

DDT in Southern California

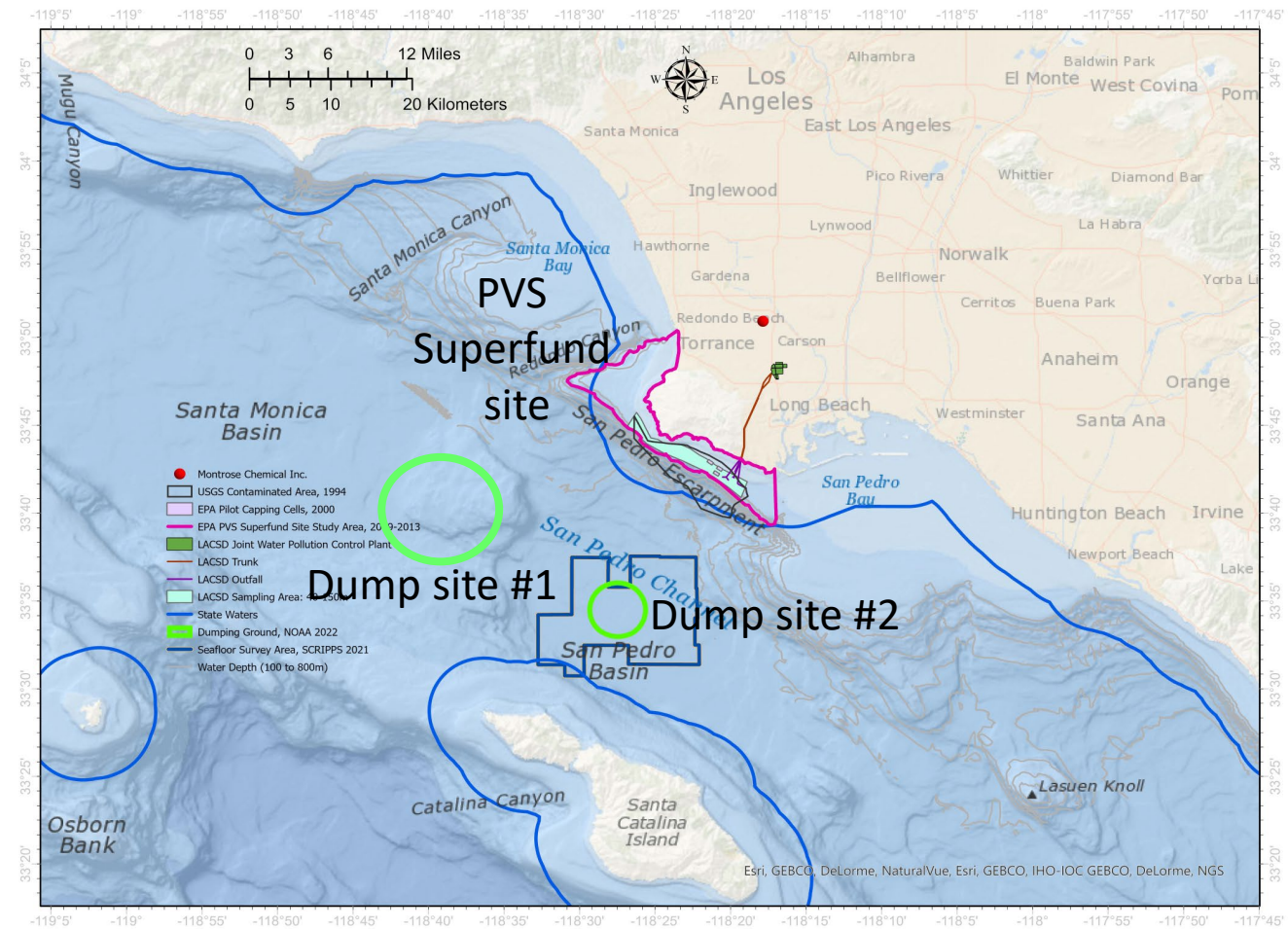
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DDT in SoCal: a tale of two locations

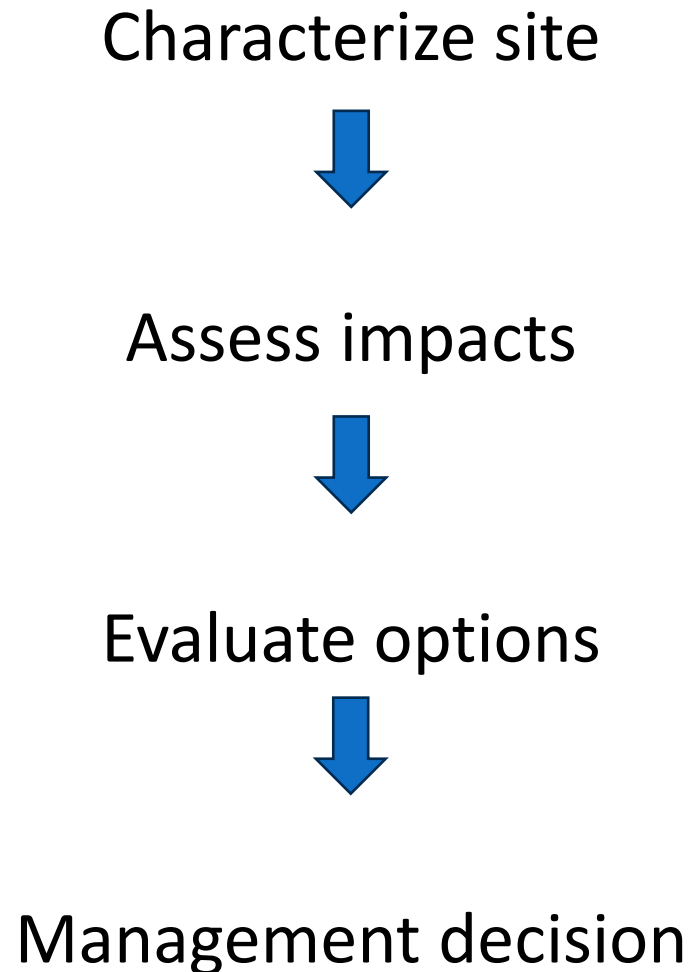
➤ Palos Verdes Superfund site

➤ Deep ocean dump sites



*The boundary of Dump Site #2 is based on NOAA navigation chart.

Palos Verdes Shelf DDT reached a resolution



Monitored Natural Recovery
Interim Record of Decision by EPA in 2009
Record of Decision slated for 2027

Deep ocean DDT situation

- Barrels at dump sites found after EPA's 2009 Interim Record of Decision on Palos Verdes Shelf
- Similar amount of DDT dumped at each location
 - 870-1450 tons released into dump sites
 - 385-1535 tons released to Palos Verdes Shelf
- $\geq 3000 \text{ km}^2$ of seafloor affected

Los Angeles Times, 4/27/21



DAVID VALENTE/REUTERS
A DISCARDED barrel lies on the seafloor near Santa Catalina Island. Renewed outcry in recent months has focused on the dumping ground.

Off L.A.'s coast, a DDT dump of staggering size

Field of waste barrels much larger than expected

BY ROSANNA XIA

When the research vessel Sally Ride set sail for Santa Catalina Island to map an underwater graveyard of DDT waste barrels, its crew had high hopes of documenting for the first time just how many corroded containers littered the seafloor off the coast of Los Angeles.

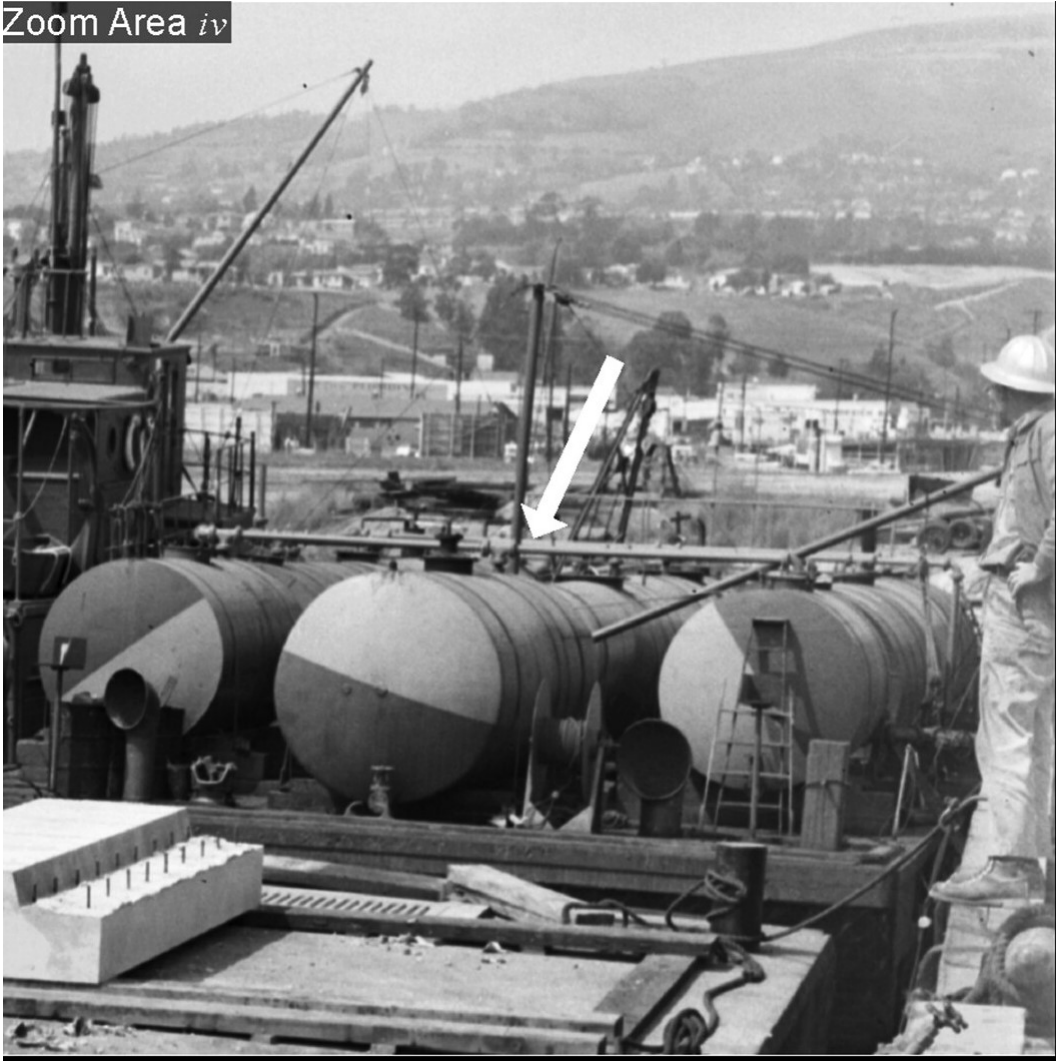
But as the scientists on deck began interpreting sonar images gathered by two deep-sea robots, they were quickly overwhelmed. It was like trying to count stars in the Milky Way.

The dumpsite, it turned out, was much, much bigger than expected. After spending two weeks surveying a swath of seafloor larger than the city of San Francisco, the scientists could find no end to the dumping ground. They could've kept going in any direction, they said, and uncovered even more.

"I was pretty shocked that it just kept extending as far as it did," said Eric Terrill of UC San Diego's Scripps Institution of Oceanography, who led the mission of 31 scientists and crew members. "We couldn't keep up with [See DDT, A12]

It's not just about the barrels

Zoom Area *iv*

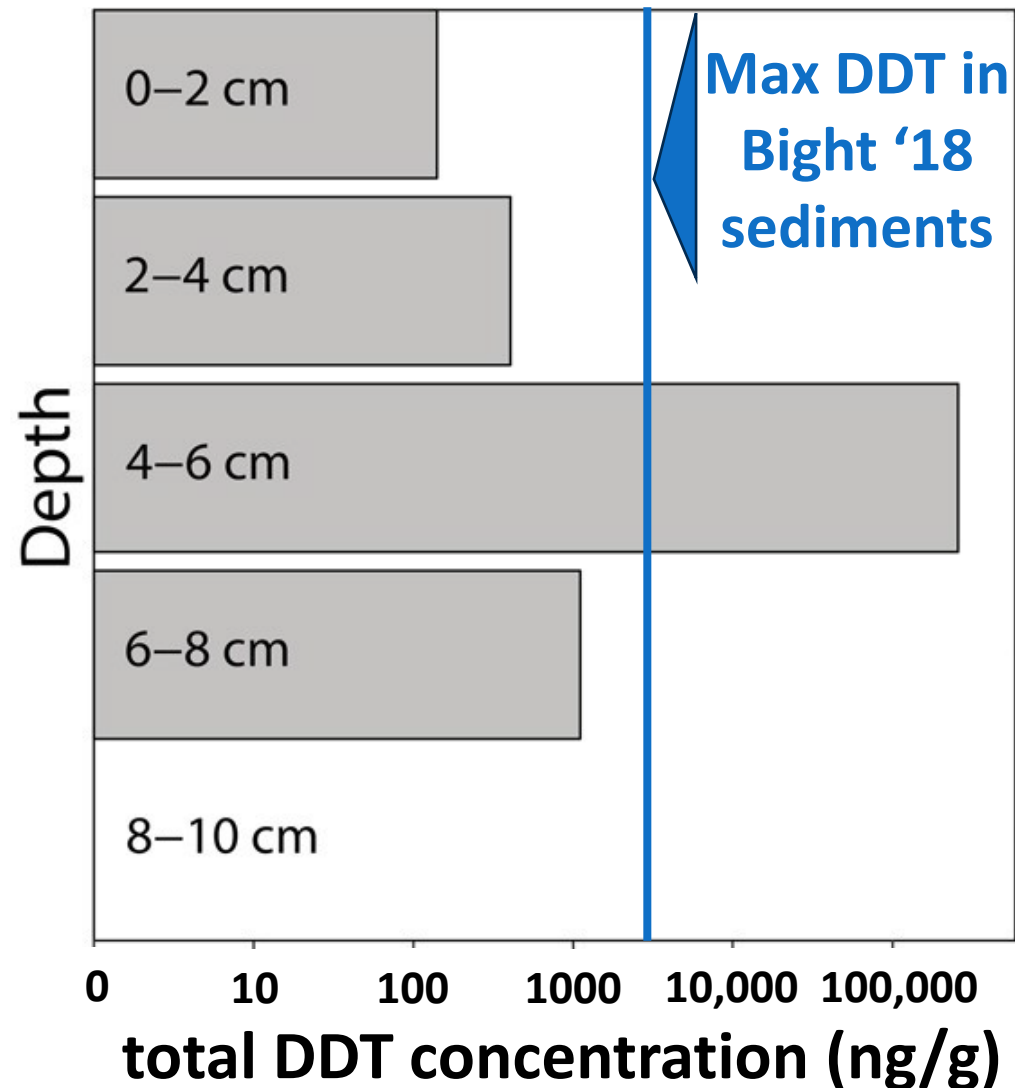


- Bulk acidic sludge wastes with DDT
- Barged offshore
- Contents of large tanks dumped

DDT dump sites: what do we know?

- Currently in early stages of understanding SoCal deep ocean DDT
- New and recent studies to do this
 - \$5.6 million federal
 - \$5.2 million state
 - Scripps, UCSB, USC
- Much focus on characterization
 - Where's DDT?
 - How much?
 - Fate and transport?

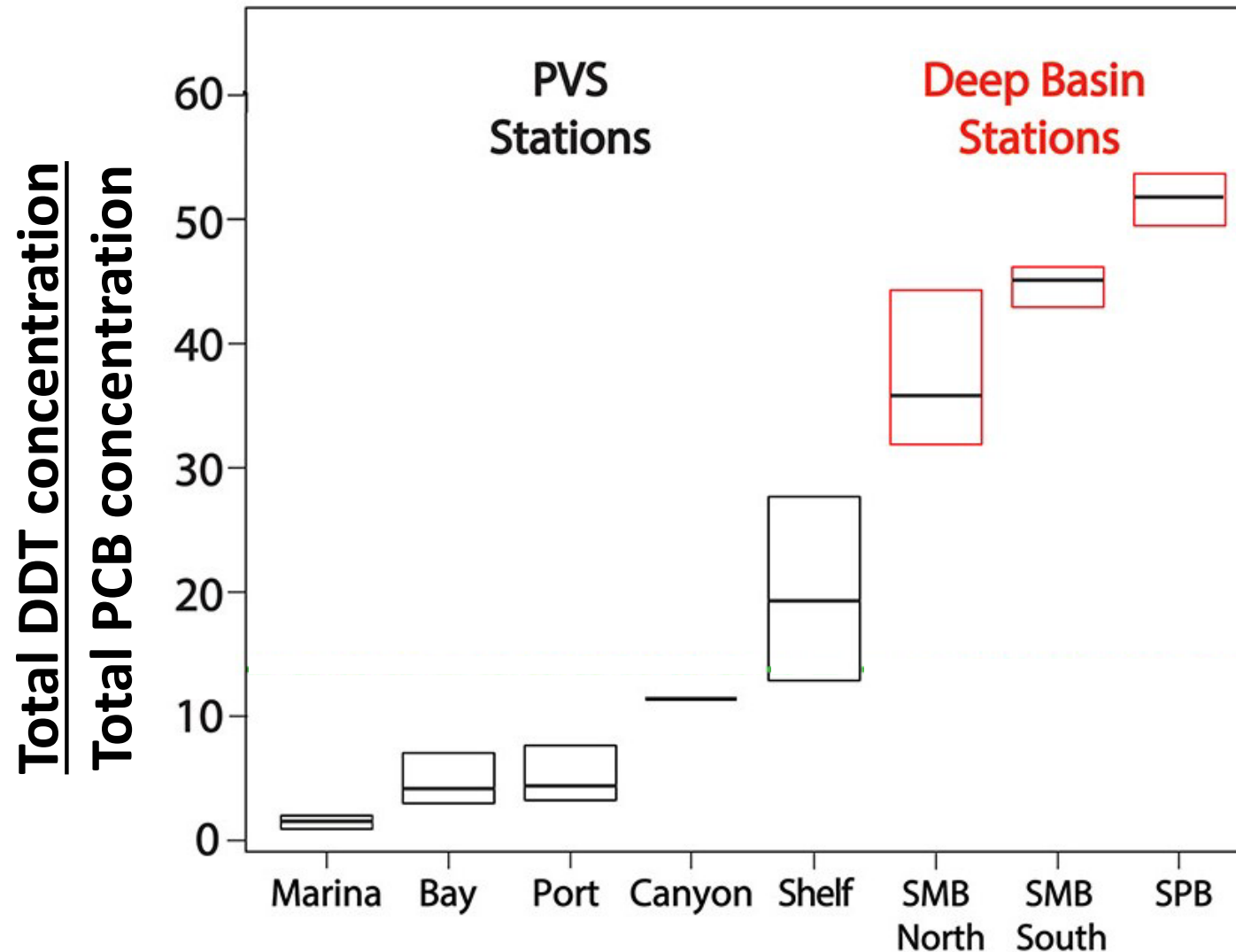
Depth profile of dump site sediment DDT



DDT/PCB ratios as chemical fingerprint

- Concentration ratios of DDT vs. PCB can be a chemical signature
 - Source tracking
- In SoCal, PCBs used and discharged through sewer system
 - These PCBs commingled with DDT in waste streams
 - So PCBs and DDT found together at Palos Verdes Shelf
- Sludge waste DDT wasn't commingled with PCBs
 - So dump site DDT/PCB ratios should be very different

Most DDT at dump sites likely from dumping



We're in the early stages at the dump sites

Characterize site



➤ Transport and fate?

Assess impacts



➤ Ecosystem exposure and impacts?

➤ Human exposure and impacts?

Evaluate options



➤ Treatment/clean up options?

➤ Widespread contamination

➤ Very deep (700-900+ meters vs. tens of meters at PVS)

Management decision