**Containing Plum Island Erosion**

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**Problem**
The increasing rate of coastal erosion on Plum Island, Massachusetts has led to destruction of both the beach and the properties along the beach.

**Technical:** The jetties are in disrepair. Hard structures are causing destructive wave refraction.

**Economic:** Shoreline property is damaged. It causes decreased tourism which hurts local small businesses in the Newburyport area.

**Environmental:** Ecosystems harmed by construction.

**Our Goal:**
Develop a strategy to stop or reduce the destructive erosion on Plum Island.

<table>
<thead>
<tr>
<th>Problems</th>
<th>Solutions</th>
<th>Description</th>
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<tbody>
<tr>
<td>Destruction of the protective dune</td>
<td>Dunegrass/ Sand nourishments</td>
<td>• Dunegrass keeps dune stable, providing buffer zone</td>
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<td></td>
<td></td>
<td>• Best solution</td>
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<td></td>
<td></td>
<td>• Needs maintenance</td>
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<td>Intense storm wave forces</td>
<td>Biodegradable armoring</td>
<td>• Either geotubes or biodegradable sandbags</td>
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<td></td>
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<td>• Release sand when they break</td>
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<td>• Should not refract wave forces</td>
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<td>Shoreline construction</td>
<td>New build policies to prevent tragedy</td>
<td>• Should not construct in dangerous areas</td>
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<td></td>
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<td>• Give relief to families who loose home</td>
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<td>• Minimize damage</td>
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**Recommendations**

**Immediate**
1. Finish repairing jetties
2. Stop shoreline construction
3. Plant dunegrass

**Long term**
1. Maintain dunegrass growth
2. Build up storm defense
3. Maintain terminal groins
4. Formally study Plum Island’s storm intensity

**Research Plan**
1. Identify the sources of the erosion on Plum Island through interviews with the Mayor of Newburyport and a local oceanographer.
2. Examine other cases of beach erosion to draw comparisons.
3. Develop a cost benefit analysis for solutions that can be implemented at Plum Island.

**Solutions to Avoid:** Breakwaters, beach scraping, putting rocks on beach, hard structures that refract waves.

**References**
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