

Beach Nourishment Using Debris Flow Sediments : Lessons Learned

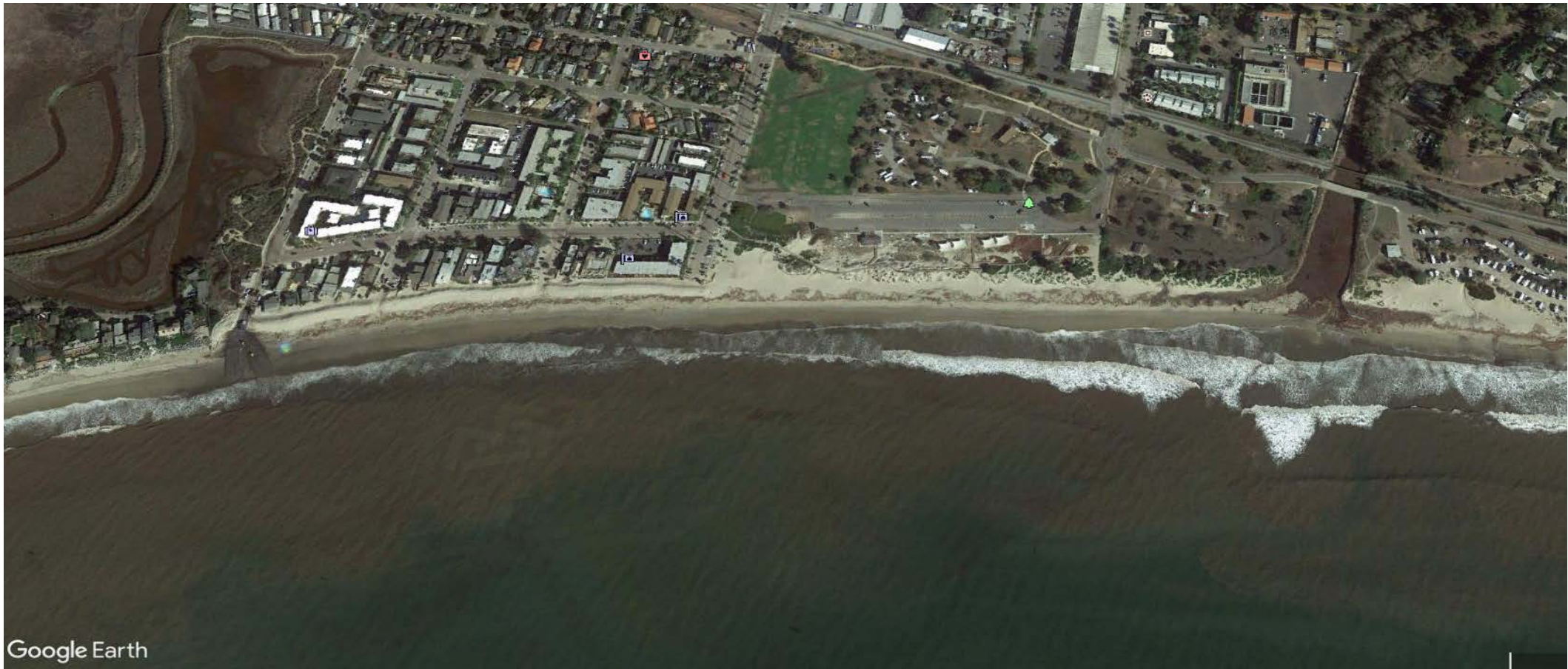


Credit: Explore Beaches UCSB

Sequence of Events

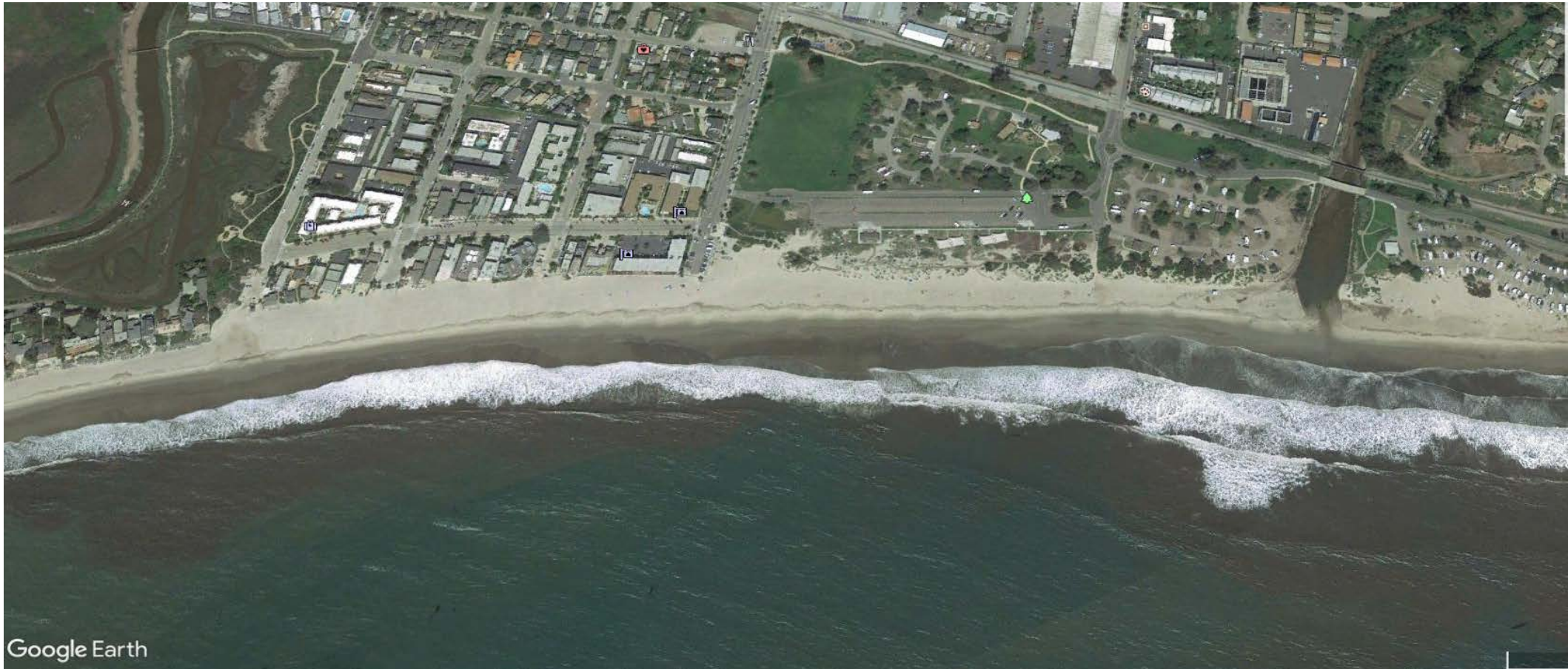
- Thomas Fire – December 2017
- Montecito Debris Flows – January 9, 2018
 - Perhaps 500,000 cy made it to the beach
 - About 70,000 cy deposited on public streets & flood control channels
 - About 400,000 cy deposited in local debris basins
 - Perhaps 1,000,000 cy deposited on private property
- Aftermath – January thru March 2018
 - Street & f/c channel sediment taken to Carpinteria & Goleta Beaches
 - Debris basin sediment taken to Buellton & Santa Paula landfills
 - Private property sediment remained in place

Carpinteria Beach – 12 January 2018



Credit: Google Earth

Carpinteria Beach - 12 April 2018



Google Earth

Credit: Google Earth

Carpinteria Beach – 10 September 2018



Credit: Carpinteria Beach Camera

Carpinteria Beach – 15 November 2018

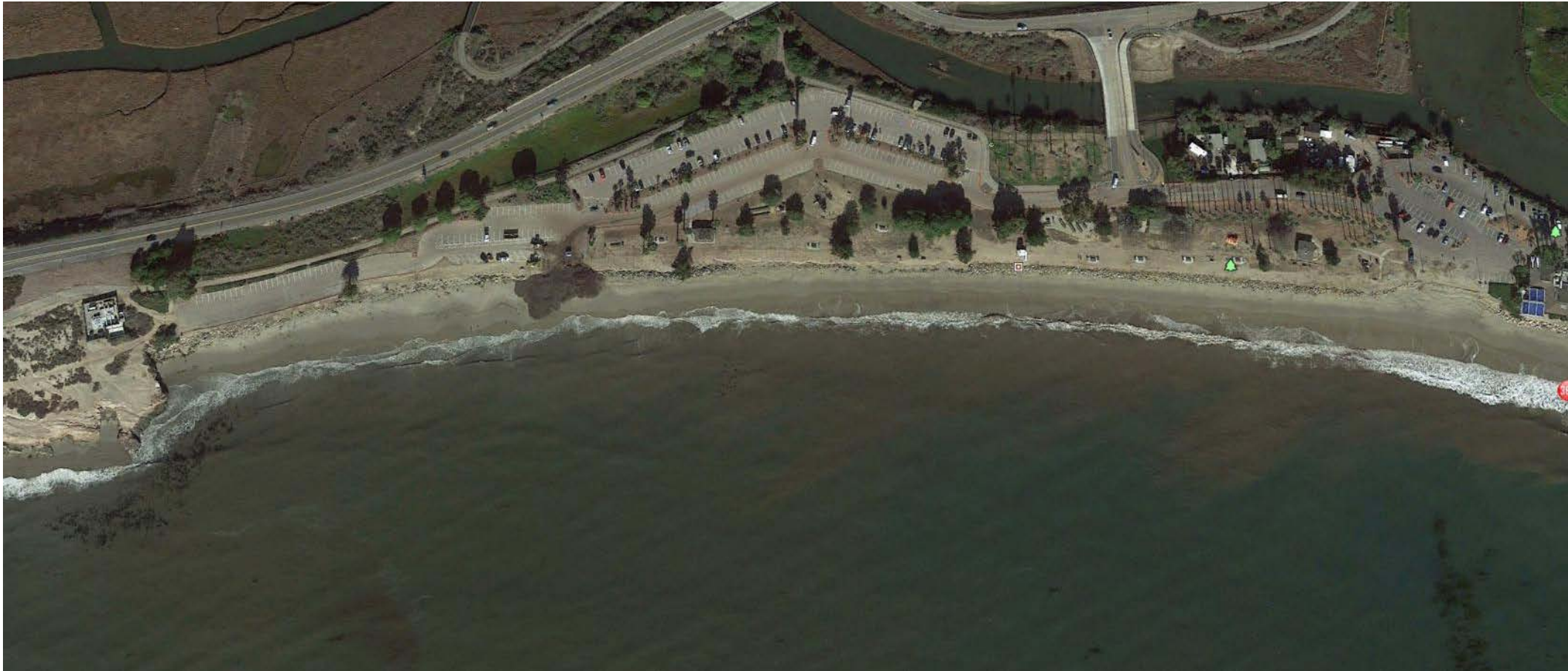


Credit: Carpinteria Beach Camera

Carpinteria Beach – Summary

- 10 January 2018 – Nourishment begins & beach closed for swimming
- 9 February 2018 – Nourishment ends - 28,000 cy of sediment placed
- March 2018 – Beach re-opened for swimming
- April 2018 – Placement zone re-worked with heavy equipment
- Summer 2018 Onward – Sandy beach w/ no sign of debris sediments

Goleta Beach – 12 January 2018



Credit: Google Earth

Goleta Beach – 19 March 2018



Goleta Beach – 3 September 2018



Goleta Beach – 2 January 2019



Goleta Beach – Summary

- 11 January 2018 – Nourishment begins & beach closed for swimming
- 20 February 2018 – Nourishment ends - 40,000 cy of sediment placed
- April 2018 – Nourishment zone re-worked with heavy equipment
- 6 July 2018 – Beach re-opened for swimming
- Summer 2018 – Sandy beach w/ extensive cobble berm
- January 2019 – Sandy beach w/ no visible cobbles

Lessons Learned

- Carpinteria Beach recovered quickly because wave heights were larger and nourishment sediments were mostly sand-sized
- Goleta Beach recovered more slowly because wave heights were smaller and nourishment sediments had a substantial cobble fraction
- A cleaning and storage area is valuable when dealing with opportunistic sediment sources
- Having funding & permits in hand is critical for taking full advantage of opportunistic sediment sources