

Salton Sea Dust Control

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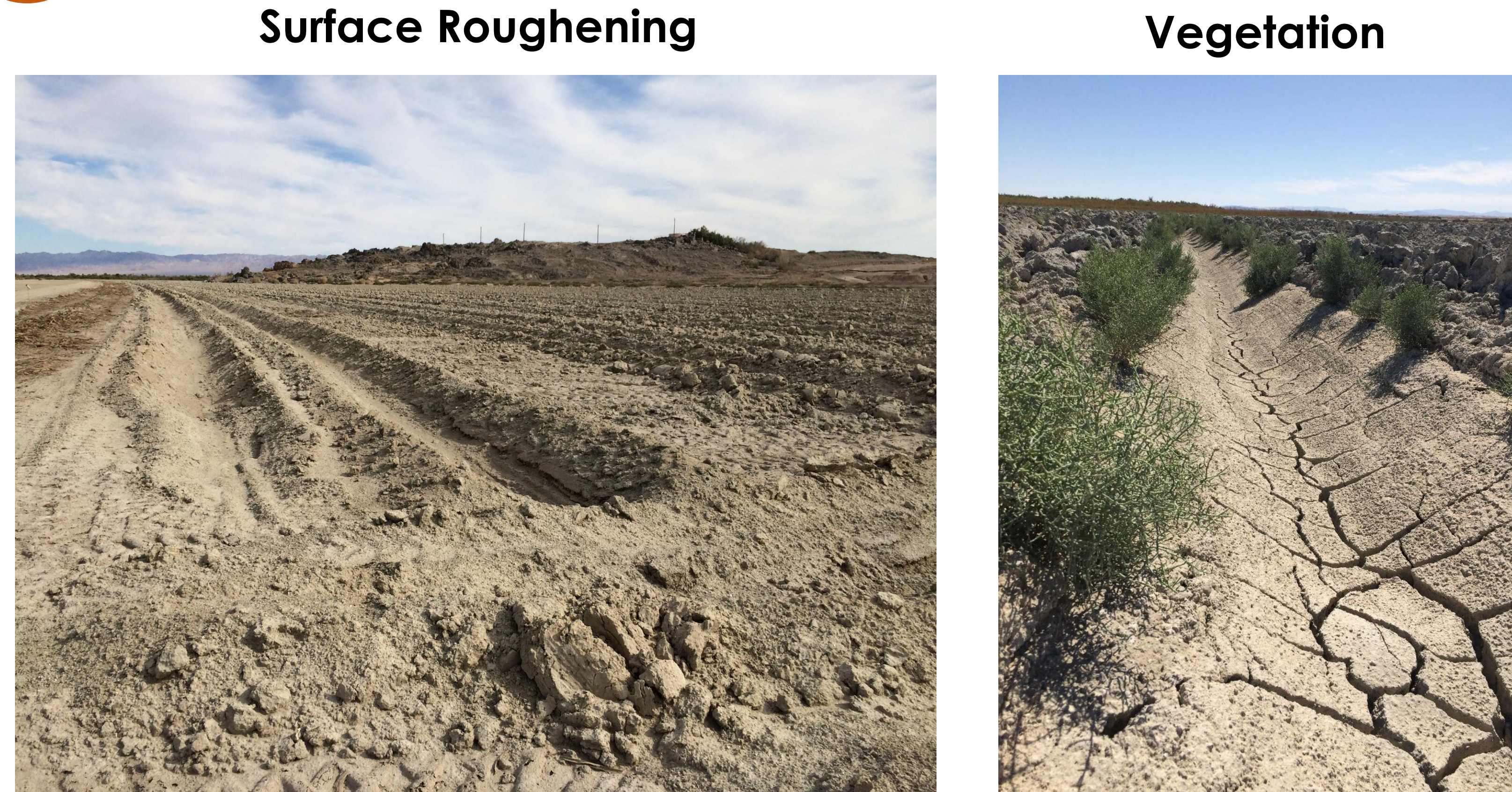
Prioritizing cost-effective dust mitigation at the Salton Sea

What is the Salton Sea?

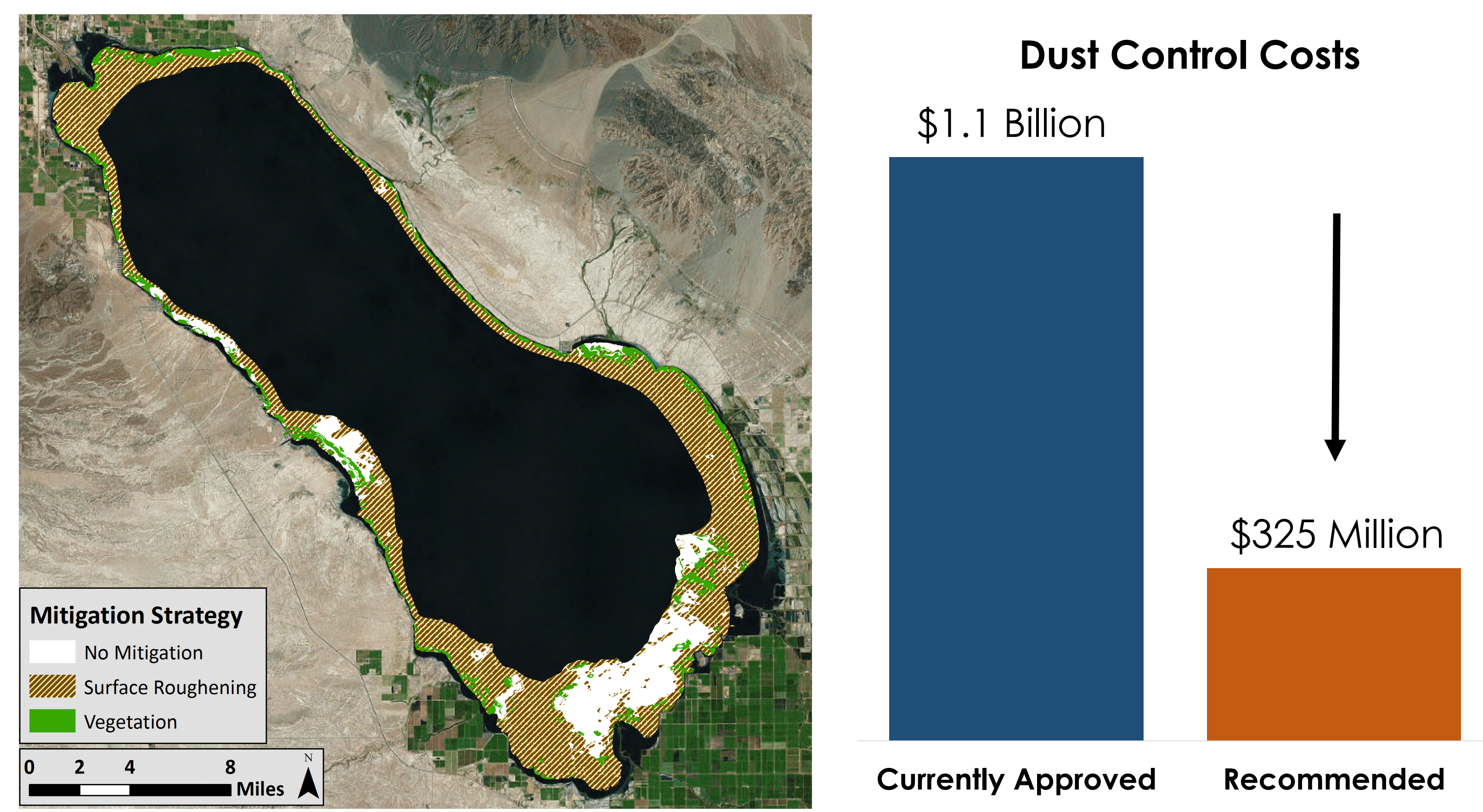
The Salton Sea is the largest lake in California, located in both Imperial and Riverside counties. It was created accidentally when a flood caused the Colorado River to break through an irrigation canal and fill the Salton Basin. The Sea is a terminal lake with no natural inflow, so lake levels have been highly dependent on the runoff from surrounding agricultural land. Outflow is solely from evaporation.



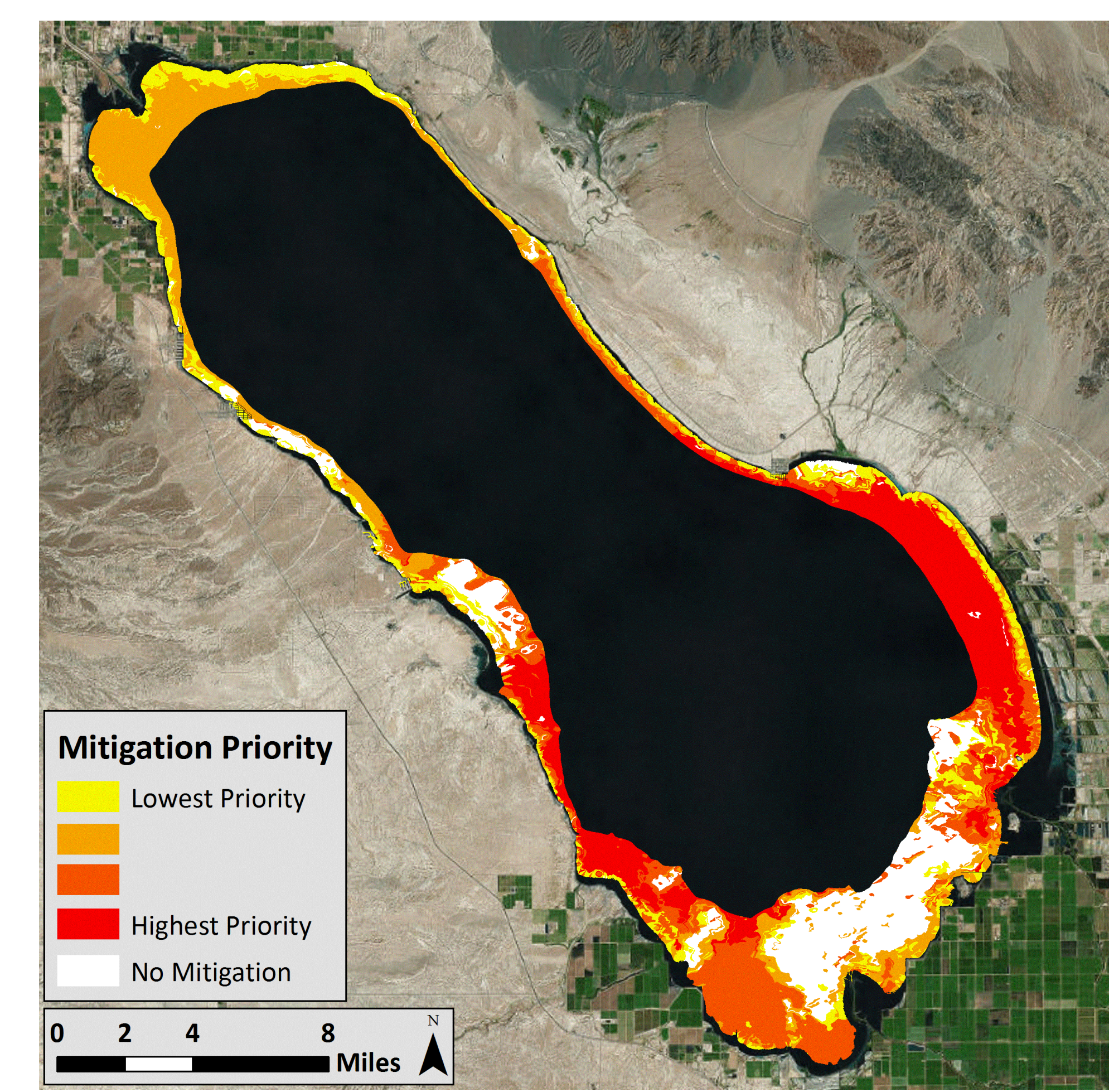
Dust control methods and costs



Surface roughening and vegetation enhancement were found to be the best techniques for controlling dust at the Sea. They stabilize the soils and reduce surface wind speeds, while being water-efficient and cost-effective. If these methods are used, dust control costs will be roughly one-third of the cost of using currently approved techniques. The map below shows where these methods should be used.



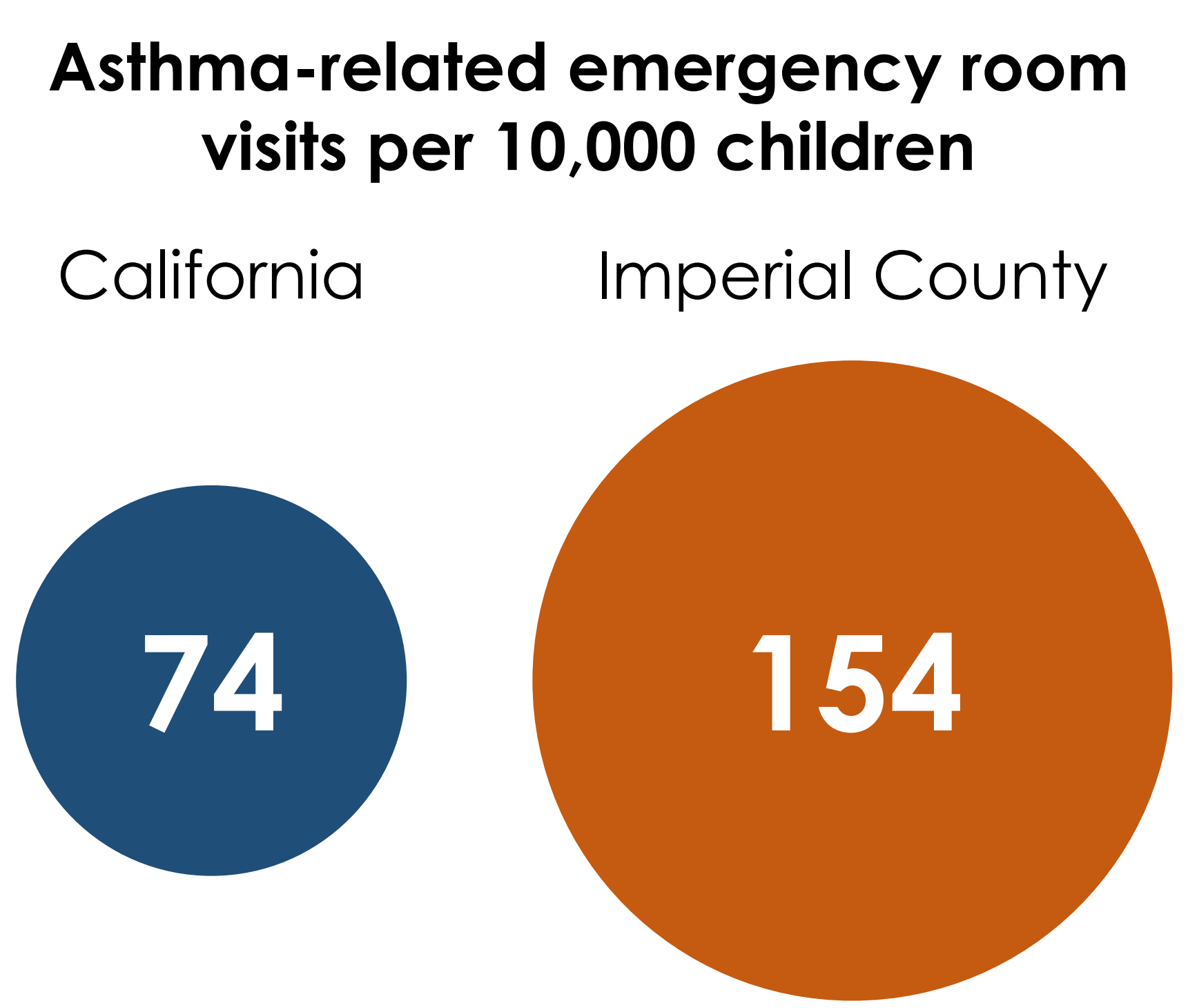
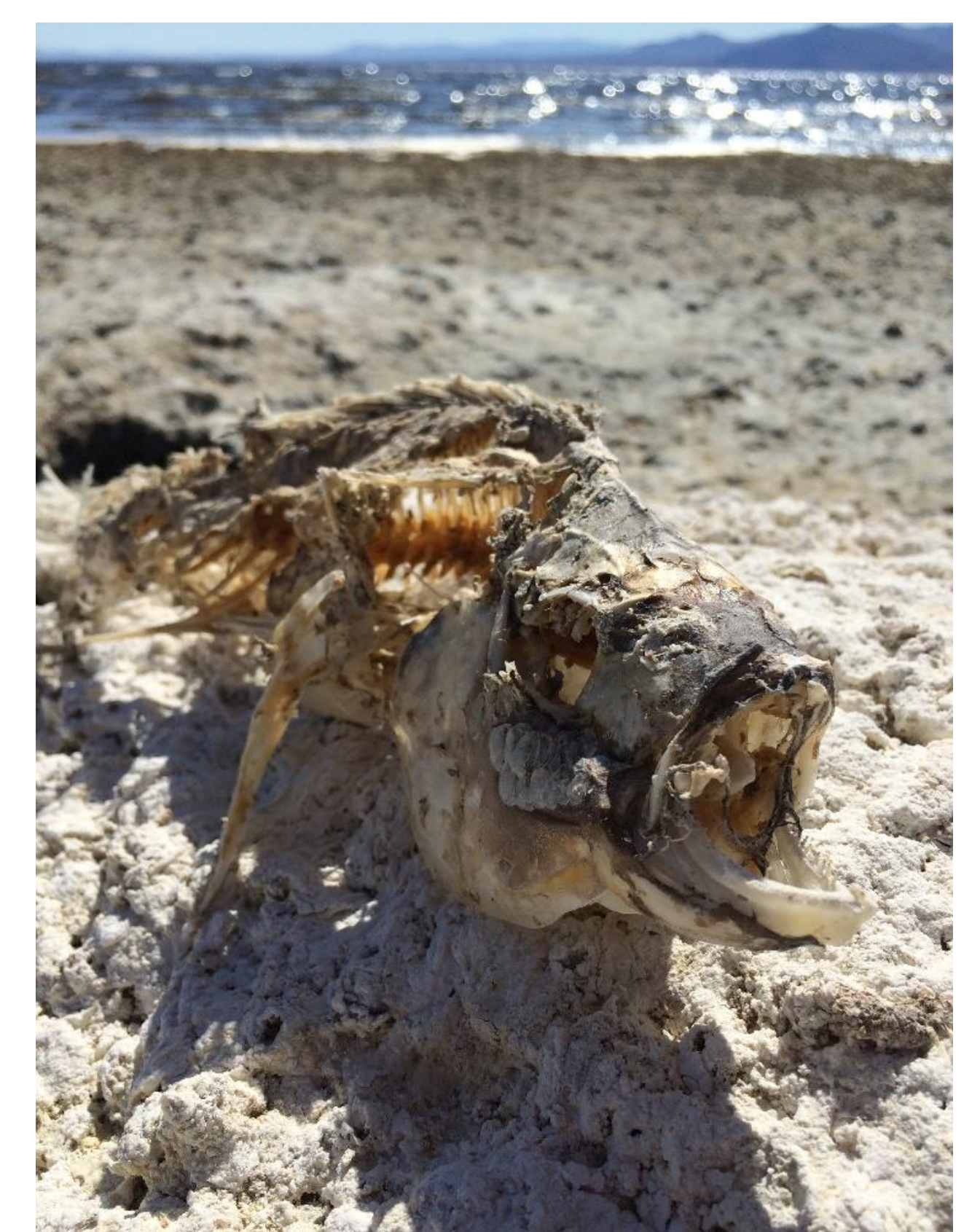
Priority areas to implement dust control



Based on our recommended dust control methods and their associated costs, as well as the results from our Dust Model, a cost-effectiveness score for each area was calculated to determine which parts of the Salton Sea should be prioritized for control.

Soils with higher dust emission potential also have lower costs of mitigation and should be given priority for dust control.

Problems arising from a shrinking sea

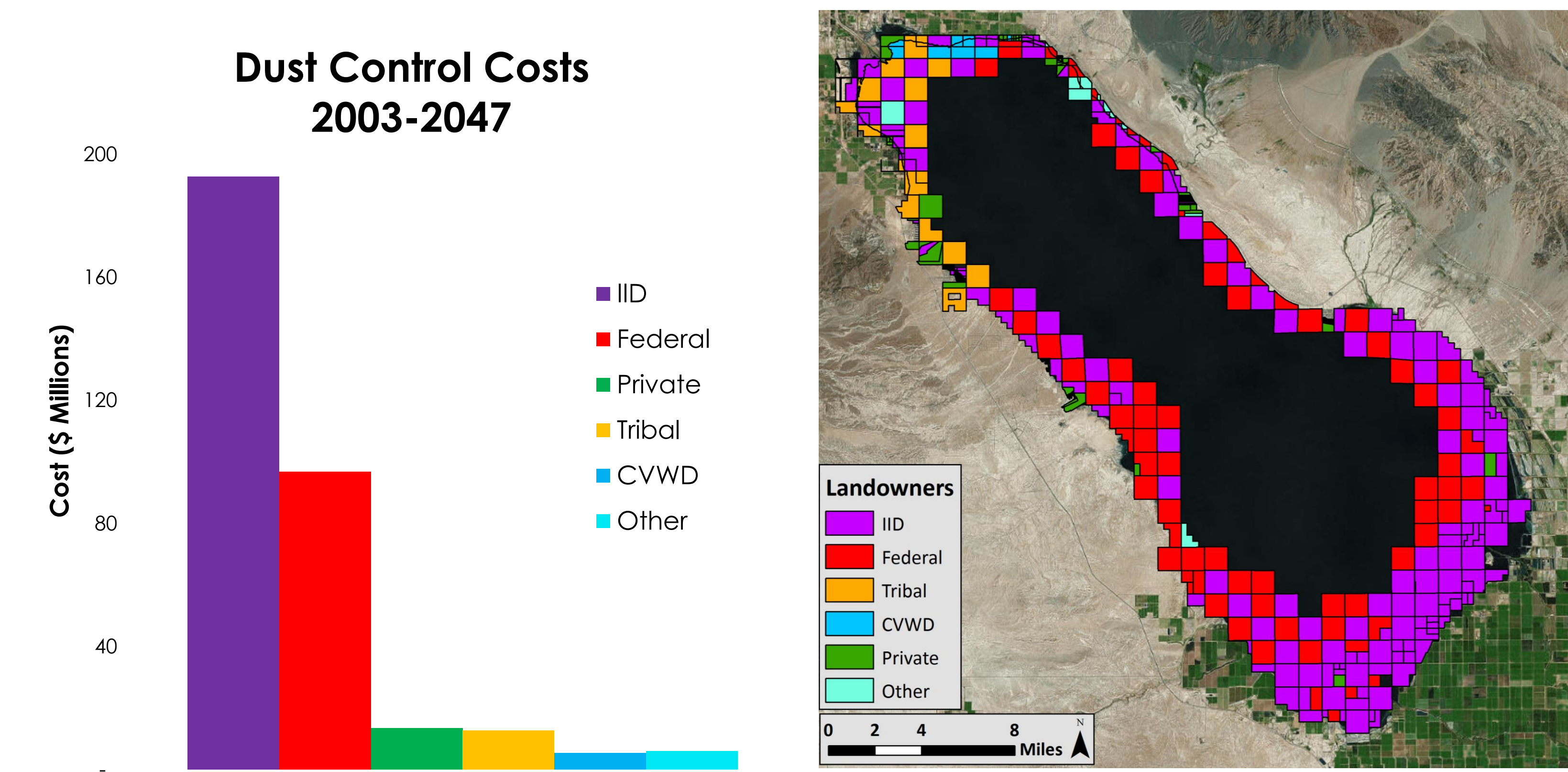


California Environmental Health Tracking Program, The Desert Sun (2017)

The lake level is declining rapidly because of water transfers that prevent the usual agricultural runoff from flowing into the Sea. This exposes the sediments of the dry seabed. High winds in the area can create dust storms on exposed land, which is harmful for people to breathe, especially for children, the elderly, and those with respiratory problems. Dust also impacts the bird and fish populations at the Sea.

Dust control responsibility

Local regulations indicate that landowners could be responsible for dust control costs. The graph below outlines expected costs for landowners under this scenario.

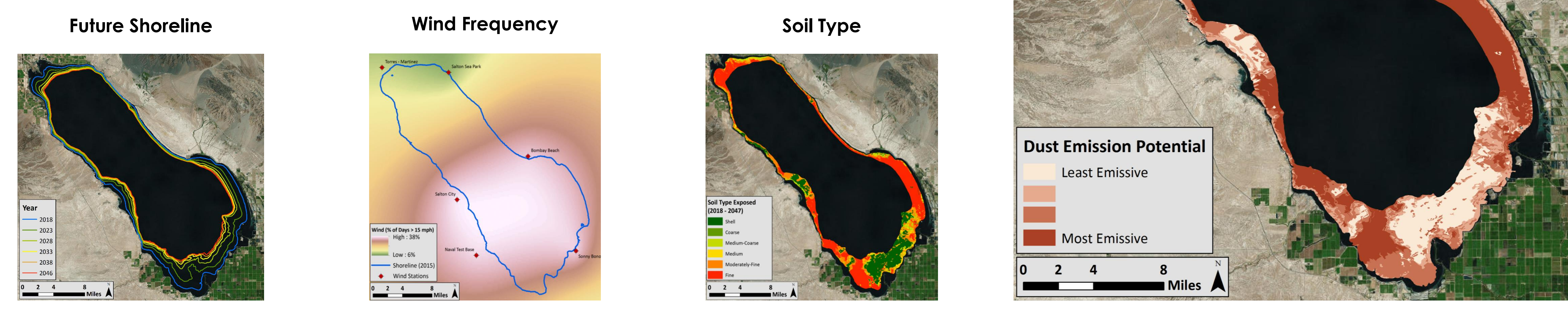


Approach

- Research cost-effective dust control methods that can be implemented at the Salton Sea
- Develop a Dust Model to forecast areas that are the most prone to dust storms
- Determine the most cost-effective way to reduce dust at the Sea
- Review relevant regulations to determine potential dust control responsibility

Dust Model

By looking at the future shoreline, wind data, and soil types of the Salton Sea, we predicted the areas that would be the least and most dusty. The model result on the right shows the the southern and eastern shores of the Salton Sea have the highest dust emission potential.



Conclusions

We hope our results can better inform decision-makers to determine the best way to reduce the amount of airborne dust at the Sea, thereby decreasing the harm to surrounding residents in Imperial and Riverside counties.

Acknowledgements

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Please visit <https://saltonseafarers.weebly.com> for more info.