27th Street Foreshore Enhancement

District of West Vancouver

Summary

The foreshore at 27th Street had historically experienced considerable erosion, leaving a low profile cobble shoreline. Residential building projects provided an opportunity to enhance and improve the foreshore. These enhancements included the formation of a creek and riparian habitat from a covered groundwater flow, creation of a subtidal reef as kelp and fish habitat, and removal of invasive vegetation. Public access to the shoreline was significantly improved and the hard-faced seawall was replaced with more natural and effective shoreline protection measures.

Status

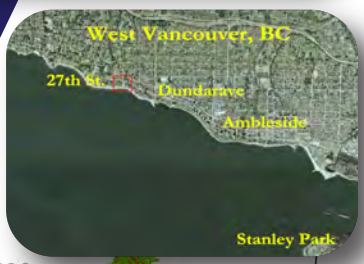
Conceived 2008. Major works 2008-2010. There is ongoing habitat monitoring.

Public Amenities

- Public Access

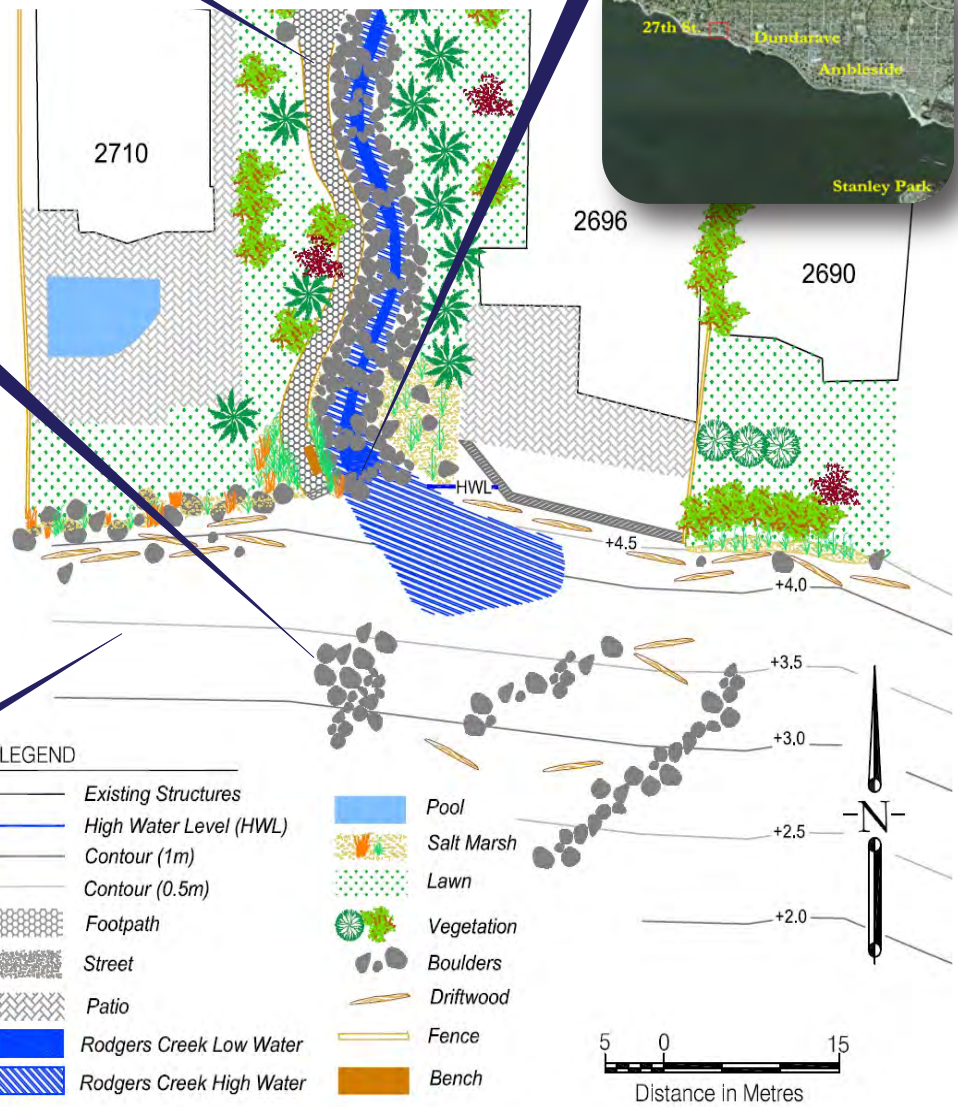
Habitat Development

- Riparian
- Stream Enhancement
- Habitat Boulders



Shoreline Protection

- Sediment Transportation
- Shoreline Roughening



Economic Benefits

- Fish Habitat
- Beach Stabilization

West Vancouver would like to thank the following organizations for their support:

Fisheries and Oceans

IP consulting

West Vancouver Community Foundation

WVSPS

Shoreline Protection: Sediment Transport

27th Street Foreshore Enhancement

Opportunities

2008

- Prevent beach erosion and improve existing shoreline protection measures.
- Create an ecologically productive and self-sustaining shoreline.

As waves and currents sweep the beach fine sediments are washed away leaving only larger and heavier pebbles, cobbles and boulders. This process can be amplified by urban development of the shoreline and the effects of the erosion itself. By working with coastal processes it is possible to implement beach defence measures that have long term benefits and are ecologically beneficial.

Achievements

2010

- Drift sills and tombolas guide and trap sediments carried by waves, rebuilding the upper shore.
- Sediments carried by the creek are deflected onto the upper shore and stabilised by vegetation.

Strategically placed patches of large boulders and logs guide and trap fine sediments on the upper shore as they are carried in by waves. Drift sills positioned at the end of the new creek deflect sediments carried in creek waters back onto the upper shore.

Fine sediments trapped on the upper shore are then stabilised by the complex root systems of riparian plants. By working with natural coastal processes it is possible to create a self-sustaining shoreline and provide a long term solution to beach erosion.

Shoreline Protection: Shoreline Roughening

27th Street Foreshore Enhancement

Opportunities

- Reduce coastal erosion and storm damage by returning the shoreline to a more natural state.
- Implement a long term solution to the problems of erosion and high water events.

2008

The beach at 27th street has experienced a high level of erosion, amplified by urban developments. Waves and currents swept away fine sediments leaving a low profile cobble beach with little resistance to waves or high water events. By returning the shoreline to a more natural state, coastal developments are protected and beach erosion is reduced, with ecological benefits.

Achievements

- Boulders were used to create wave trips and sediment traps to preserve the shoreline.
- Recreation of a more natural and defensive shoreline, with long term protective benefits.

2010

Boulders and logs along were strategically placed along the the mid-shore to create an irregular, sloping shoreline that diffuses wave energy more effectively. In addition to this the riparian habitat at the back of the beach replaces the hard-faced sea walls with an ecologically valuable sea defence that absorbs wave energy more effectively and stabilises fine sediments.

Habitat Development: Habitat Boulders

27th Street Foreshore Enhancement

Opportunities

2008

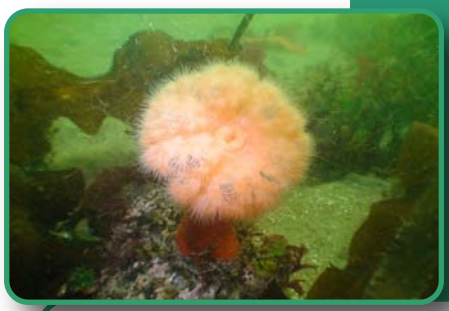
- Increase ecological value by creating new colonisation opportunities for kelp and fishes.
- Improvement of the existing intertidal habitat by stabilising sediments.

The existing cobble beach was home to typical mussel, barnacle and rockweed communities along the lower shore. Kelp was observed wherever there was subtidal substrate that was stable enough for colonisation. Kelp beds are incredibly productive habitats, providing food and shelter for many species, including salmon, herring, rockfish, and lingcod.

Achievements

2010

- Large boulders were positioned along the sub-tidal zone to form reefs, providing attachment opportunities for kelp and broad-leaf algae, and critical habitat for fishes.



Large boulders were used to create productive subtidal reef habitats. The boulders provide stable attachment points for kelp and broad-leaf algae, and gaps between the boulders provide safe habitat for many fishes and invertebrates. Subtidal reefs significantly increase the productive capacity of the site and support healthy fisheries. Kelp beds also provide extra shoreline protection from waves and currents.

Habitat Development: Riparian Habitat

27th Street Foreshore Enhancement

Opportunities

• Replace the existing hard-faced sea walls with a naturally protective upper shore.
• Create a more ecologically valuable upper shore and improve local biodiversity.

2008

The riparian zone is an important feature of a healthy coastline, acting as a buffer between the sea and the land, supporting coastal ecosystems and protecting the ocean from terrestrial pollution. The complex root systems of dune grass and other riparian plants also help to stabilize fine sediments along the upper shore.

Achievements

• Creation of a natural riparian habitat to improve biodiversity and add aesthetic value.
• Replacement of sea wall with an elevated and irregular shoreline for long term protection.

2010

The existing sea wall was replaced with natural riparian habitat. The upper shore planted with dune grass and other native species. Hardy, native plants and woody debris provide much needed habitat and food for many birds and insects, increasing the biodiversity, providing biological material to the foreshore (an important source of food for fishes), and protect the upper shore from waves.

Habitat Development: Stream Enhancement

27th Street Foreshore Enhancement

Opportunities

2008

- Create new fish habitat along the upper shore and improve productivity at the site.
- Enhance the ecological value of the site and improve biodiversity.

An existing groundwater flow ran under the site and on to the beach, feeding the mussel beds along the mid shore. The subterranean flow provided the opportunity to create a new, high value fresh water and riparian habitat enhancement.

Achievements

2010

- 'Daylighting' of subterranean groundwater flow through purpose built creek channel.
- Creation of valuable freshwater and native riparian vegetation to improve biodiversity.

The ground flow was brought to the surface (daylighted) through a channel. The new creek was created with riffle pools, meanders, and shelter for insects and fishes. The new riparian zone also creates important habitat for insects and birds. Insects and their larvae, plant material and seeds are an important food source for juvenile fishes along the coast.