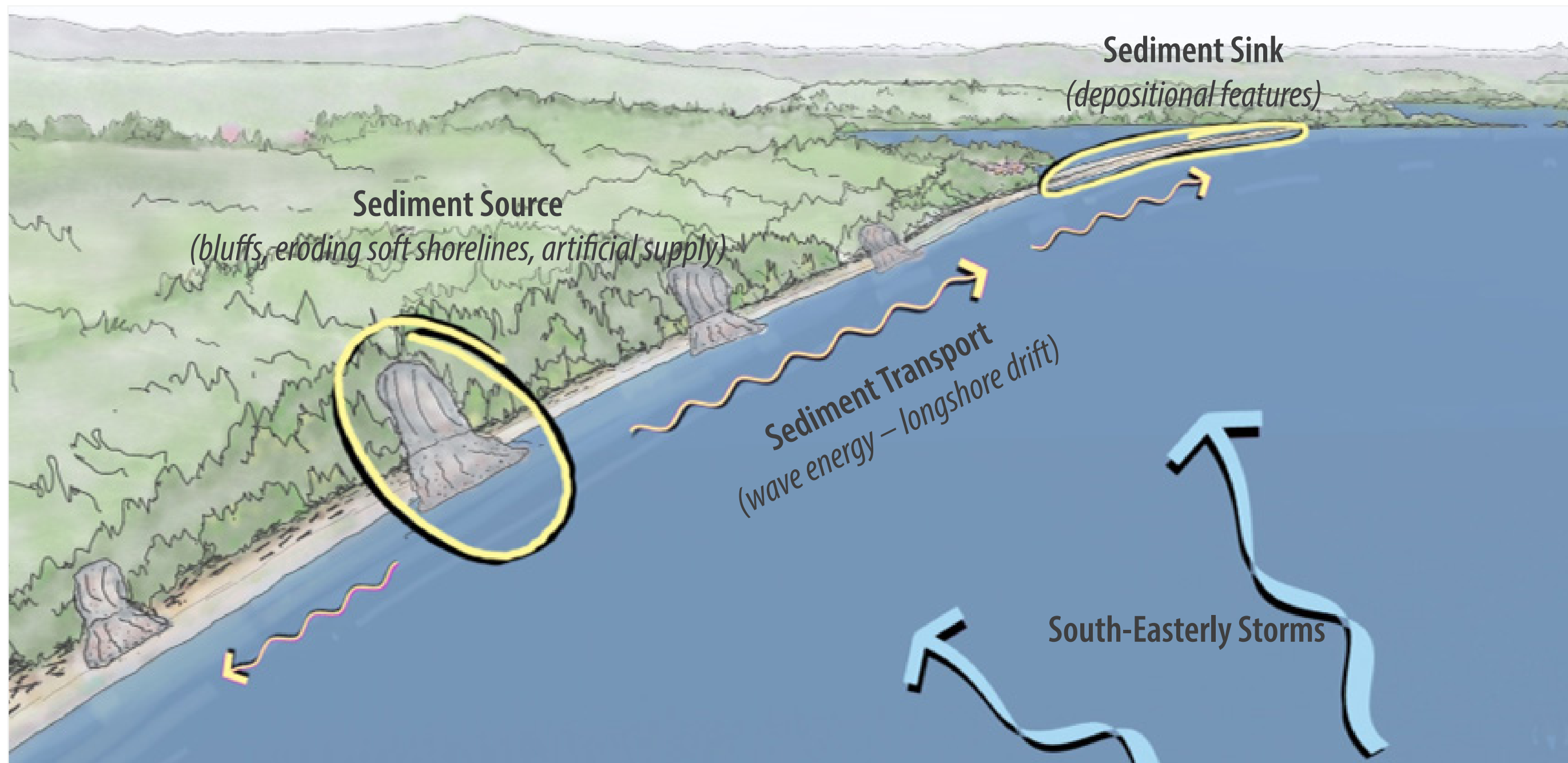


Shoreline System

OVERVIEW

Pre-Disturbance Shoreline (Pre-1890's):

Prior to European settlement and the start of gravel pit operations at Producer's Pit, the sediment system was fed by active bluffs south of the lagoon. Waves from south-easterly storms pushed sediment predominantly northward (see diagram below).



Pre-disturbance, the spit represented the key depositional feature in the system.

- The Spit was much coarser – pebble and cobble sediment.
- The Spit was washed over during storm events.
- There was little vegetation (some gumweed is visible)

Post-Disturbance Shoreline (Pre-1890-1950):

During gravel pit operations, the sediment system was artificially nourished by an over-abundance of sediment 'leaking' from Producer's Pit. Vegetation stabilized bluffs either side of the pit during this time. The Spit remained the primary depositional feature, with excess sediment continuing northward past Fort Rodd Hill.



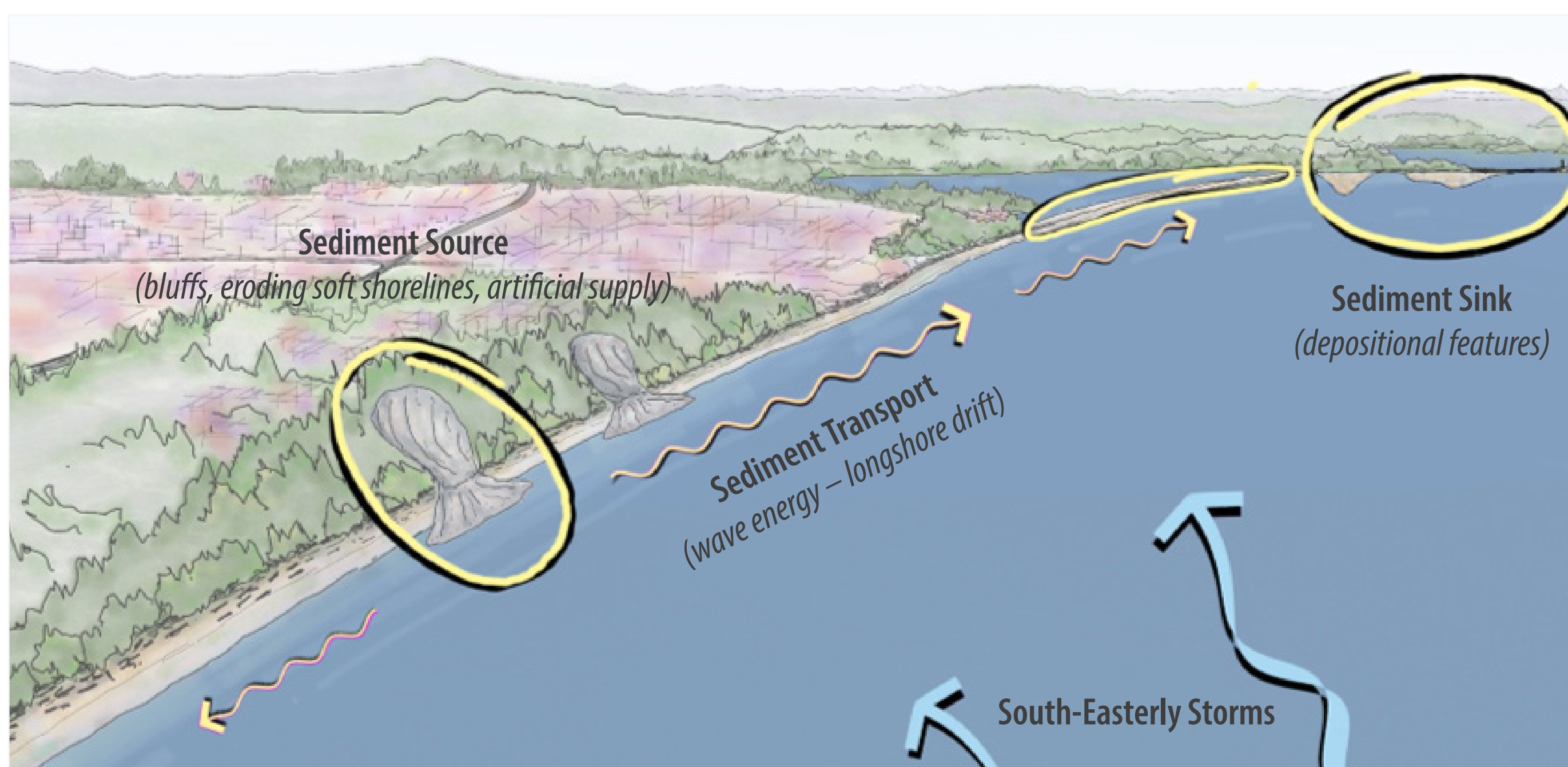
Historical image of the spit, pre-disturbance

Expected Future Shoreline:

Starting around 1950, the Causeway to Fisgard Lighthouse began trapping sediment at the north end of the Lagoon. In 2007, Producer's Pit ceased operation. Since then, waves continue to move sediment predominantly northward. Sediment supply to the system is likely to come from beach over-steepening and subsequent re-activation of bluffs.



Comparison of 1942 (blue) and 2019 (red) high water marks



Sediment Movement is Inevitable:

Whether a shoreline is hardened or is nourished with sediment, wave energy will continue to move sediment along the shoreline. If a sediment shoreline is hardened with seawalls (ie: to protect property values), waves will continue to move beach materials, eventually depleting the beach.