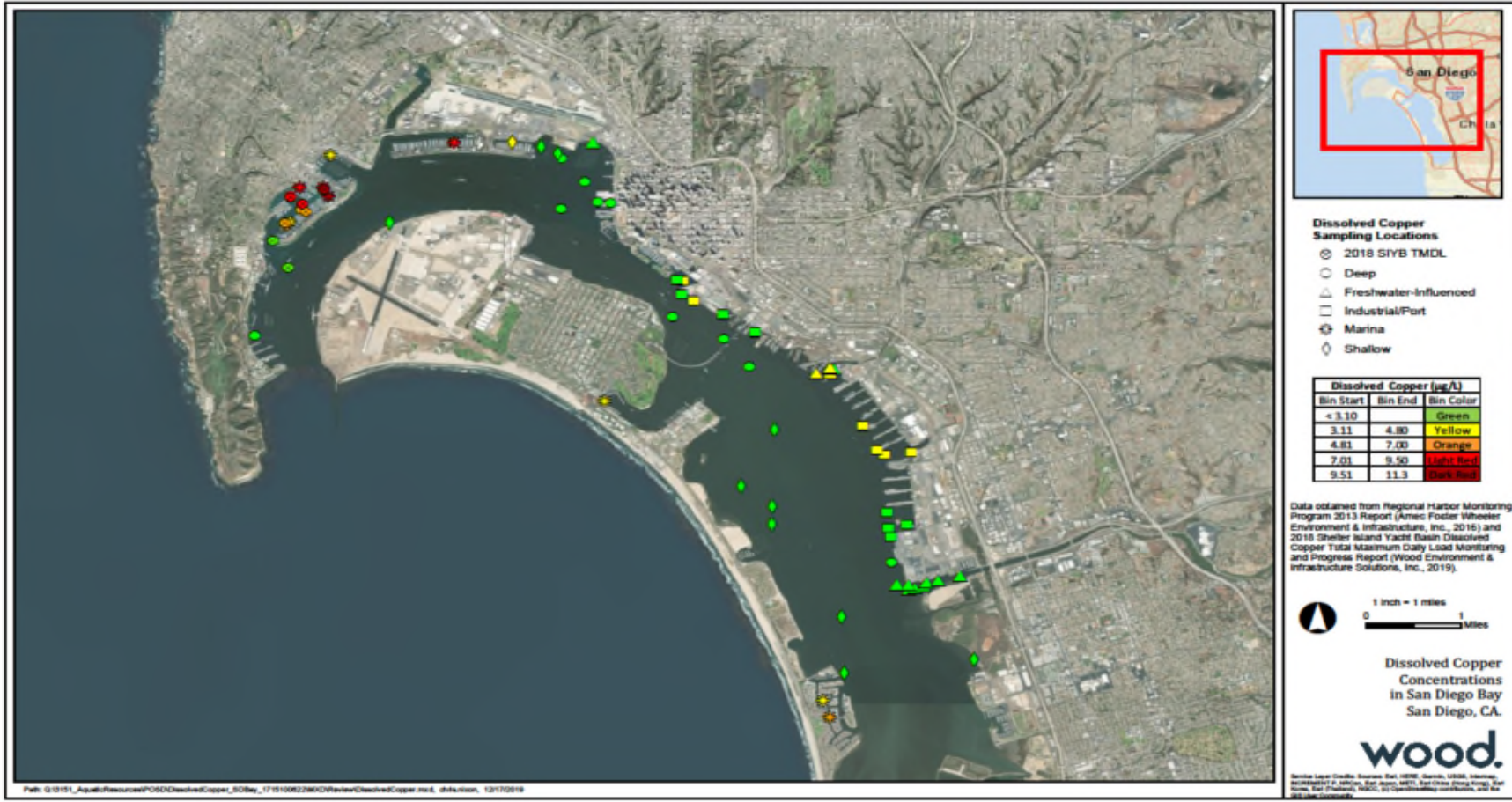
& Lessons Learned over the Years

1. Accessibility of copper hull paints
 - Low leach rate copper paints remain legal to apply
 - Alternative (non-copper paints) need to be part of solution
2. Hull cleaning input greater than anticipated
3. Multiple interpretations of scientific data
4. Modifying Perceptions (We're all in it together)
 - Need acceptance and "buy-in" from stakeholders
 - Changing public behavior is difficult
 - Frequent & consistent messaging
5. Incentive program is not sustainable
6. Balance interests of boating, the economy and the environment



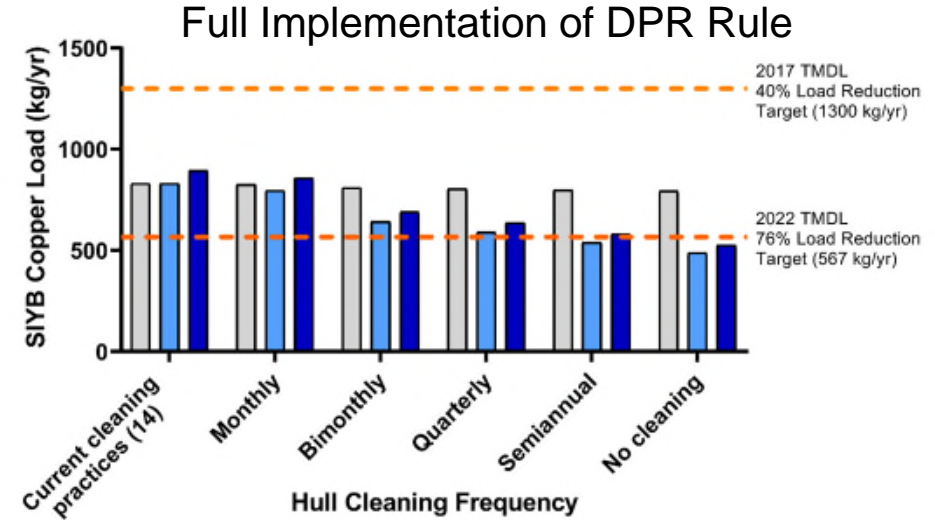
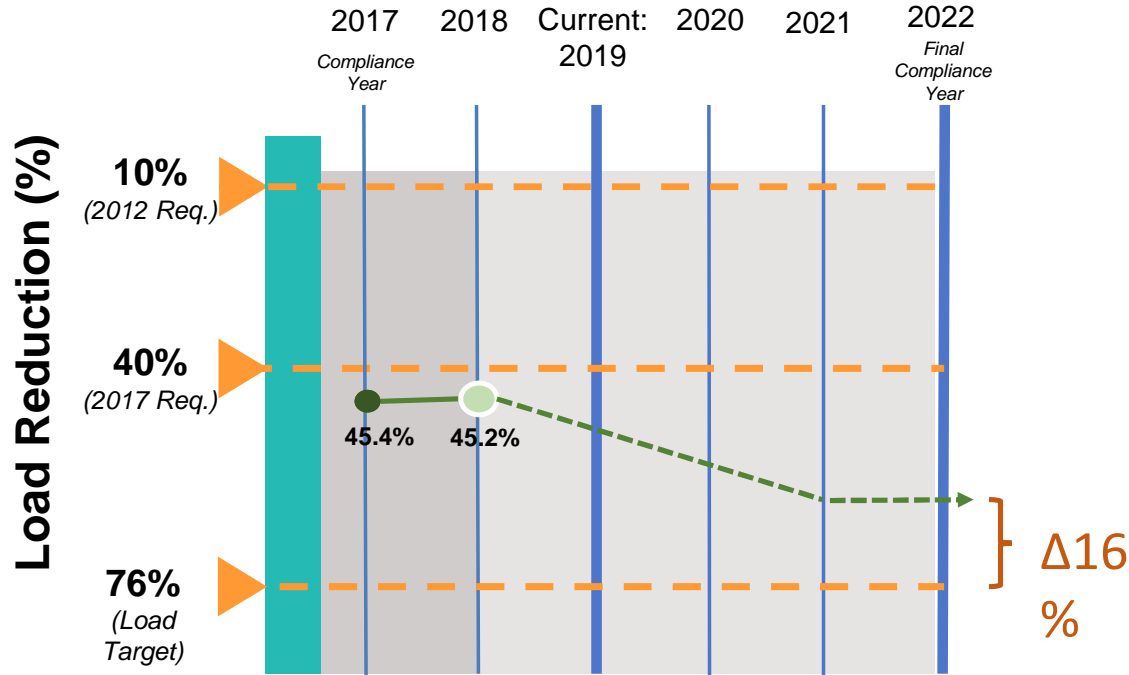
Scientific Interpretations (Example 1):

Other Bay Sources are the Problem



Scientific Interpretations (Example 2):

Direct Load Reductions are Necessary



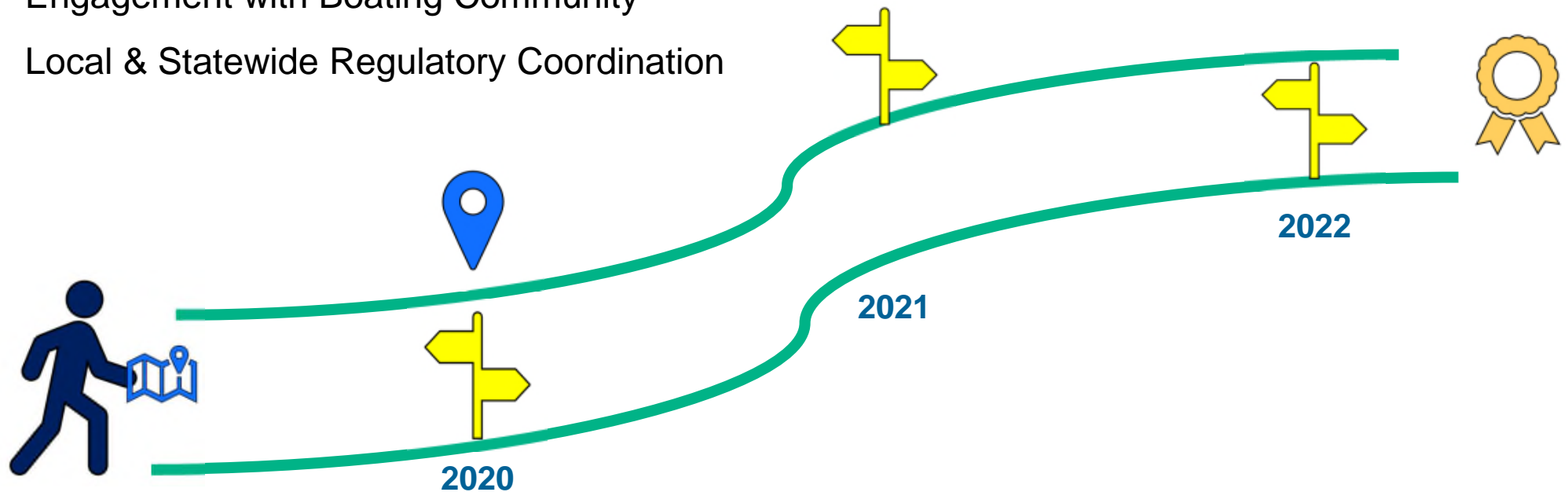
* Projections use 2018 SIYB vessel tracking data

- 2005 TMDL Instantaneous Model (0.45 kg/yr for Category I paints; 3.4-m beam width)
- TMDL (2005) using Earley et al. (2013) Life Cycle Dynamic Model (0.45 kg/yr for Category I paints; 3.4-m beam width)
- Earley et al. (2013) Life Cycle Dynamic Model (0.485 kg/yr for Category I paints; 4-m beam width)

Next Phase

Moving toward the final Compliance Target

- Emphasis on In-Water Hull Cleaning
 - Policy Approaches
 - Additional Research
- Engagement with Boating Community
- Local & Statewide Regulatory Coordination



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