Water Quality in the Tijuana River Valley

Overview

In the Tijuana River Valley and neighboring coastal areas, contaminated flows from Mexico enter the U.S. and create significant negative impacts to water quality, public health, and the environment. In 2020, the U.S. government, through the U.S. Environmental Protection Agency (EPA), committed $300 million in the USMCA (United States-Mexico-Canada Agreement) to identify infrastructure solutions to mitigate this decades-old problem. The USMCA requires EPA, in coordination with eligible public entities to carry out the planning, design, and construction of high priority treatment works in the Tijuana River watershed to address transboundary flow pollution.

What is Transboundary Flow?

Transboundary flow refers to the movement of water across an international boundary—in this case, from Mexico into the U.S. These flows contain a combination of treated wastewater, untreated wastewater, groundwater, and stormwater. There are three major points of entry for these transboundary flows:

- **Tijuana River,** conveys flows from the City of Tijuana, through the Tijuana River Valley in Southern California, and discharges into the Pacific Ocean. Although there are no transboundary flows for an average of 212 days of the year (2015-2019), wet-weather events cause an average of 109 million gallons per day of transboundary flows.
- **San Antonio de los Buenos (SAB) Creek,** releases 50 million gallons of flow, of which a significant percent is raw sewage, are discharged into the ocean each day through SAB Creek. Northward currents carry the discharge up the coast to the U.S. causing maritime transboundary flows.
- **Cross-border Canyon** tributaries at the U.S.-Mexico border act as entry points for transboundary flow. Flows from these canyons enter the Tijuana River.

What Pollutants Are Found in This Flow?

- **Untreated wastewater,** often referred to as sewage, enters the flow due to spills from wastewater pipeline breaks, aging wastewater treatment systems, poorly maintained manholes and canyon collectors, lack of stormwater drainage systems, and homes without plumbing.
- **Trash** from Tijuana's urban area, when not properly disposed, enters the flow with an increased volume during wet-weather events.
- **Sediment,** usually eroded soil from the canyons and upstream of the Tijuana River, increases in the flow during wet-weather events.

What Are the Negative Impacts of These Pollutants?

Pollutants negatively impact water quality in the Tijuana River Valley and the Pacific Ocean:

- **Public Health & Beach Water Quality:** Untreated wastewater contains harmful pathogens that pose risks to human health. To minimize human contact with untreated wastewater during transboundary flow events, local governments mandate beach closures, reducing access to fishing, swimming, surfing, other recreational activities, and tourism. Sediment and trash contribute to flooding, which pose public safety and property loss concerns.
- **Wildlife & Habitat:** Sediment, trash and polluted wastewater can also negatively impact aquatic and terrestrial wildlife and degrade the riparian, marine, and estuarian habitats that wildlife relies on to thrive.
- **Government Activities:** U.S. Navy and Customs and Border Protection personnel are sometimes exposed to untreated wastewater while performing their job duties. The presence of trash and sediment also poses challenges to U.S. Navy and Customs and Border Protection personnel in carrying out their mission support operations.

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Next Steps: Evaluate Potential Solutions

EPA is evaluating 10 different projects and their ability to reduce environmental and human health impacts from transboundary flows. The evaluation will also look at each project's feasibility, cost of construction, and operations and maintenance costs to inform EPA's decision.

Broadly, projects are focused on three types of interventions:

- **Conveyance** projects evaluate the construction or repair of the infrastructure (e.g., pipes, pumps) that convey wastewater to treatment and disposal facilities.
- **Treatment** projects increase facility capacity to treat wastewater, remove pollutants, and put clean water back into waterways and waterbodies.
- **Source Control** projects intervene at the source of contamination to stop or reduce pollutants before reaching a waterbody or treatment facility.

The 10 projects under evaluation cover a range of pollutants and entry points, and each may focus on one or more intervention strategies. Below is a list of the 10 projects under consideration and their respective intervention focus.

	Project Title	Conveyance	Treatment	Source Control
1.	New Tijuana River Diversion System in the U.S. and Treatment in the U.S.	•	•	
2.	Expand and Upgrade Tijuana River Diversion System in Mexico and Provide Treatment in the U.S.	•	•	
3.	Treat Wastewater from the International Collector at the ITP		•	
4.	Shift Wastewater Treatment of Canyon Flows to U.S. (via Expanded ITP) to Reduce Flows to SAB	•		
5.	Enhance Mexico Wastewater Collection System to Reduce Flows into Tijuana River	•		•
6.	Construct New Infrastructure to Address Trash and Sediment During Wet Weather Flows		•	
7.	Divert or Reuse Treated Wastewater from Existing Wastewater Treatment Plants in Mexico to Reduce Flows into the Tijuana River	•		
8.	Upgrade SAB Wastewater Treatment Plant to Reduce Untreated Wastewater to Coast		•	
9.	Treat Wastewater from the International Collector at the SBWRP		•	
10.	Sediment and Trash Source Control			•

ITP: South Bay International Wastewater Treatment Plant; **SAB:** San Antonio de los Buenos Wastewater Treatment Plant; **SBWRP:** City of San Diego South Bay Water Reclamation Plant

Some Key Considerations for Projects

- Ownership and sustainable funding for operation of projects.
- Sediment/sludge disposal options for applicable projects are unknown.
- Presidential Permit required for transboundary pipelines.

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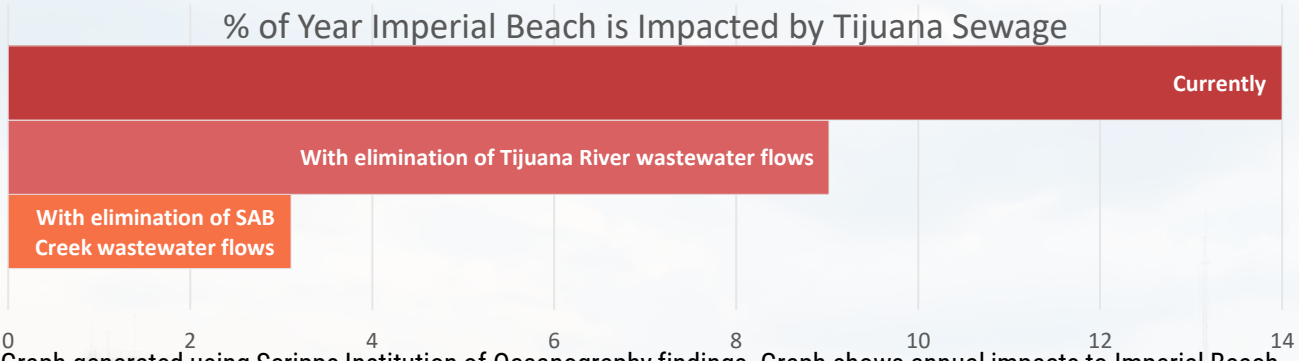
Impact Comparison: Tijuana River vs. SAB Creek

Scripps Institution of Oceanography developed an estuary and ocean model to evaluate impacts of "infrastructure solutions to improve shoreline water quality and reductions on regional beach closures." Their work, which analyzed all flows during 2017, concluded that:

- "Eliminating or dramatically reducing [wastewater flows to SAB Creek] has the strongest benefit to the City of Imperial Beach, Silver Strand State Beach, and City of Coronado."
- In wet season the Tijuana River causes ⅔ of closures and SAB Creek ⅓ of closures.
- SAB Creek "is the dominant source that leads to regional beach closures" year-round, and especially during the dry season (109 days during the year).
- Beach closure estimates are made based on wastewater bacteria concentrations and may not correlate with actual beach closures due to additional factors.



* Graph generated using Scripps Institution of Oceanography findings. Graph shows annual impacts to Imperial Beach. Similar conclusions are drawn at Playas Tijuana, Silver Strand State Beach, and Hotel del Coronado.

Feddersen, F., X. Wu, and S. N. Giddings, Modeling impacts of various wastewater and stormwater flow scenarios on San Diego South Bay and Tijuana beaches, Tech. Report for the North American Development Bank, November 2020.

Existing System: This map shows the current wastewater treatment system