

# PUGET SOUND VITAL SIGNS

## INDICATOR NET CHANGE IN PERMITTED SHORELINE ARMOR

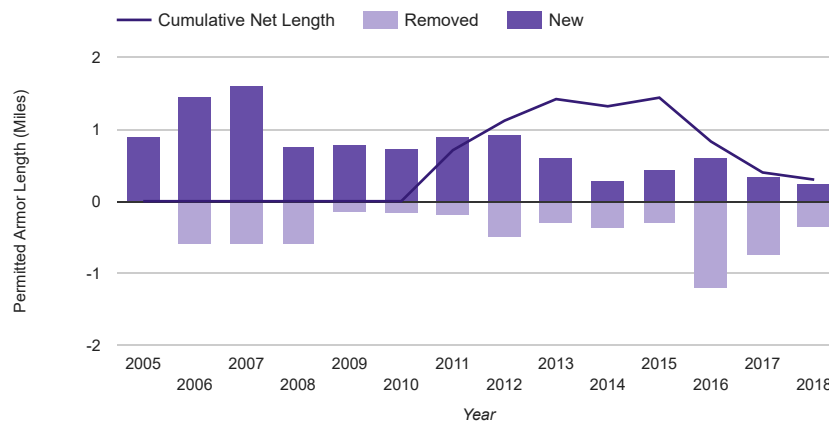
This indicator measures the net change in permitted shoreline armor (new minus removed). Shoreline armor, including structures like bulkheads, seawalls, and rip rap, is the most common type of shoreline modification on Puget Sound. These structures directly alter geologic processes that supply sediment to build and maintain beaches and spits, and have the potential to diminish the availability and condition of key shoreline habitats.

Indicator  
Progress

Indicator  
Status



Net change in permitted shoreline armor  
By: Permitting Type



The annual length (shoreline miles) of new and removed shoreline armor, and the cumulative net change of shoreline armor (new minus removed) beginning in 2011 as measured from shoreline armor permit data (Washington Department of Fish and Wildlife Hydraulic Project Approval).

### Recovery Target

From 2011 to 2020, the total amount of armoring removed should be greater than the total amount of new armoring in Puget Sound (total miles removed is greater than the total miles added).

### Data Source

Washington State Department of Fish and Wildlife [Hydraulic Project Approval \(HPA\)](#)

Map: 2018 Puget Sound Partnership. Data credits: Estuary and Salmon Restoration Program, USGS, WA Department of Ecology, and Office of Financial Management

## Key Vital Sign Indicator Results

- New armor continues to be permitted for construction on Puget Sound shorelines. More permitted armor was added than removed cumulatively since 2011, resulting in a net cumulative length of 0.3 miles (1600 feet) of new armor.
- The rate of new armor permitted through HPAs has slowed since 2013. More armor was permitted for removal than added in 2014, 2016, 2017 and 2018, and the cumulative net change in armor has continued to decline since 2015. Therefore, this indicator is making progress toward the 2020 recovery target.
- In 2018, 0.26 miles of shoreline armor was permitted for construction, while 0.36 miles of shoreline armor was permitted for removal.
- 80 percent of new shoreline armor by length was permitted for construction within six Puget Sound county geographic boundaries (Pierce, Mason, Island, Skagit, San Juan, Kitsap) between 2011 and 2018.
- Single-family residences are the most common applicant type for new shoreline armor permits, accounting for over two-thirds of the total new shoreline armor length between 2011 and 2018.
- Nearly 2 miles of shoreline armor was removed in Kitsap and Clallam County geographic boundaries between 2011 and 2018, accounting for 43 percent of the total armor removed over that time period.
- Replacement of existing shoreline armor remains the most common armor project. Work with landowners on replacement armor methods and placement may be an opportunity to gain shoreline function.

### Indicator Lead

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## Contributing Partners

