2016

Sediment Contamination Study of Casco Bay part 2, Ramboll Environ PowerPoint 2016

Ramboll Environ

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DATA ANALYSIS

- Integrate data, calculate sums
- Calculate summary statistics (baywide and by region)
  - Focusing on detects
- Plot data (box and whiskers and maps)
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- Comparison to screening values

Adverse effects in aquatic organisms (invertebrates and fish)

**Effects Range Low (ERL):** Concentration at which effects rarely observed

**Effects Range Median (ERM):** Concentration above which effects are frequently observed
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- Statistical analysis (by region and time)
- Geospatial analysis to illustrate notable trends
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- Comparison to rest of Gulf of Maine
RESULTS: 2010-2011 DATA

BOX PLOTS

- **Median**: Half the data below and half above.
- **25th percentile**: 1/4ths of data fall below this line.
- **75th percentile**: 3/4ths of data fall below this line.
- **Whiskers**: Show the full range of the data, w/o outliers.
- **"Outliers" or extreme values**: Dots outside the whiskers.

Inner Bay vs. Outer Bay

Concentration
RESULTS: 2010-2011 DATA
SEDIMENT GRAIN SIZE

![Box plot showing percent sand distribution for different regions of Casco Bay. The plot includes data from Inner Bay, Outer Bay, West Bay, East Bay, and Cape Small. Each box represents the interquartile range, with the median indicated by a line within the box. The plot also includes outliers represented by individual points outside the whiskers.]
### RESULTS: 2010-2011 DATA

#### EXAMPLE METALS

<table>
<thead>
<tr>
<th>Metal</th>
<th>Inner Bay</th>
<th>Outer Bay</th>
<th>West Bay</th>
<th>East Bay</th>
<th>Cape Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td></td>
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<td></td>
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<tr>
<td>Mercury</td>
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<tr>
<td>Selenium</td>
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<td></td>
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<tr>
<td>Zinc</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*: statistically significant differences between regions
RESULTS: 2010-2011 DATA
PAHS

*: statistically significant differences between regions
RESULTS: 1991-2011 CASCO BAY

1991/1994

2000-2002

2010-2011

- Inner Bay
- Outer Bay
- West Bay
- East Bay
- Cape Small

SEEDMENT ASSESSMENT OF CASCO BAY (1991-2011)
SEPTEMBER 14, 2016
RESULTS: 1991-2011 CASCO BAY METALS

**RESULTS:**

- *Arsenic*
- *Copper*
- *Lead*
- *Mercury*
- *Selenium*
- *Zinc*

*: statistically significant trend in concentration by time

**Graphs:**

- Arsenic
- Copper
- Lead
- Mercury
- Selenium
- Zinc

**Detected Concentration (μg/g)**

**Years:**

- 2000-2002
- 2010-2011

**Legend:**

- 2000-2002
- 2010-2011

**Note:**

SEDIMENT ASSESSMENT OF CASCO BAY (1991-2011)

SEPTEMBER 14, 2016
LEAD IN CASCO BAY, 1991-2011

Legend
- Sample Locations
- Bay Subdivisions

Lead (μg/g dry)
- < 21.0
- 21 - 24.5
- 24.6 - 27.6
- 27.7 - 30.9
- 31 - 35
- 35.1 - 40.4
- 40.5 - 46.6
- 46.7 - 52.8
- 52.9 - 59.4
- > 59.4

ERL: 40.7 μg/g
ERM: 218 μg/g