Building Climate Resiliency in the Morro Bay Estuary

Lexie Bell, Executive Director
Who we are.

Protect and restore the Morro Bay estuary for people and wildlife.

Nonregulatory, collaborative, nonprofit organization that brings together citizens, government, nonprofits, and landowners.

Part of a network of 28 national estuary programs, designated by the U.S. Environmental Protection Agency
Where we work.

Morro Bay estuary is one of the most significant and least disturbed wetland systems on the central and southern California coast.

Morro Bay is halfway between San Francisco and Los Angeles.

Our watershed is 75 square miles (about ½ the size of New Orleans).
What we do.

**Restoration & Conservation**
Reduce pollution and protect natural areas

**Outreach & Education**
Educate residents and visitors about how to keep Morro Bay clean and healthy

**Monitoring & Research**
Assess how the bay, estuary, and watershed change over time
Climate Vulnerability Assessment

What’s the goal?

To identify climate change risks that impact our goals for the Morro Bay watershed and highlight potential adaptation actions.

Water quality protection and enhancement
Ecosystem restoration and conservation
Public education, outreach, and stewardship
Fostering collaboration
What’s the process?

We used a combination of staff knowledge, consulting with local and regional experts, and stakeholder input.

Report research and writing was completed by an intern with Bachelor’s degree.
What’s the Result?

Visualizations of predicted climate changes in our watershed.
What’s the Result?

Ranking of severity and likelihoods of risks based on those visualizations and watershed management priorities.
<table>
<thead>
<tr>
<th>Likelihood of occurrence</th>
<th>Consequence of impacts</th>
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</table>
| High                    | 1. More frequent and intense peak flows disrupting steelhead  
2. Increased landscape and stormwater runoff  
3. More frequent floods  
4. More frequent oyster closures  
1. Increased frequency and intensity of pollution-flushing events  
2. Erosion and aggradation of estuary |
| Medium                  | 1. More frequent landslides  
2. More groundwater recharge (+)  
1. Altered flood-prone area habitat |
| Low                     | 1. More frequent flooding |

Consequence of impacts
What’s the Result?

Compilations of possible adaptation actions, indicated by level of involvement from National Estuary Program.
<table>
<thead>
<tr>
<th>Risk</th>
<th>Severity Level</th>
<th>Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedimentation increase</td>
<td>Red</td>
<td>Mitigate/transfer</td>
</tr>
<tr>
<td>More frequent floods</td>
<td>Yellow</td>
<td>Mitigate</td>
</tr>
<tr>
<td>Aggradation of estuary</td>
<td>Red</td>
<td>Mitigate</td>
</tr>
<tr>
<td>More intense and frequent pollution flushes</td>
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</tr>
<tr>
<td>Landscape runoff increase</td>
<td>Red</td>
<td>Mitigate/accept</td>
</tr>
<tr>
<td>Increased stormwater runoff</td>
<td>Red</td>
<td>Mitigate</td>
</tr>
<tr>
<td>Altered flood-prone area habitat</td>
<td>Yellow</td>
<td>Accept</td>
</tr>
<tr>
<td>Increased groundwater recharge</td>
<td>Green</td>
<td>Accept</td>
</tr>
<tr>
<td>More frequent landslides</td>
<td>Green</td>
<td>Accept</td>
</tr>
<tr>
<td>High stream velocities</td>
<td>Yellow</td>
<td>Mitigate</td>
</tr>
</tbody>
</table>
How did we assess adaptation actions?

- Other factors also considered:
  - Risk reduction potential
  - Feasibility and effectiveness
  - Cost and cost effectiveness
  - Ancillary costs and benefits
  - Equity and fairness
  - Robustness
15 Adaptation Actions

Compiled by level of involvement from National Estuary Program.
What’s next?

- Restoration and conservation project planning.
- Sharing results with the public
- Aligning our Comprehensive Conservation and Management Plan
- Informing and strengthening partnerships
  - FEMA
  - Municipalities
  - Resource Conservation District
  - California Polytechnic University, San Luis Obispo
Integrating Climate Vulnerability Into Project Implementation
The most important result:

- Creating a product that allows you to talk about climate vulnerability and risks with partners to develop and improve projects and address risks as feasible.

- Don’t get caught up in following an exact approach. Focus on what works for your watershed/estuary and how you think you can best effect progress toward addressing climate risks.
Project funded by EPA Climate Ready Estuaries Program.