



EVERYTHING MATTERS

TCAO No. R9-2011-0001

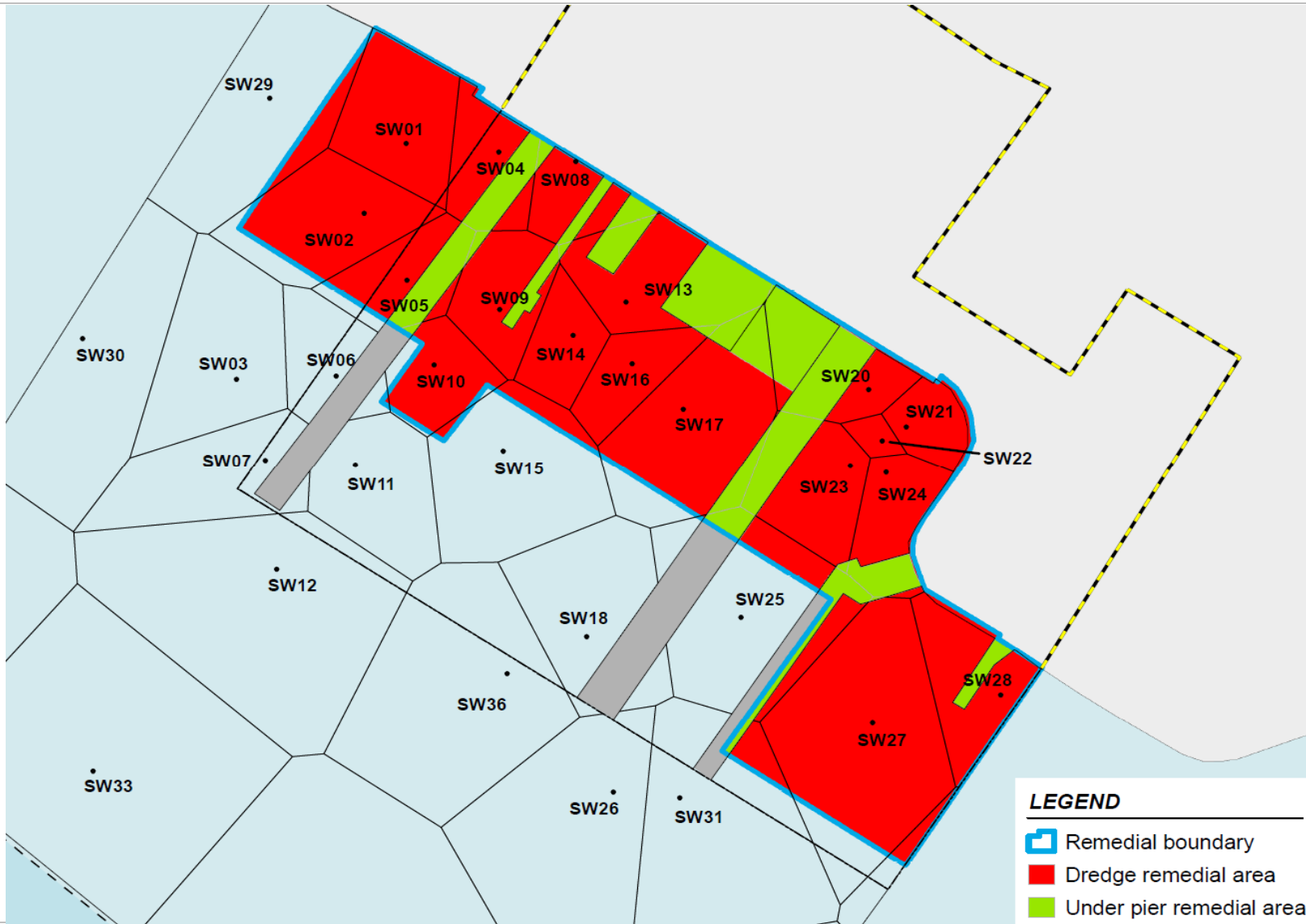
Closing Argument

BAE Systems San Diego Ship Repair Inc.

November 9, 14-16 2011

- All parties named in the TCAO should remain named in the Order with the current status

Polygon SW29



LEGEND

- Remedial boundary
- Dredge remedial area
- Under pier remedial area



- SW29 is within the Shipyard Sediment Site
- SW29 should remain in the Shipyard Sediment Site
- Review new data and determine whether it should be remediated
- Or
- Obtain additional data to make that determination

Agree? Disagree? Who? Why?



- Methodology
- Impairment
- 92-49
- Monitoring

- Cleanup Team and Shipyards agree

- Mr. MacDonald agrees

- Board should be confident it was appropriate

- State of the art - MLOE
 - Disagreement

- The DTR analyses are based on unrealistic screening-level assumptions and should be based realistic baseline-level assumptions

Protection of Beneficial Uses: Human Health and Aquatic-Dependent Wildlife



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 - CUT deposition:
 - agreed that this assumption is “**very conservative**” (331:16-19)
 - conceded the CUT was not relying on any guidance document in setting this assumption (333:21-23)
 - agreed that it is “**actually probable**” the selected receptors consume some portion of their diet outside the Site (334:16-19)

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 - Any exposure above no effects is significant
 - CUT deposition:
 - acknowledges **no known agency guidance document** supporting this assumption (357:13-17)
 - Agrees that the actual threshold for adverse effects is always greater than the assumed no effects threshold (357:23-358:1)

Protection of Beneficial Uses: Human Health and Aquatic-Dependent Wildlife



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 - CUT depo: “I agree” that there is no evidence that anyone has fished at the site (95:5-18)

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 - Anglers have access to and fish daily at the Site
 - CUT depo: “I agree” that there is no evidence that anyone has fished at the site (95:5-18)
 - Anglers eat fish from the Site every day for 30 years
 - CUT depo: agrees that this assumption is “**unrealistic and overly conservative**” (144:9-14)

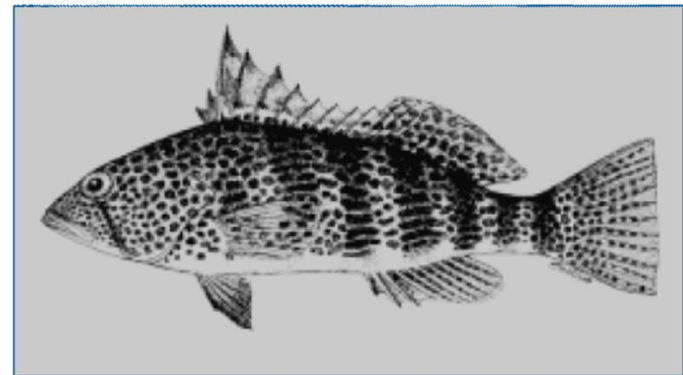
Summary

- The DTR analyses are based on unrealistic screening-level assumptions.
- The use of more realistic assumptions would result in negligible risks being found at the Shipyard Site.
- The remediation footprint is overly conservative with respect to protection of human health and aquatic-dependent wildlife.

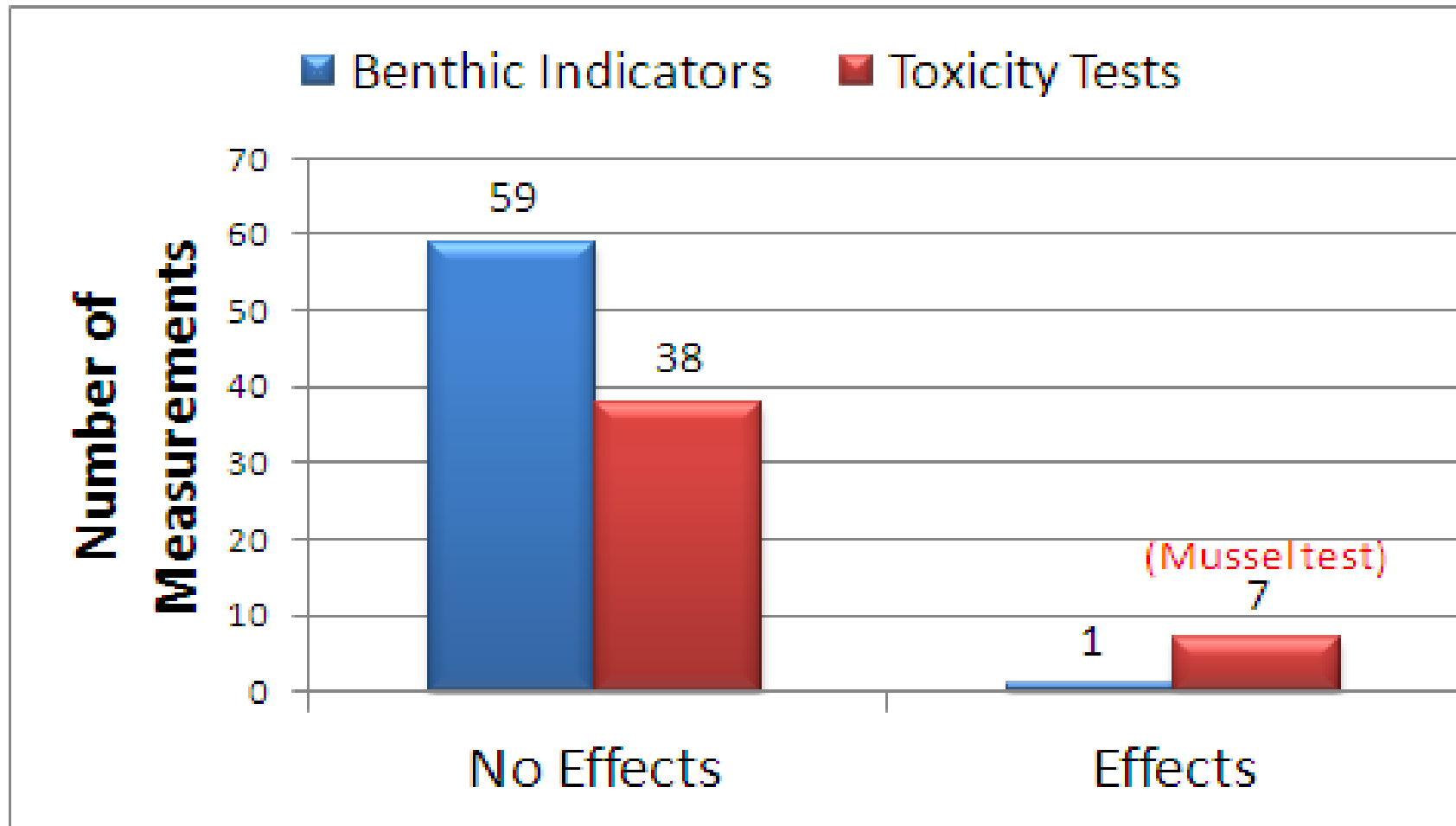
Protection of Beneficial Uses: Aquatic Life Fish at the Shipyard Site



- 253 spotted sand bass were captured at the Shipyard Site.
- No effects on growth or condition were found.
- No serious liver lesions were found.
- No elevated PAH exposure was found.
- The remediation footprint is overly conservative with respect to protection of fish.



Protection of Beneficial Uses: Aquatic Life Benthic Macroinvertebrates at the BAE Site



Protection of Beneficial Uses: Aquatic Life Benthic Macroinvertebrates at the BAE Site



- Only 1 of a possible 60 benthic effects was found (reduced diversity at SW04).
- No toxicity was found for the amphipod and sea urchin tests.
- Effects for the mussel test was found at 7 stations, but the results are questionable due to unusual sensitivity of the mussels to fine-grained sediment.
- The remediation footprint is overly conservative with respect to protection of benthic macroinvertebrates.

Protection of Beneficial Uses: Aquatic Life in Non-Triad Stations



- **The 60% LAETs are Overly Conservative**
 - To assess individual COCs
 - AETs vs LAETs
 - Lowest value for the four toxicity indicators
 - Benthic communities, amphipod, mussel larval, sea urchin
 - LAETs Reduced by 40%
 - based on the judgment of the Cleanup Team
 - Results in overly conservative

- **SS-MEQ is Overly Conservative**
 - To assess combined impacts of all COCs
 - Nearly two-thirds of the polygons identified as toxic did not have “Likely Effects”, which errs on the side of being overly conservative.

Conservative + Protective = No Additional Polygons



- All parties agree that this Order is conservative in nature and protective of beneficial uses
 - **Cleanup Team:**
 - ACLs are "the most stringent selected for any sediment remediation ever conducted in San Diego Bay." (CUT response to BAE RFA No. 56)
 - PMKs agreed at deposition that underlying assumptions are "very conservative" and "extremely conservative."
 - **MacDonald:**
 - testified that ACLs will protect beneficial uses in the Bay
 - **BAE:**
 - ACLs are in fact overly conservative
- **Conclusion: no reason to add any polygons**

- “determining 'economic feasibility' requires an objective balancing of the incremental benefits of attaining further reduction in concentrations of primary COCs as compared with the incremental cost of achieving those reductions.” (CAO Finding31)

92-49: "Total Values" Approach Must be Followed



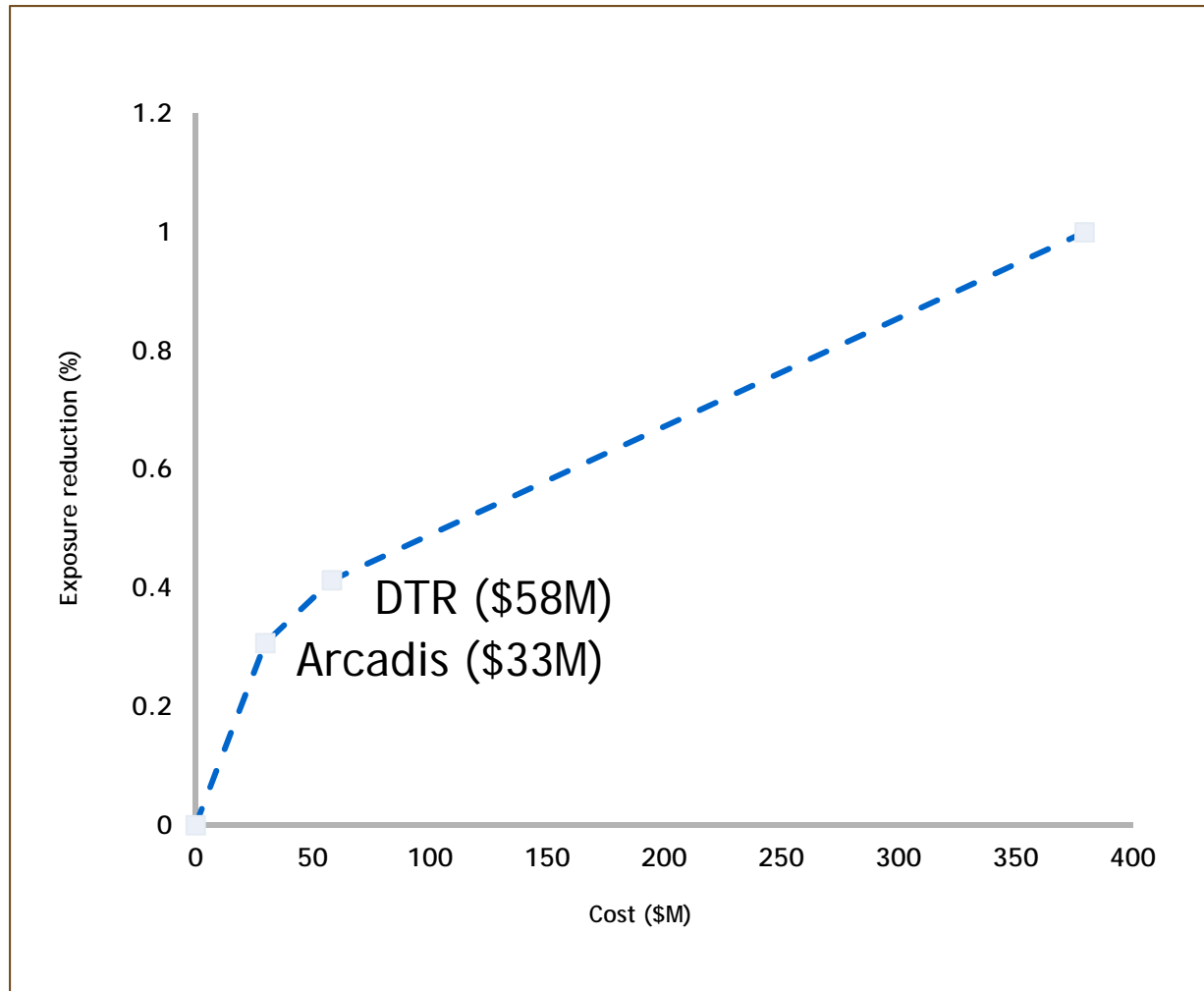
Resolution 92-49 III-G

- “The Regional Water Board shall implement the following procedures to ensure that dischargers shall have the opportunity to select cost-effective methods for detecting discharges or threatened discharges and methods for cleaning up or abating the effects thereof. The Regional Water Board shall:”
 - “Ensure that dischargers are required to clean up and abate ... considering ... **the total values involved, beneficial and detrimental, economic and social, tangible and intangible.**”

Cleanup Team Response to Comments

- "the specific language of Resolution 92-49 commands that the San Diego Water Board must consider the 'total values involved, beneficial and detrimental, economic and social, tangible and intangible' when setting alternative cleanup levels”

Cost-Effectiveness Scenarios



92-49 Analysis of MacDonald's Addition of 8 Polygons



- Mr. MacDonald has suggested adding 8 polygons.
 - He has no expertise with and did not conduct any economic feasibility analyses with respect to his opinions and proposed additional polygons and other suggested Order changes
 - If the Board adds 8 polygons to cleanup:
 - results in further diminished marginal benefit derived for the significant added cost
 - full analysis of additional costs must be considered with increased footprint

92-49: Total Values Approach - Costs



- Exemplar costs that must be included in 92-49 analysis resulting from an increased footprint
 - Increased air emissions from truck traffic
 - Increased truck noise
 - Increased risk of accident
 - Increased greenhouse gases
 - Increased loss of eel grass
 - Increased destruction of macroinvertebrate communities
 - Increased potential impacts on operations of BAE shipyard activities

92-49: Total Values Approach - Conclusion



- ACLs are protective
- Costs increase as footprint increases
- Adding more polygons is not economically feasible
- **Thus no basis for adding more polygons to footprint**

- Agreement
 - Cleanup Team, Shipyards and other designated parties all agree it will assure effectiveness of cleanup

- Disagreement
 - NGOs disagree with elements of CAO/DTR approach

- CAO/DTR - Remedial Monitoring
 - David Gibson deposition:
 - It will ensure the protectiveness of beneficial uses. (103:24-104:12)
 - Considers it to be extensive, and more extensive than any other sediment remediation projects in San Diego Bay. (*Id.*)
 - Julie Chan hearing testimony:
 - It will verify the cleanup has been achieved and maintained.
 - This is the most rigorous plan ever applied in San Diego Bay.

- CAO/DTR – Post-Remedial Monitoring
 - David Gibson deposition:
 - Considers it to be extensive, and is "almost certain that it is" more extensive than the other programs throughout SD Bay (134:12-135:7)
 - Does not believe the Regional Board has ever required implementation of 5 to 10 year post remedial monitoring plans for sites not involving engineered cap. (*Id.*)
 - Julie Chan hearing testimony:
 - Post-remedial monitoring is the "heart and soul of the CAO."
 - At 2, 5 and if necessary 10 year intervals the cleanup will be verified.
 - Multiple layers in the future to assure adequacy and effectiveness.

The Monitoring Plans are Protective



- Both Plans must be reviewed and approved by the Board.
- The Remediation Plan includes detailed measurements of water quality and sediment quality.
- The Post-Remediation Plan includes the three Triad indicators, as well as bioaccumulation in clams.
- The Post-Remediation Plan will be reviewed in Years 2, 5, and potentially 10.

- Julie Chan testimony: “NGOs still misunderstand the application of UCLs.”

- If set to 100%, natural variability would cause 50% failure rate

- Cleanup Team presentation: “120% Decision Rule does not determine Alternative Cleanup Levels”

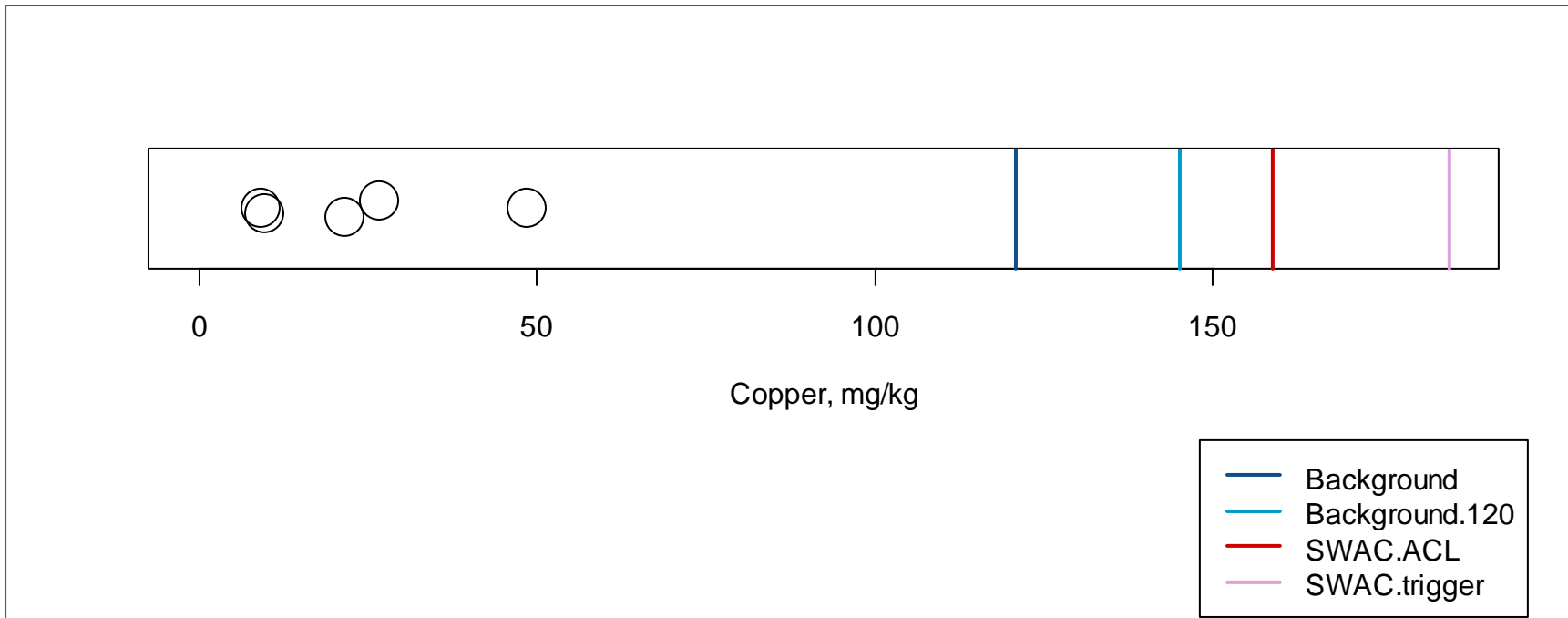
- Dreas Nielsen testimony:
 - the ACLs are in fact ranges of numbers.
 - Standard and accepted methodology for assessing cleanup compliance

Dredging Results at BAE Systems

How do we know the 120% rule works? Real world experience

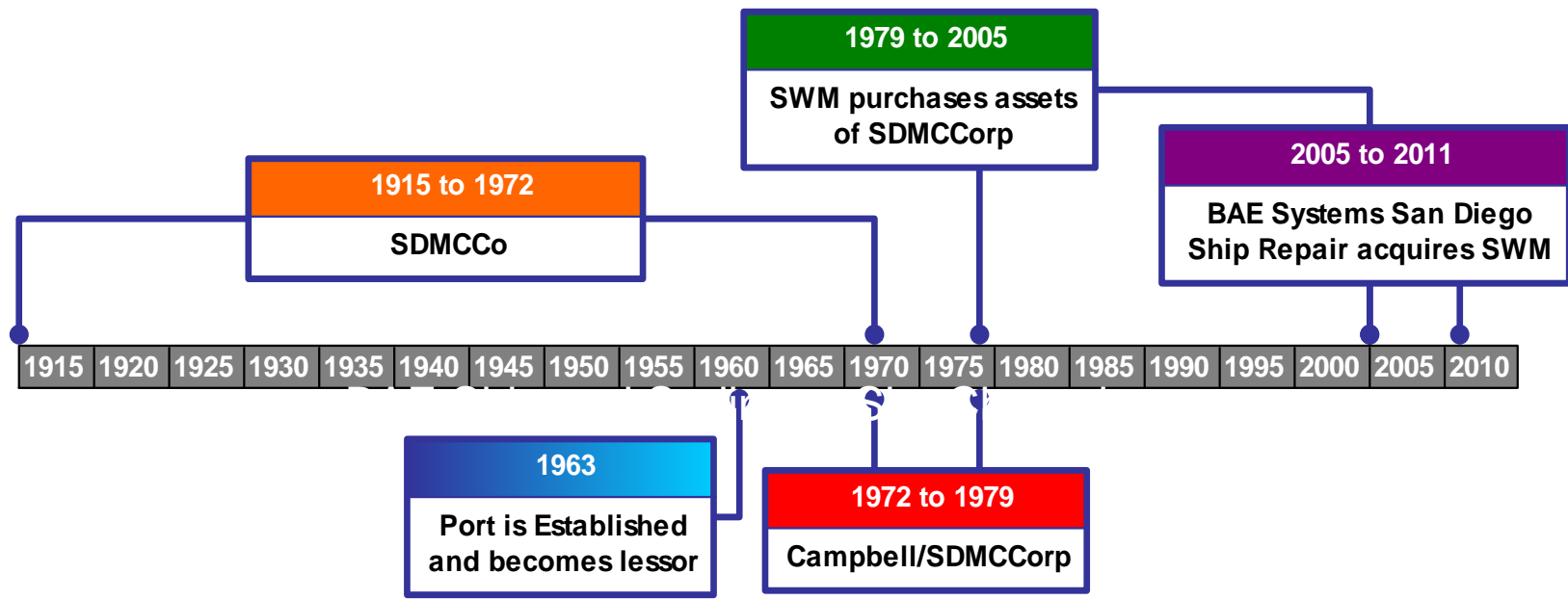
- BAE's dry dock sump dredged Dec. 2010
 - Partially in cleanup area
 - Dredged to < 120% background
 - **Result: All COCs were less than background**
-
- Julie Chan hearing testimony: BAE's dredging proves the 120% rule works

Dredging Results: Copper



- Sample concentration limit of 120% of background
 - Allows for measurement variability
 - Average concentrations expected to be below background
- SWAC limit at the upper confidence limit of the ACL
 - Allows for measurement variability
 - Consistent with EPA guidance

BAE Shipyard Sediment Site Chronology



Occupation Percentages:
SDMCCo - 60%
SDMCCorp - 7%
SWM - 27%
BAE - 6%