

NGSS Performance Expectation		In this unit, students:
5-LS2-1	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Identify how plastic pollution negatively affects all organisms in an ocean ecosystem by linking them into food chains.
5-ESS2-1	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	Examine how discarded plastic can be carried by wind, water, animals, and people to different areas of the environment including into the ocean.
5-ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.	Learn that environmental engineering is a multidisciplinary field that addresses problems related to the quality of the air, water, and soil.
3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	Determine that the filter must meet the needs of the community members (criteria) while working within a budget and with limited materials (constraints).
3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	Independently imagine multiple ways to solve the problem, then negotiate a group plan. They test and evaluate their design solutions against the criteria and constraints and use those findings to improve their designs.
3-5-ETS1-3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Test their filters with a normal river flow and a storm surge to see how much plastic is collected. They analyze the results of the tests and consider how their filter failed when improving their designs.

Connections to NGSS

Crosscutting
Concept

Stability and Change

In this unit, students learn about the effects of plastic and other pollutants on the stability of the ocean ecosystem. Students think about the impact of plastic pollution on ocean life and consider how their plastic filter design might prevent unwanted changes in animal populations.