



Tijuana Slough NWR

Tijuana Slough National Wildlife Refuge

- Located at the southern end of California in the City of Imperial Beach
- 1,056 acres in size at the confluence of the Tijuana River and the Pacific Ocean
- Protects numerous endangered species such as the light-footed Ridgway's rail and salt marsh bird's beak, and threatened Western snowy plover



Tijuana Slough National Wildlife Refuge



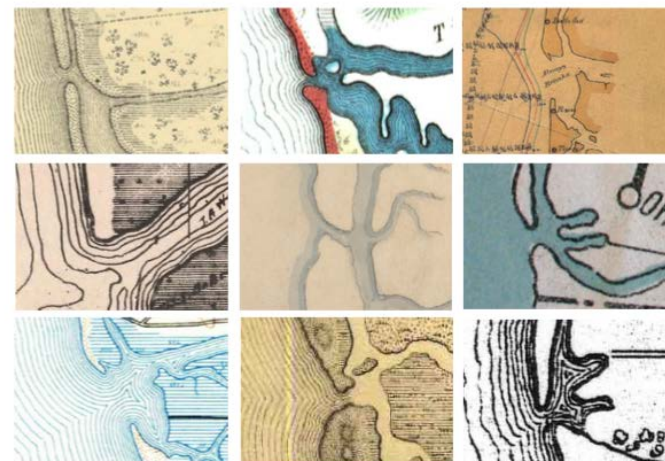


Tijuana River Mouth

Tijuana River Mouth Over Time

Year	Source	Inlet Condition
1849	Gray 1849	O
1850	Hardcastle and Gray 1850	O
1850	Ilarregri and Chavero 1850	O
1850	Ilarregri 1850	O
1852	Harrison 1852	O
1854	Poole 1854	O
1875	Denton and Lauteren 1875	O
1881	Unknown 1881	O
1883	Fox & Wiley 1883	O
1886	Clark 1886	A
1887	San Diego Land and Town Company 1887	O
1889	Beasley 1889	O
1889	Mansfield 1889	O
1889	Ryan and Humphreys 1889	O
1900	Denton 1900	O
1901	International Boundary Commission 1901	O
1904	USGS 1904	O
1906	Crowell 1906	O
1910	Rodney Stokes Co. Inc. 1910	O
1912	Alexander 1912	O
1914	Alverson 1914	O
1915	Cromwell 1915	O
1917	Automobile Club of Southern California 1917	O
1917	Guldbaum 1917	O
1918	Savage 1918	O
1920	Rodney Stokes Co. Inc. 1920	O
1921	Ervast 1921	O
1922	San Diego & Arizona Railway 1922	O

Year	Source	Inlet Condition
1928	Mora 1928	O
1929	Adams and Favela 1929	O
1929	Department of Public Works 1929	O
1930	Automobile Club of Southern California 1930	O
1930	USGS 1930	O
1931	Blackburn 1931	O
1931	Harwood 1931	O
1933	USCGS 1933	O
1935	City of San Diego 1935	C
1935	Klare 1935	O
1935	Sipe and McBean 1935	O
1937	Lee 1937	O
1937	Cruse 1937	O
1937	Unknown 1937	O
1943	USGS 1943	O
1944	Guayle 1944	O
1946	City of San Diego 1946	O
1950	Thomas 1950	O
1953	Nichols 1953	O
1953	USGS 1953	O
1935	Rand McNally 1935a	O
1935	Rand McNally 1935b	O
ca. 1880	San Diego Land & Town Company ca. 1880	O
ca. 1900	E. M. Burbeck ca. 1900	O
ca. 1900	Knight ca. 1900	O
ca. 1900	S[????] ca. 1900	O
ca. 1950	Metsker Maps ca. 1950	O
n.d.	Southern California Mountain Water Co. n.d.	O



Inlet condition	
O	open
C	closed
A	ambiguous

Table XX1883. We analyzed the depiction of the Tijuana estuary inlet in 57 unique historical (1849-1960) cartographic sources. The inlet was classified as "open" if a source suggested that some ocean water could enter the estuary, even if there was closure in the intertidal. All but two of the unique historical (1849-1960) cartographic sources reviewed for this project depict the Tijuana estuary with an open inlet. One 1935 map shows the estuary with a closed inlet, and one shows the inlet in an ambiguous state. Bold font is used for maps that were likely drawn from direct observations/surveys of the Tijuana estuary.

Tijuana Estuary Mouth Closure 1982 – 1983 El Nino

Effects of frequent storms on vegetation

JB Zedler

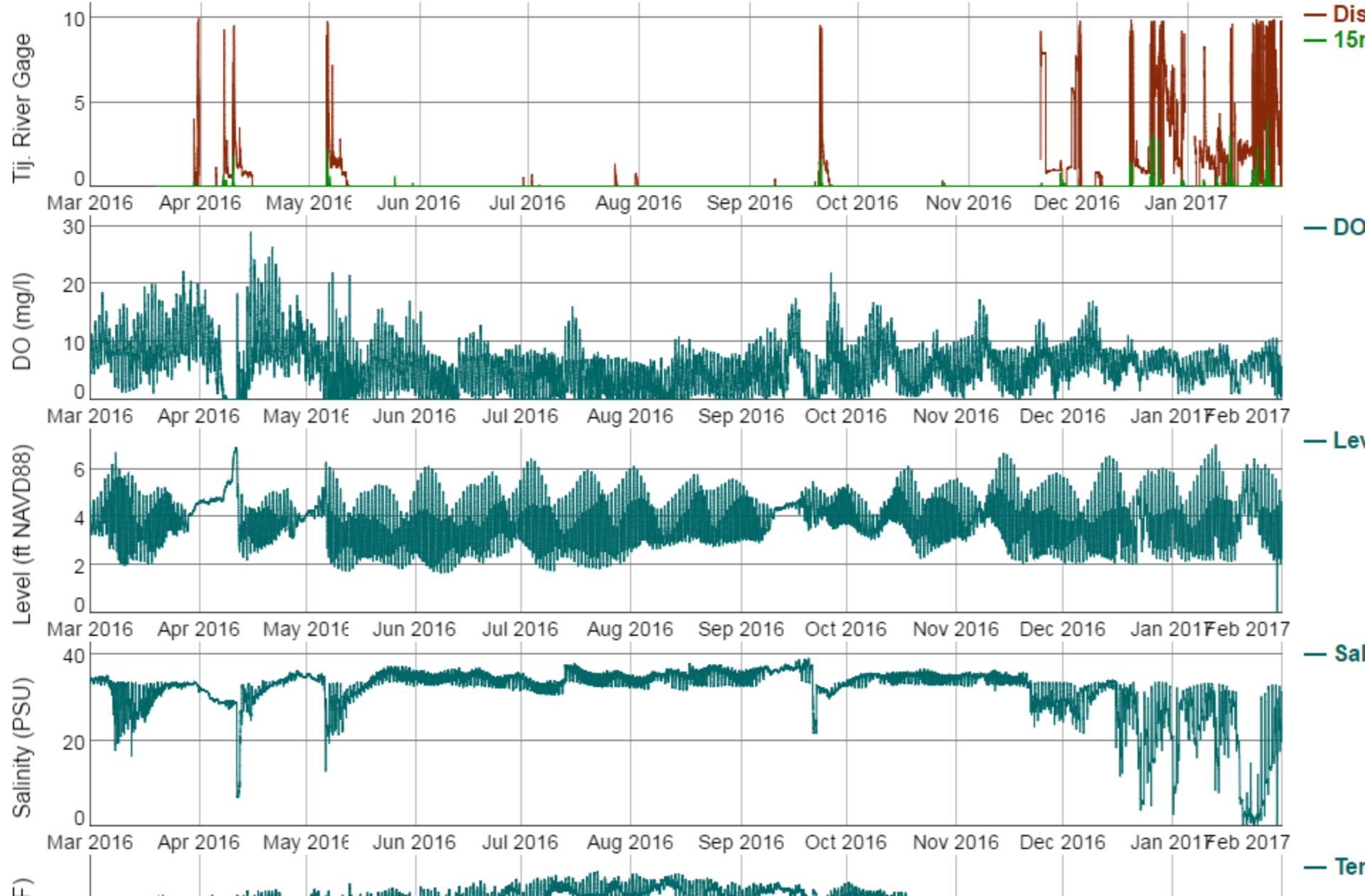
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Figure 5. The mouth of the Tijuana Estuary (a) closed in April 1984 and remained closed until sand was dredged from the channels and replaced on the dunes, and bulldozers reopened it (b) in December 1984.

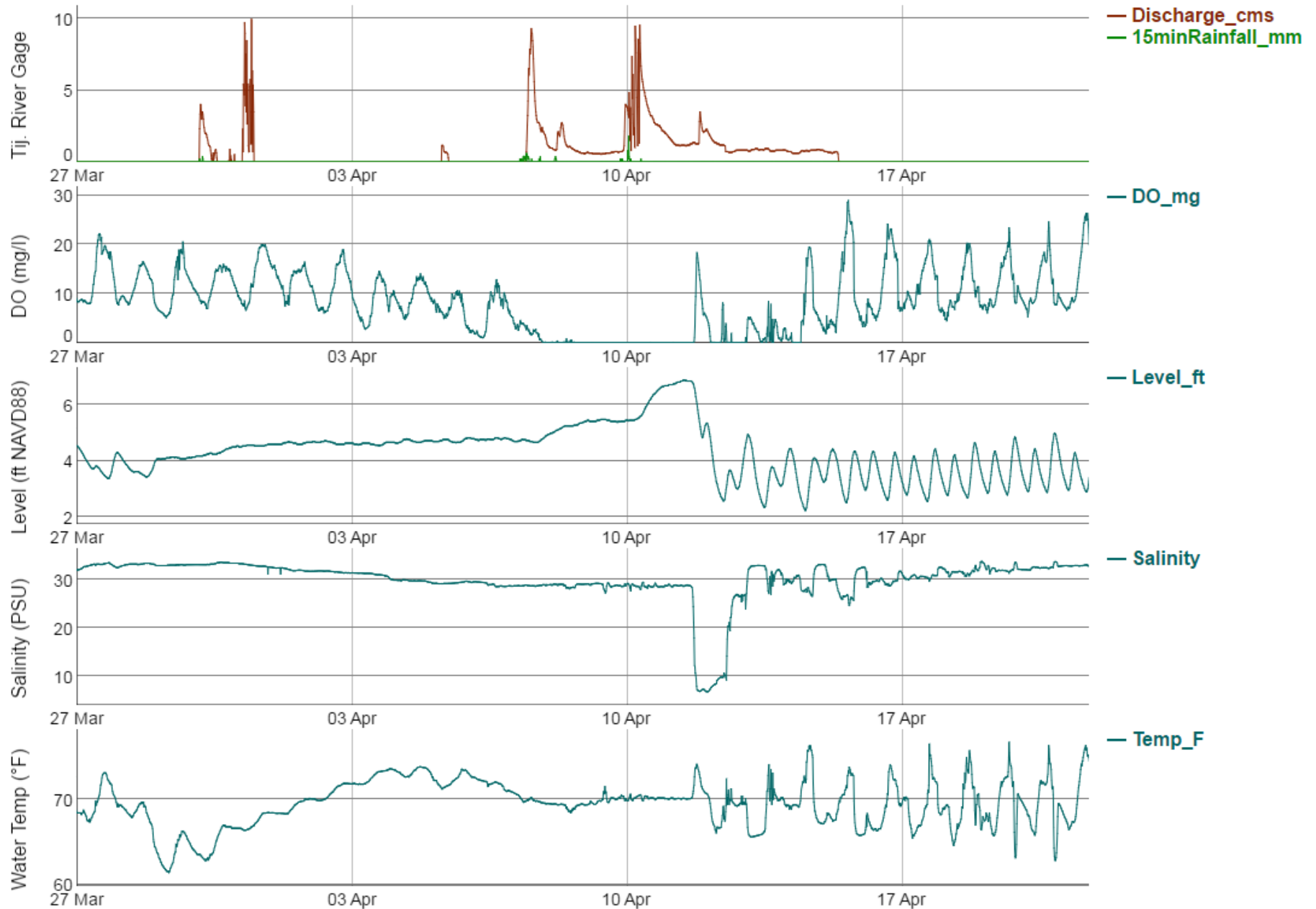
TRNERR Oneonta Slough station water quality with IBWC river gage data

All data is preliminary and has not undergone any QA/QC procedures (please see links below for further information)



TRNERR Oneonta Slough station water quality with IBWC river gage data

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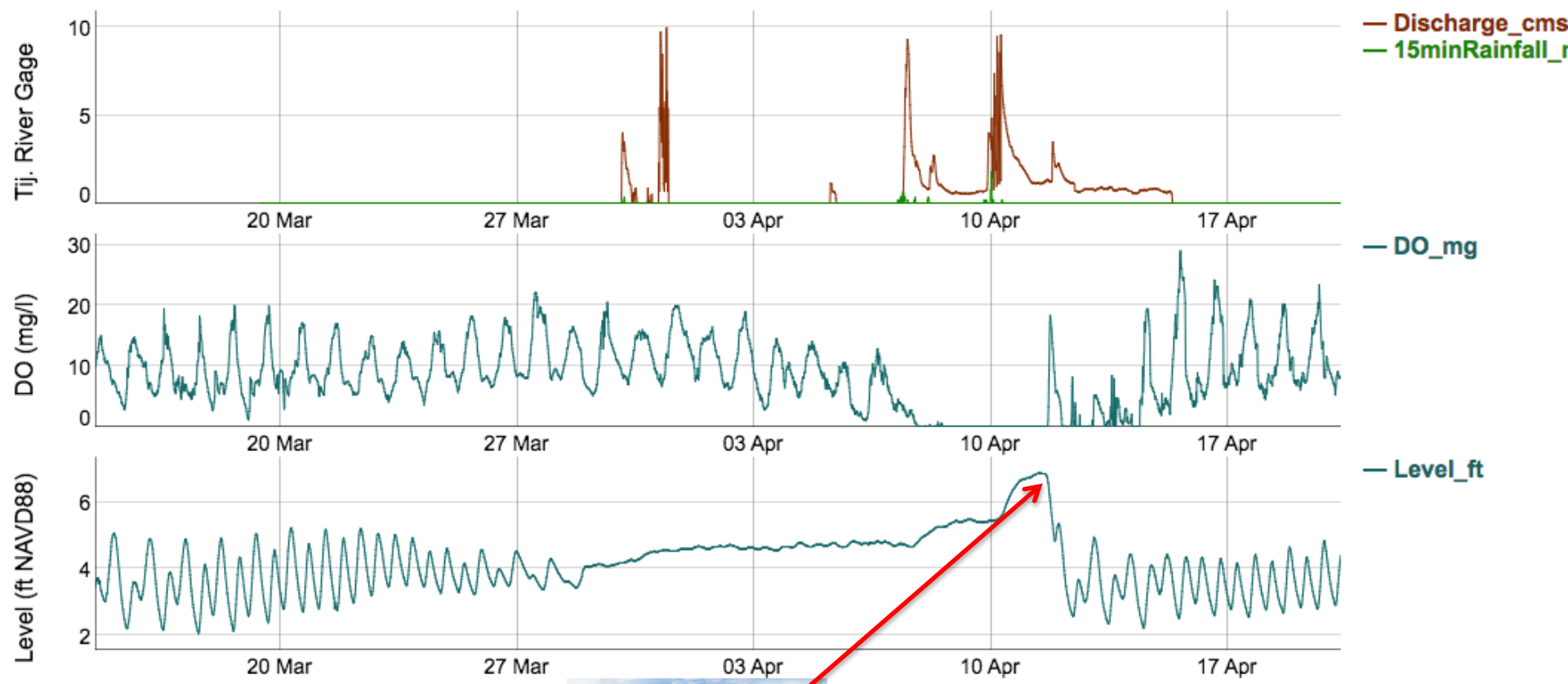






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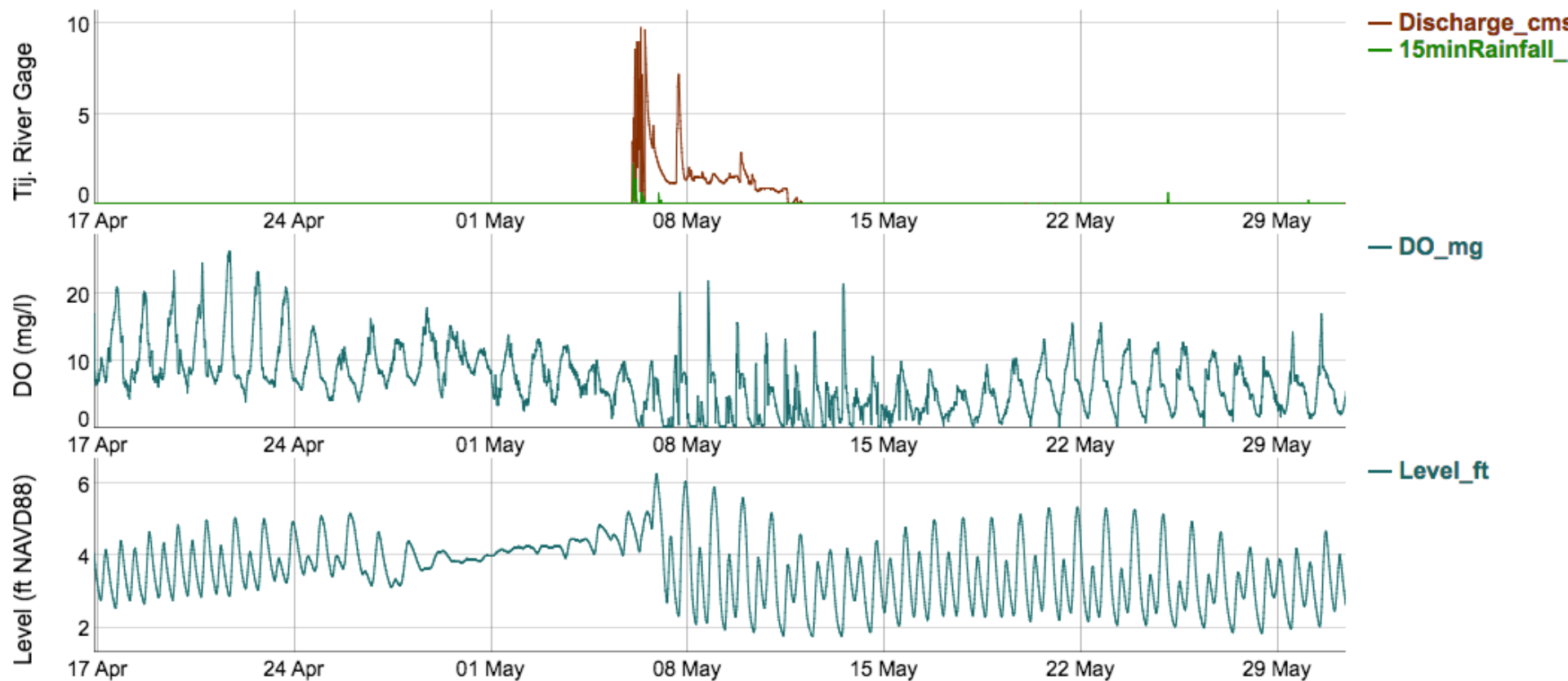






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TJ river mouth reopened after flooding, shark deaths

El Niño conditions pushed enough sand into the mouth of the Tijuana River south of Imperial Beach to close off the flow of the river to the ocean. With the weekend rains water from the closed off estuary was backing up into Imperial Beach streets, forcing an emergency opening of the river mouth with heavy equipment Monday afternoon. After the water receded it became apparent that the oxygen depleted waters had been fatal to many leopard sharks, mollusks and other species that inhabit the area.



Sea gulls ate the remains of a leopard shark killed when the estuary was closed off from the ocean. — John Gibbins / San Diego Union-Tribune

Share Gallery



Dozens of leopard sharks died near the mouth of the Tijuana River. (Serge Dedina)



Purple
Varnish
Clams



Anoxic Creek Bottom & Wrack

Bubble Snails



Fish & Sea Hare





Questions?

U.S. Fish & Wildlife Service
San Diego National Wildlife Refuge Complex
1080 Gunpowder Point Drive
Chula Vista, CA 91910
(619) 476-9150



Tijuana River National Estuarine Research Reserve

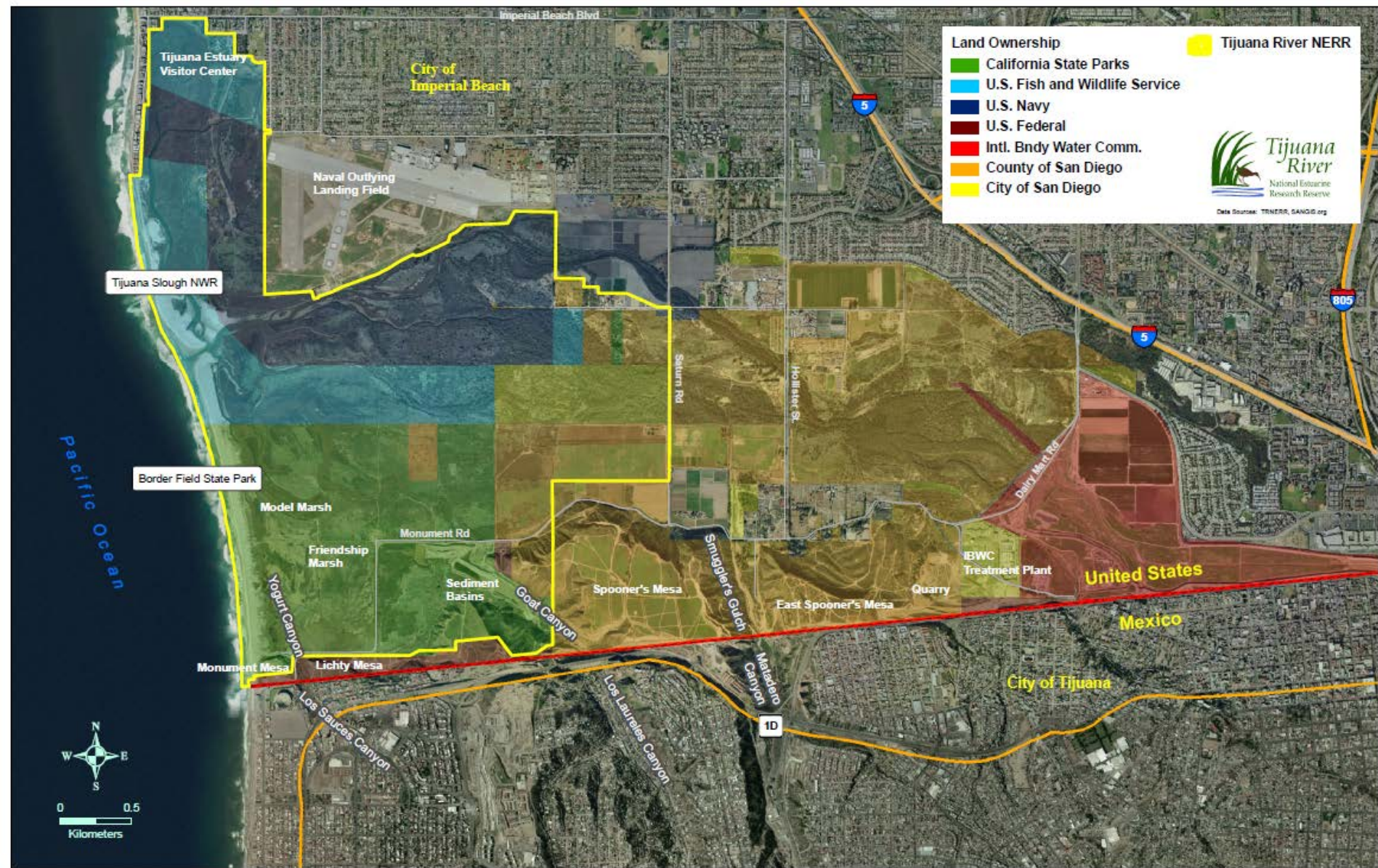
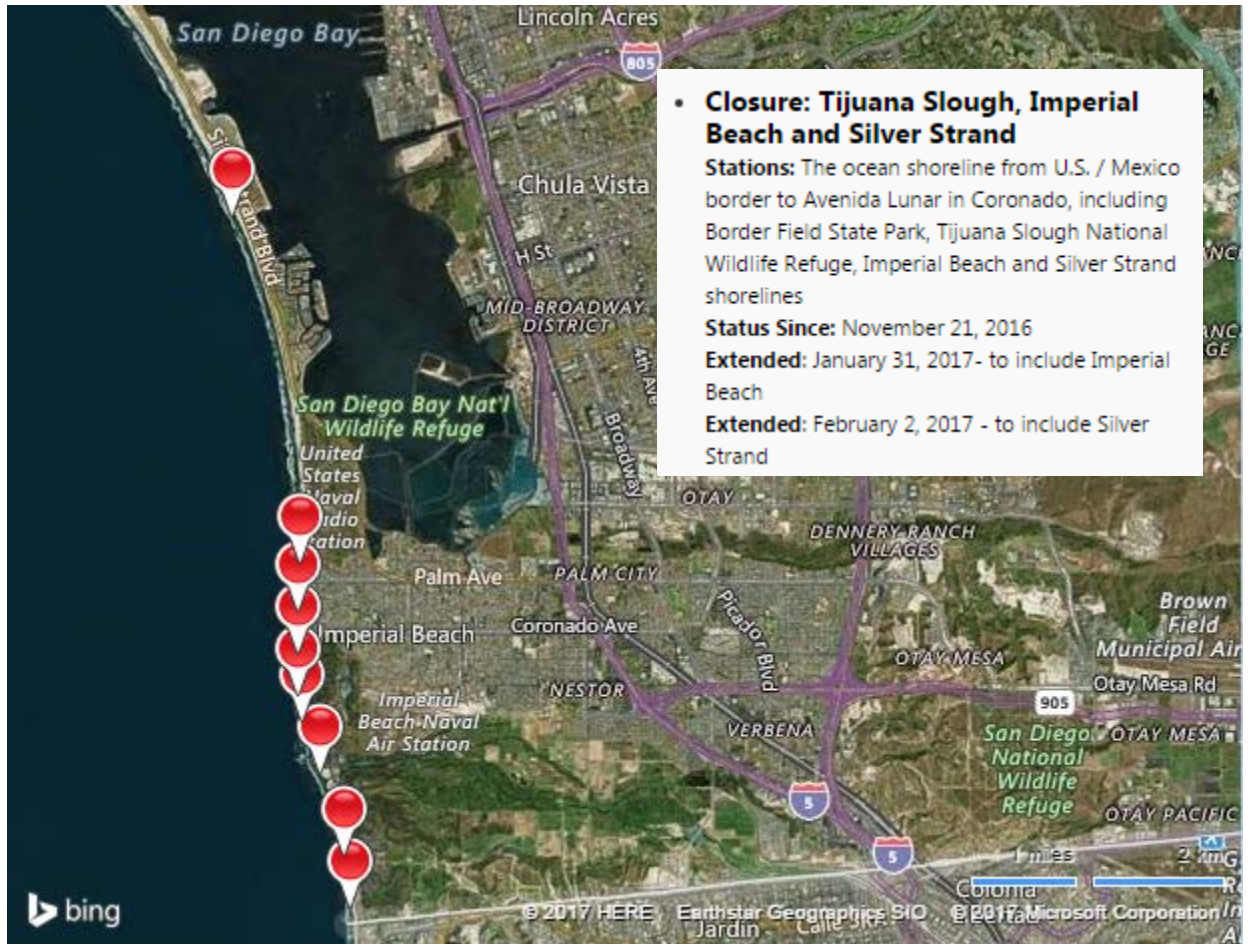


FIGURE 3. RESERVE BOUNDARY AND TIJUANA RIVER VALLEY OWNERSHIP

Tijuana River Watershed

Drains 1,750 square miles, 3/4 of which lie in Mexico. Considered a world biodiversity hotspot.





• **Closure: Tijuana Slough, Imperial Beach and Silver Strand**

Stations: The ocean shoreline from U.S. / Mexico border to Avenida Lunar in Coronado, including Border Field State Park, Tijuana Slough National Wildlife Refuge, Imperial Beach and Silver Strand shorelines

Status Since: November 21, 2016

Extended: January 31, 2017 - to include Imperial Beach

Extended: February 2, 2017 - to include Silver Strand