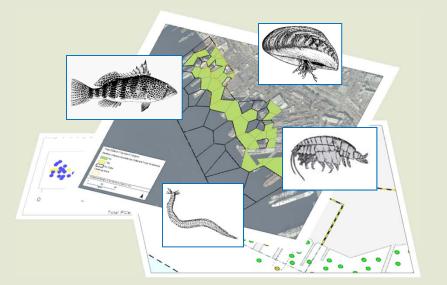
Cleanup Thresholds

San Diego Shipyard Site

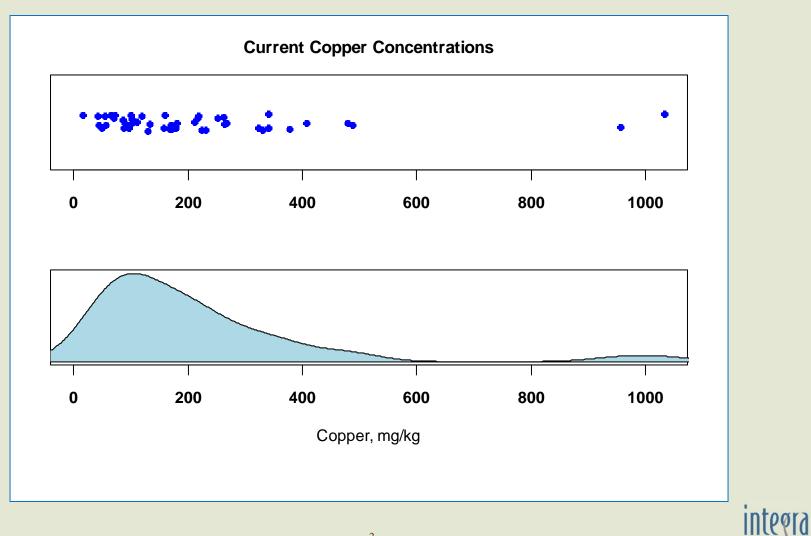
Dreas Nielsen

On behalf of BAE Systems





Environmental Concentration Data



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Duplicate Laboratory Analyses

• Inorganic chemicals

- Solids: Relative Percent Difference <20% (or <35%)
- Source: U.S. EPA. 1994. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review
- Organic chemicals
 - Solids: Relative Percent Difference <19-50%
 - Source: U.S. EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods in Data Review



Accounting for Uncertainty During Post-Remedy Sampling

- For a sample: 120% of background
- For the site: upper confidence limit of the SWACbased ACL



EPA Guidance on Background Comparisons

The action level for background comparisons is the largest value of the difference in means that is acceptable to the decision maker.

It is necessary to specify a gray region...because the decision may be "too close to call" due to uncertainty...

U.S. EPA. 2002. Guidance for comparing background and chemical concentrations in soil for CERCLA sites.

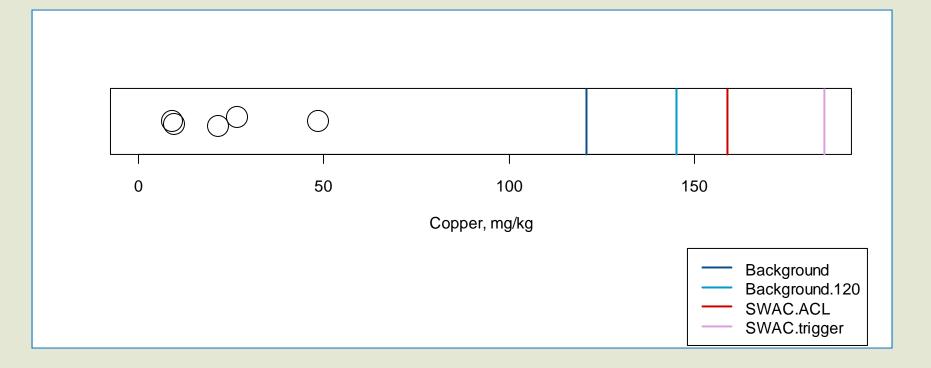


Dredging Results at BAE Systems

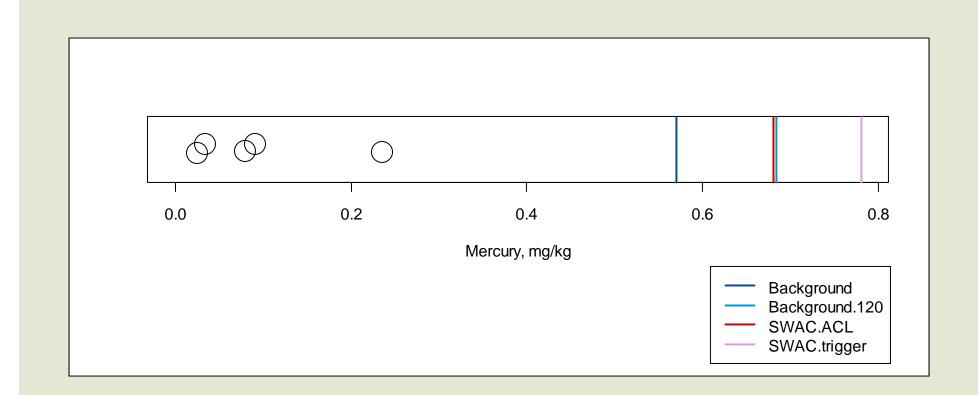
- Dry dock sump dredged
- Partially in cleanup area
- Dredged to < 120% background
- Result: All COCs were less than background



Dredging Results: Copper

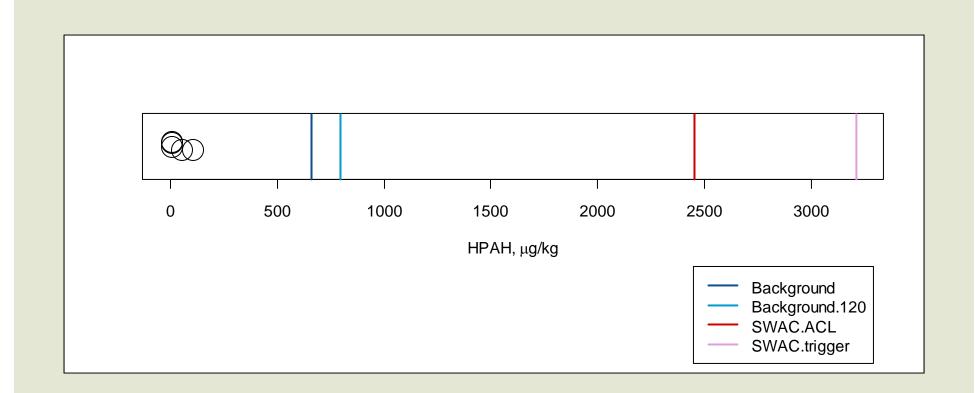


Dredging Results: Mercury

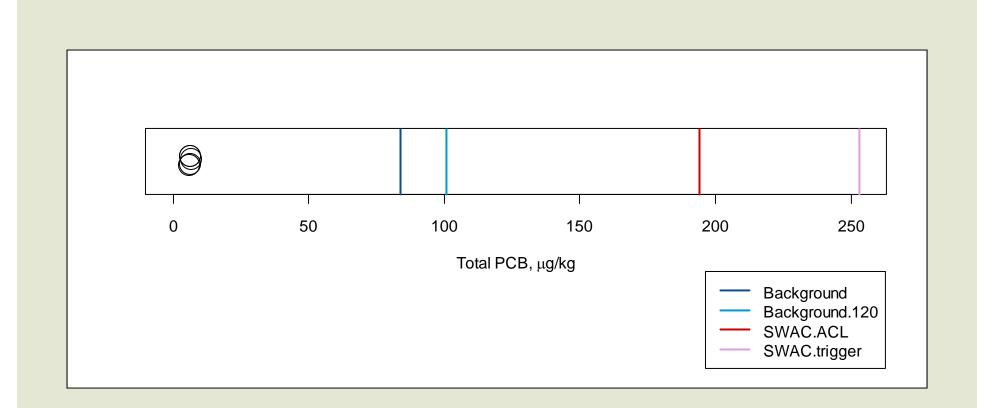




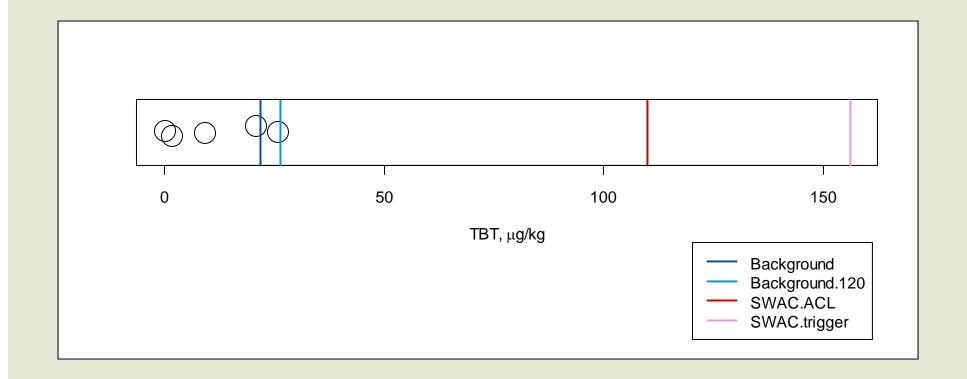
Dredging Results: HPAH



Dredging Results: PCBs

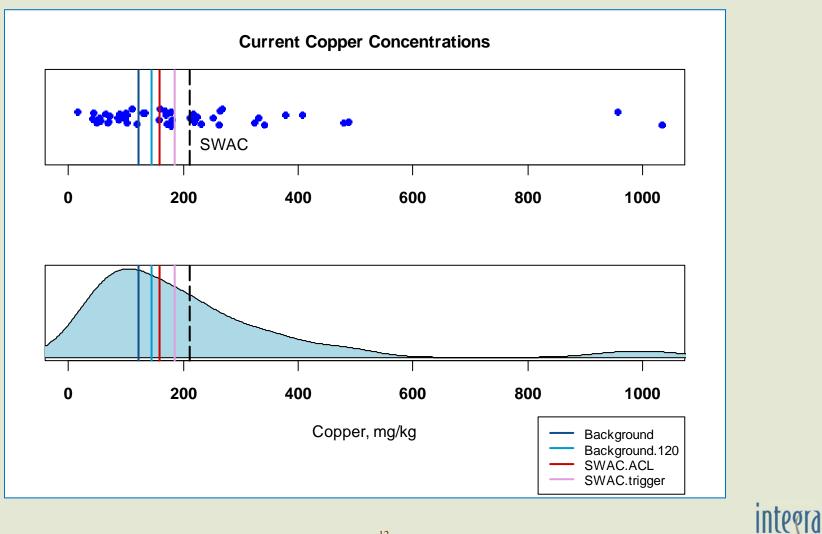


Dredging Results: TBT



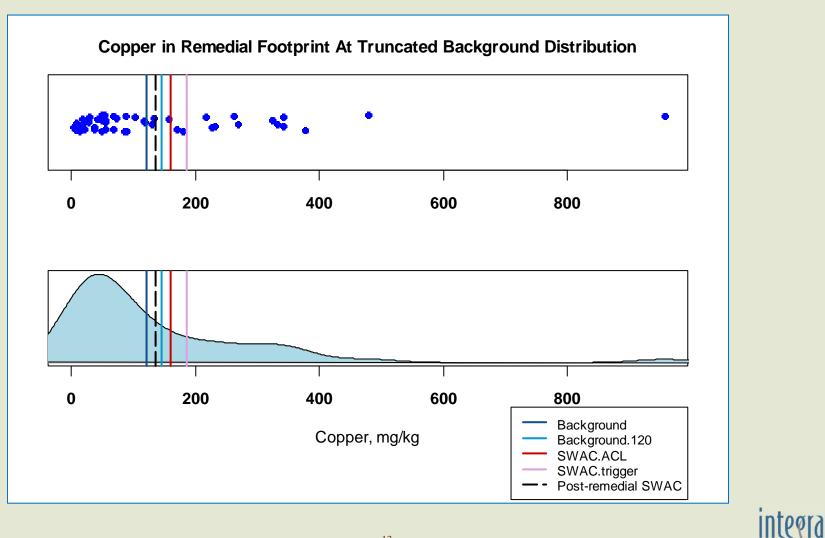
integral consulting inc.

Example: Copper, Pre-Remedy



consulting inc.

Example: Copper, Post-Remedy



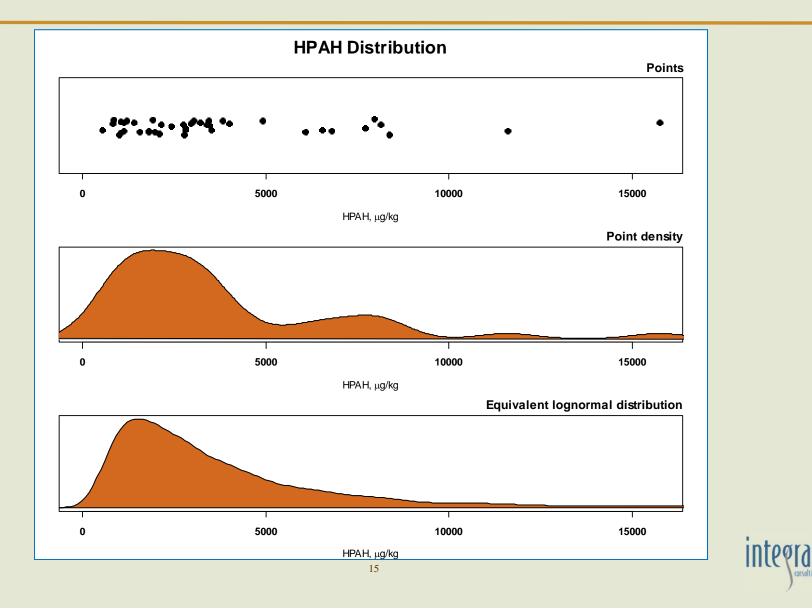
consulting inc.

EPA Guidance on Use of Confidence Limits

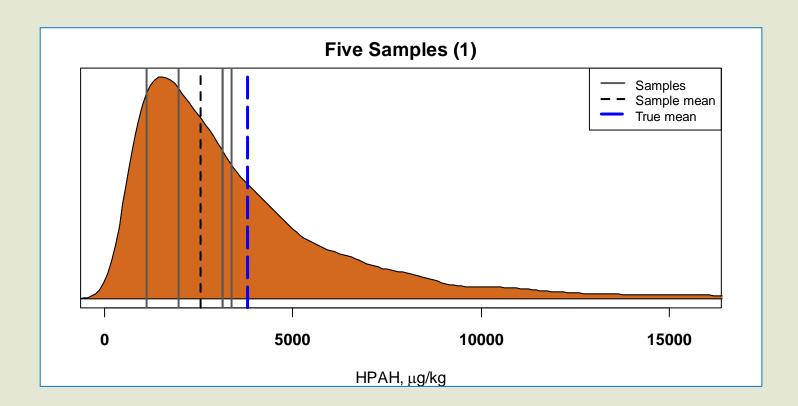
A confidence interval can be used to make decisions... Confidence intervals are analogous to two-sided hypothesis tests. If the threshold value lies outside of the interval, then there is evidence that the population parameter differs from the threshold value. In a similar manner, confidence limits can also be related to onesided hypothesis tests. If the threshold value lies above (below) an upper (lower) confidence bound, then there is evidence that the population parameter is less (greater) than the threshold.

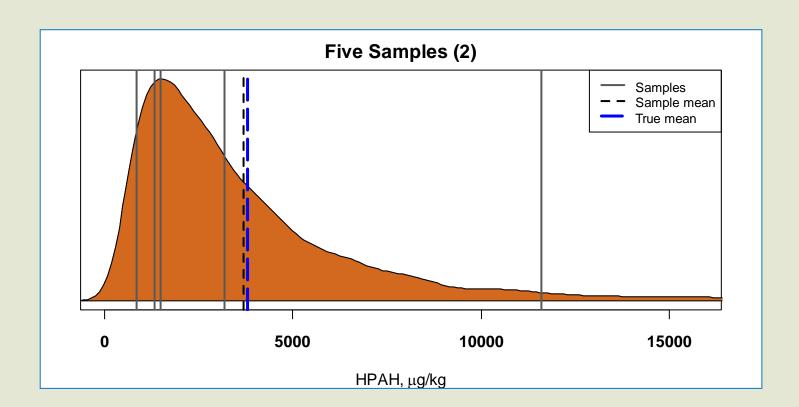
U.S. EPA. 2006. Data Quality Assessment: Statistical Methods for Practitioners.



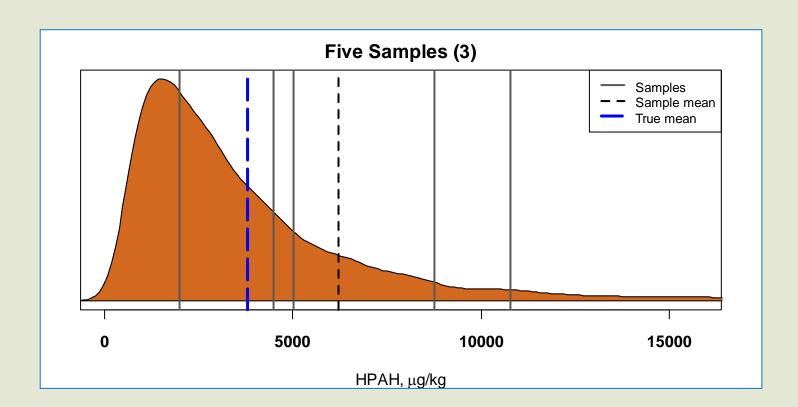


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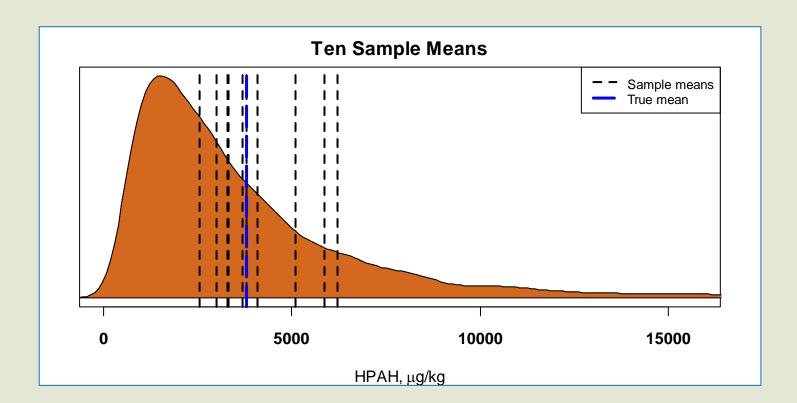














Summary

- 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



Cleanup Thresholds

San Diego Shipyard Site

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