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Transboundary Wastewater

Tijuana River Crisis

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The Tijuana River Crisis

The long-running wastewater crisis of the Tijuana River watershed illustrates how developmental pressures and infrastructure gaps in a shared basin can overwhelm institutions, imposing persistent health, environmental and economic costs on communities in both Tijuana and San Diego County.

Transboundary wastewater flows from the Tijuana River basin into San Diego have been a protracted public health and environmental crisis for decades. Between 50–80 million gallons of untreated sewage flow daily from Tijuana, Mexico into San Diego, California. Imperial Beach has been closed for more than 1,300 consecutive days. The crisis has sickened US Navy SEALs training in contaminated waters and generated toxic hydrogen sulfide concentrations thousands of times above safe thresholds. In 2025, California State Assembly members requested a federal state of emergency to address persistent discharges. The problem is worsening in scale and complexity despite six decades of binational agreements, litigation, and capital commitments approaching US$1 billion.

The crisis originates in a fundamental infrastructure deficit driven by rapid urbanization that has outpaced civil authority capacity. Tijuana's wastewater system was designed to serve 600,000 residents. The current population exceeds 2.3 million, with an estimated 150,000 people fully unconnected to centralized collection and treatment in the urban area, and 40% of new developments being unconnected. Most growth occurs in unsanctioned canyon settlements where households discharge waste directly into ravines via simple outlet pipes. During rain events, this waste enters the Tijuana River and flows north across the border. Further, Tijuana adds approximately 30,000 residents annually, while the existing collection network built in the 1960s continues to corrode and collapse under loads it was never designed to handle.

The health impacts extend beyond just water contact. A 2023 peer-reviewed study identified hydrogen sulfide aeration from polluted river flows as a regional air quality hazard, with peak concentrations reaching 4,500 parts per billion under low-wind conditions. Community health assessments report widespread headaches, respiratory irritation, and gastrointestinal illness. Emergency department visits for diarrhea in South Bay zip codes spiked to 3.25 times the mean during Tropical Storm Hilary. The Tijuana River Estuary, a National Estuarine Research Reserve, experiences recurring hypoxia and anoxia from organic loading, triggering fish kills and habitat degradation. Storm events amplify all impacts by mobilizing contaminated sediments and expanding the contamination footprint northward along the coast, reaching beaches as far as La Jolla.

The binational response is governed by the 1944 U.S.-Mexico Water Treaty and the International Boundary and Water Commission, which uses negotiated Minutes to translate treaty obligations into specific projects and commitments. The institutional response has evolved from episodic emergency measures to a more structured governance architecture, but execution remains constrained by the asymmetry between shared physical systems and divided legal authority. IBWC Minute 283 in 1990 established the principle that Mexico would assure no discharges cross the border. Minute 328 in 2022 committed both countries to a coordinated investment plan. Minute 333 in 2025 explicitly acknowledged that accelerated population growth and depleted infrastructure have prevented comprehensive solutions, and called for improved maintenance notification protocols and operations funding structures.

Legal pressure has been essential to converting framework agreements into enforceable action. Cities, environmental organizations, and the State of California filed Clean Water Act suits beginning in 2018,

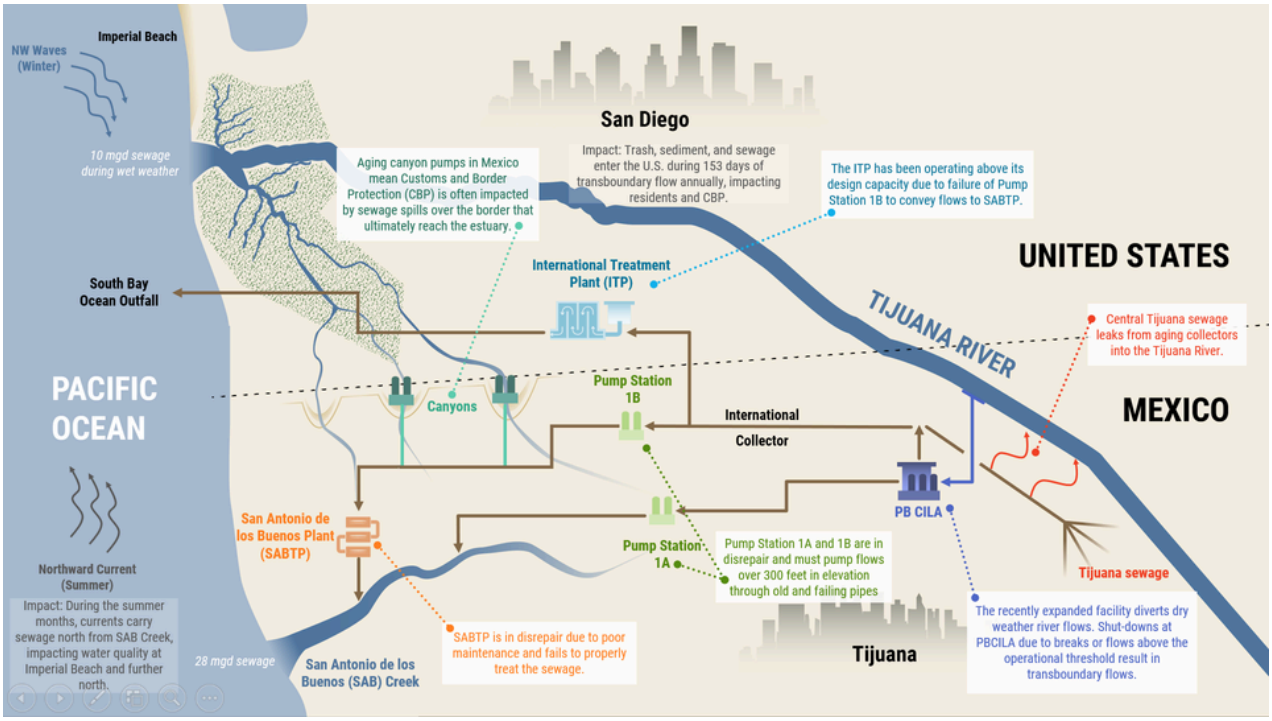
culminating in a 2022 settlement that locked USIBWC into a seven-year implementation schedule. The 2020 USMCA Implementation Act provided $300 million in U.S. funding, placing EPA at the center of capital planning and tethering binational mandates to federal budgetary authority. This combination of litigation and appropriation enabled the transition from planning to execution.

Current capital programs center on a US$600 million rehabilitation and expansion of the South Bay International Wastewater Treatment Plant. The plant increased capacity from 25 million gallons per day to 35 MGD in August 2025 through a fast-tracked expansion completed in 100 days. The broader program is underway to reach 50 MGD average capacity with 75 MGD peak hydraulic capacity by December 2027. On the Mexico side, rehabilitation of the San Antonio de los Buenos treatment plant is underway, alongside repairs to the Parallel Gravity Line and other collection system improvements. Combined current treatment capacity across both borders is approximately 73 MGD.

Investments are necessary but insufficient. EPA reports that wet weather events generate average transboundary flows up to 109 MGD at the Tijuana River point of entry, and San Antonio de los Buenos Creek releases 50 MGD directly to the Pacific each day, much of it raw sewage. Even with planned capacity expansions, the system cannot eliminate cross-border impacts when such large volumes bypass collection entirely. The fundamental constraint remains the unknown and growing number in Tijuana not connected to centralized wastewater systems.

The Tijuana River case demonstrates that transboundary environmental crises are governed less by technical capacity than by institutional synchronization across jurisdictions. The 1944 Treaty provides a binational venue, while domestic litigation and federal funding compel the transition from coordination to delivery. Long-term durability depends on sustained operations funding, binational incident reporting protocols, and infrastructure life-cycle management that can keep pace with urban growth and climate-driven storm intensification.

Success depends on closing the collection gap in Tijuana faster than population growth widens it. Mexico-side execution capacity determines whether planned infrastructure investments translate into reduced transboundary flows, and this capacity is shaped by domestic fiscal constraints and institutional fragmentation that U.S. policy levers cannot directly control. Without alignment of diplomatic process, legal pressure, fiscal commitment, and Mexico-side execution capacity, infrastructure planning remains structurally detached from delivery.



- Daily between 50 - 80 million gallons (190,000 - 300,000 m^3) of *untreated* sewage flows from Tijuana, Mexico into San Diego, CA across the US-Mexico border. Early 2000s infrastructure is built to treat just 25 MGD.

- The decades long running wastewater issue has grown into an air quality issue as well, with over 1,300 days of beach closures, mass marine deaths, and toxic air quality impacting residents.

- Decades of agreements have not produced a durable transboundary solution, and the treaty system on its own has proven insufficient without aligned legal pressures and fiscal commitments.

- The SBIWTP joint infrastructure project treats Tijuana's wastewater flows inside the US and is increasing its capacity by 40% from 25 to 35 MGD. Still just 70% of today's daily untreated sewage flow, while a growth rate of 20-30,000 people per year keeps adding pressure.

- Treatment capacity is necessary but insufficient: multiple IBWC Minutes across decades converge on the reality that collection and conveyance gaps (canyons, storm drains, breakage) will overwhelm or bypass treatment solutions.

- Accountability depends on measurement and robust protocols that are enforced. From flow accounting to spill and maintenance notification, transparency mechanisms must be treated as core infrastructure.

- The problem is basin-wide and not limited to 'only' sewage. Aeration of H_2S makes the air toxic. Sediment and solid waste are also transboundary pollutants alongside wastewater flows.

- Durability and future-proofing is the key issue: IBWC Minute 333's emphasis on O&M funding structures and better infrastructure life-cycle management is a positive sign of lessons learned from decades of building that then falls behind.

How we got here

The poor performance of urban infrastructure is often the result of rapid urbanization and sprawling growth that civil authorities simply cannot keep pace with. This is further compounded into potential disaster when combined with constrained governance capacity, lower fiscal resources, and high in-migration pressures. All of these elements exist for Tijuana, Mexico.

Since the 1930s the rapid urbanization of Tijuana, Mexico has placed strain on its infrastructure and key public services, particularly its wastewater flows and treatment. In the 1940s, Tijuana had 20,000 residents, by 2010 this would reach 1.4 million, and 1.75 million in the wider area, a 70x increase. Today, its population is estimated to be over 2.3 million, growing at 1.5% and adding ~30,000 people a year. It is also the most visited border crossing between the U.S. and Mexico, affected by migrations and immigration policies, where people arrive and many then settle, often in surrounding canyons and hillsides. Precise population data is difficult to obtain.

Sprawling developments in Tijuana were often built without building codes, inspections, or regulation enforcement, and thus not connected to central services. Many homes and developments remain improperly connected to centralized wastewater systems. Nearly a century after urbanization began, weak governance results in unsanctioned housing built without public services including electricity, water, or wastewater. Many residents are served via water truck but without septic tank systems. Homes are typically built along canyons with simple waste outlet pipes dumping into ravines, which eventually reach the Tijuana River. Even in the urban center, heavy rains have led to building collapses.

San Diego, by contrast, grew from 333,000 people in 1950 to 1.38 million by 2020, with the wider San Diego County holding 3.3 million residents. The parallel yet opposing development stories across the U.S.-Mexico border point to key differences in fiscal capacity, regulatory enforcement, and infrastructure investment spanning over decades.

Borders may divide governance systems and keep some problems on the ‘other side’ of the fence. When it comes to environmental degradation, however, particularly transboundary wastewater flows, an artificial line of law and politics does not contain negative externalities. Greater wealth and better governance to the north have made little impact against the watershed's flow north across the border and out to the sea, where ocean currents continue moving north. Jurisdictional confusion also plays a role, as the city takes the brunt of impacts while the problem lies on federal lands in a border area with transboundary flows. If the watershed flowed south deeper into Baja California rather than across a border to wealthier areas, such a ‘crisis’ may likely not exist at all. Of course it is a crisis, for those in Tijuana living with it at the source, without the coherent development strategy and resources to fix the issue, and for those in San Diego with greater resources and capacity, but without the control of the source of the problem.

The border pollution crisis has been affecting South Bay residents for decades going back to the first emergency plans in 1960s but has garnered more widespread attention only in recent years. The city of San Diego first declared an emergency in 1993 and has called on the federal government to declare its own since. Imperial Beach declared emergencies in 2017 and 2023. The State of California has not declared a state emergency, instead stating it would have no bearing as the issue is federal, on federal border lands, and no decisions from the Governor could apply. California State Assembly members requested President Trump to declare a federal state of emergency in 2025 to address the decades-long problem. The EPA has made it a priority to speed up plans and find a final comprehensive solution. The crisis also appeared in the American Rivers Endangered Rivers report as the #2 most polluted river in the U.S. in 2025, first appearing in the top 10 in 2024 (but did not appear in 2023).

In this time, the sheer volumes of sewage have been staggering, with between 50–80 million gallons flowing daily, leading to new levels of toxicity and air-borne reactions that have not been seen elsewhere. People have been made sick without being in contact with the water itself. If it were ‘only sewage’, the daily volumes for such an extended period would be unacceptable. But it is not only sewage, as it is mixed with industrial waste and products, as a result of rapidly growing industry in Tijuana, taking advantage of near shoring to the U.S. market.

Trade integration has amplified the economic drivers of Tijuana's growth and wastewater load. Firms have near shored to the border to secure U.S. market access while lowering labor and operating costs, expanding maquiladora production under NAFTA and continuing under USMCA. The result is higher in-migration and higher municipal flows, alongside more industrial wastewater that is often stronger and chemically complex. In a system with limited coverage and aging infrastructure, that added volume and load increases overflows and raises the probability that discharges reach the river during routine conditions and storms.

The Problem

The Tijuana River originates in Mexico, with estuaries covering a wide area of canyons and ravines, crosses into the United States, and reaches the Pacific Ocean near Imperial Beach in San Diego, California. When collection and treatment systems are overwhelmed, untreated sewage, urban runoff, and industrial waste are carried north into downstream communities. The resulting public health, ecological, and economic impacts have been persistent for decades and getting worse in scale and in nature.

The wastewater crisis is defined by a fundamental disconnect between Tijuana's population and its collection infrastructure. The current sewage system was designed to service approximately 600,000 residents only. This leaves approximately 1.7 million residents whose waste either overburdens the existing network or is not connected to centralized treatment at all. Most of this growth occurs in unsanctioned canyon developments lacking basic public services. In these areas, households often discharge waste directly into ravines via simple outlet pipes. The absence of first line solutions such as the use of septic tanks and trucking to treatment plants deepens this problem. During rain events, this waste enters the Tijuana River and flows into the United States.

Structural failures within the existing network exacerbate the volume of transboundary flows. Old concrete pipes, mostly built in the 1960s with a 40-year design lifespan, are dealing with much higher acidity from mixed industrial wastewater, placing further corrosion pressure on an aging system. Since the 1980s, PVC plastic is installed in new sections for longer lifespan, but the system actually reaching people needs massive overhauling, plus capacity growth to extend service to the 1.7 million people unconnected or underserved. The core network remains prone to collapse, while official data claims an 89% sewage coverage that isn't seen as credible.

Storms convert chronic capacity shortfalls into large discharge events. Heavy rainfall overwhelms collection and pumping systems and increases inflow volumes beyond treatment limits. Stormwater also carries debris and sediment that degrade performance at key facilities and diversion points. Operational fragility under these increasing pressures leads to high-magnitude spill events.

Measured Impacts and Initial Response

Imperial Beach has been closed for more than 1,300 days. From 2015 to 2017, closures averaged 160 to 200 days annually. Since 2023, closures have been almost continuous. Impacts have extended north toward Coronado and into U.S. Navy SEAL training areas. In May 2025, the New York Times reported that 50 million gallons of untreated sewage, industrial chemicals, and trash flow daily into southern San Diego County.

IBWC Minute 283 in 1990 authorized construction of the South Bay International Wastewater Treatment Plant and diversion works to capture and treat dry-weather sewage flows before reaching U.S. territory. These investments significantly reduced direct cross-border sewage discharges during dry weather. However, aging sewer networks, illegal connections, and pumping systems operating beyond capacity continued to produce overflows during heavy rainfall. The U.S. system remains under-built for wet surge periods while sufficient in dry summer periods. The system becomes somewhat irrelevant when 2-3 times its capacity bypasses treatment facilities altogether through illegal discharges.

System Failures and Legal Escalation

In January 2017, a major Tijuana wastewater collector collapse triggered a discharge of at least 28 million gallons over four days. Official investigation findings emphasized infrastructure failure, notification issues, and uncertainty regarding scale. In December 2018, a collector rupture led to continuous spills exceeding 6 million gallons per day. These events revealed fundamental infrastructure fragility on the Mexico side.

Litigation intensified in 2018. Imperial Beach, Chula Vista, and the Port of San Diego filed suit against USIBWC in March. The Surfrider Foundation filed in July. In September, the State of California through the San Diego Regional Water Quality Control Board filed suit. Legal pressure produced operational commitments. In April 2022, USIBWC settled, agreeing to short-, mid-, and long-term actions to intercept and divert transboundary flows over a seven-year implementation period.

Early Infrastructure Attempts in Mexico

Mexico attempted to address wastewater infrastructure deficits in the early 2000s through planned expansion of collection and treatment systems. These efforts failed to achieve meaningful coverage expansion due to insufficient financing, weak institutional capacity, and the pace of unregulated settlement growth. The gap between population growth and infrastructure deployment widened rather than narrowed. This failure led to a strategic shift toward bilateral funding mechanisms and coordinated planning frameworks that could leverage U.S. technical and financial resources for projects on both sides of the border.

Policy and Capital Commitments

The USMCA Implementation Act in January 2020 appropriated $300 million for infrastructure to reduce polluted cross-border flows, with the EPA responsible for spending on eligible projects. In July 2022, both governments adopted IBWC Minute 328 and a Statement of Intent establishing a coordinated investment plan. The United States committed substantial federal funding through the EPA and IBWC to expand SBIWTP's capacity, build new conveyance infrastructure, and support wastewater projects in Mexico. Mexico agreed to upgrade wastewater collection systems, pumping facilities, and treatment plants, including rehabilitation of the San Antonio de los Buenos facility and the Parallel Gravity Line. Coordinated policy and capital commitments are critical first steps.

Recent Acceleration and Current Status

Tropical Storm Hilary in 2023 caused significant debris damage at SBIWTP, necessitating a $100 million emergency repair allocation within a broader $600 million rehabilitation program. In September 2023, USIBWC issued an urgent repairs plan. In December 2023, USIBWC issued a solicitation for SBIWTP rehabilitation and expansion via progressive design-build contracting. In August 2024, USIBWC awarded the contract with a first phase of $42.4 million for design, with PCL as contractor and Stantec as designer. The overall program scope was confirmed as doubling average capacity from 25 MGD to 50 MGD and increasing peak hydraulic capacity to 75 MGD to manage the regular surges that currently bypass existing treatment facilities.

Implementation then accelerated in 2025. In April, county officials reported Mexico-side pipeline replacement work leading to approximately 3–5 million gallons per night released into the valley. Coastkeeper and CERF filed a lawsuit in April 2024 alleging Clean Water Act permit violations at SBIWTP, naming IBWC and its operator. In May 2025, a fast-track expansion was announced to increase capacity from 25 to 35 MGD within 100 days. In July, a U.S.–Mexico memorandum of understanding established an accelerated framework with commitments toward new actions and a new IBWC Minute by year end. By August, the 10 MGD expansion was completed, raising SBIWTP's capacity to 35 MGD, and expansion to 50+ MGD by end of 2027. December 2025, Mexico agreed to enter a new Minute by December 31 with at least 12 new actions and projects (*Minute 333*).

The Tijuana River case illustrates standard constraints found in transboundary wastewater management globally. Urban growth vastly outpaces treatment and collection capacity while governments aren't set up to respond. Storm events expose system limits and amplify all cross-border externalities. Chronic underinvestment over decades and a lack of coordination leads to more sewage flows and a breakdown in trust. Institutional arrangements matter greatly in this context because the physical / natural system is inherently integrated, while governance and fiscal capacities are not. Long-term performance of water utilities depends on capital investment, operations, maintenance, and regulatory compliance. In a transboundary context it also depends on sustained diplomatic mechanisms that translate shared exposures into jointly coordinated action, lasting through multiple budget cycles, across jurisdictions with unequal resources, built on parity of esteem and joint ownership.

Health & Environmental Impacts

Human exposure in the Tijuana River system is shaped by a persistent pollutant mix that moves through surface water, sediments, as well as air. County and state reporting describes the contamination as untreated sewage, urban runoff, and industrial waste, with more than 100 billion gallons discharged to the river system over the past 5 years, and more than 200 billion gallons total since 2018. This toxic flow travels down the river corridor into the Tijuana River Estuary and into the Pacific Ocean, creating routine exposure potential for people living, working, training, and recreating on both sides of the border, per NOAA Coastal Management.

The risks from contact with this water is visible through beach and bay monitoring that translates microbial contamination into advisories and extensive closures. San Diego County's Beach and Bay Water Quality Program samples shoreline waters and evaluates results against state standards, using fecal indicator bacteria such as enterococcus and fecal coliform as proxies for pathogen risk. The persistence of excessive levels has turned closures into a chronic feature of the South Bay coastline, with more than 1,300 consecutive days of beach closures due to transboundary waste flows. Losing beach access is only the start of the problem.

Clinical impacts reported by affected communities are consistent with the exposure pathways implied by monitoring and closures. San Diego County epidemiology reporting characterizes the crisis as a recurring driver of gastrointestinal illness risk and a broader burden of symptoms that residents associate with contaminated water and degraded environmental conditions. Furthermore, such symptoms are being seen after rain, and without any direct contact with the water. A CDC-supported community assessment in the Tijuana River Valley found widespread concern and high rates of self-reported symptoms, with headaches and upper-respiratory and eye irritation prominent among reported impacts. Peer-reviewed analysis of 2023 conditions found a strong correlation between transboundary Tijuana River flows and emergency department visits for diarrhea in South Bay zip codes, with a spike to 3.25 times the mean during Tropical Storm Hilary.

Airborne exposure has become a central public health issue as polluted flows generate toxic gases and aerosols that extend their impacts inland. A peer-reviewed study in Science attributes a regional air quality crisis to the water-to-air transfer from the heavily polluted river, identifying hydrogen sulfide (H_2S) as a key hazard under high-flow, low-wind conditions and reporting peak concentrations many orders of magnitude above typical urban levels—from under 1 ppb, up to 4,500 ppb. University reporting tied to the same work contrasts California's health-based chronic reference level for H_2S with a higher, odor-based 1-hour standard, underscoring the tension between nuisance conditions and health-protective thresholds in a community. Local authorities have responded by deploying community air monitoring and publishing hydrogen sulfide guidance intended to support day-to-day risk decisions for residents near the river corridor. More than 80% report having to change their daily behaviors as a result.

The pollutant mix and aeration creates exposure pathways beyond direct contact with either river or ocean water. Peer-reviewed coastal aerosol studies have detected sewage-associated bacteria in sea spray aerosol along the impacted coastline, providing a mechanism for inland transport of biological contamination during marine aerosol conditions. Related research finds that gases emitted from the polluted river can contribute to fine particulate matter formation under unfavorable dispersion conditions, reinforcing that the crisis can register as an air-quality problem as well as a water-quality problem. Sediment studies in the river-estuary system have also documented persistent, bio-accumulative chemicals, including legacy organochlorine pesticides, adding a longer-lived contamination pathway that can complicate cleanup and ecological recovery. The long-term effects of such prolonged impact to these pollutants (and at this level) is unknown.

Environmental impacts are most concentrated in the Tijuana River Estuary, a National Estuarine Research Reserve and one of Southern California's largest remaining coastal wetlands. The estuary receives repeated loading of organic matter, pathogens, nutrients, trash, and contaminated sediments, which degrades habitat quality and can alter ecological function in a system that supports sensitive wetland and nearshore species. The opposing canyon in Tijuana is home to over 80,000 people, mostly in shantytowns with no wastewater treatment, as they are unsanctioned settlements. The Tijuana River itself used to be a seasonally dry river, which now contains flows year-round due to sewage runoff.

Dissolved oxygen trends provide a measurable signal of ecosystem stress consistent with heavy organic loading from sewage. Continuous monitoring and reporting describe episodes of hypoxia and anoxia, including runs of near-zero oxygen that are directly harmful to fish and invertebrates and consistent with oxygen demand from decomposing organic waste and nutrient-driven productivity in the marsh. These conditions trigger mortality events, suppress reproduction for less mobile species, and push species to leave the estuary, producing the observed pattern of declining aquatic abundance and diversity during the worst periods of water-quality deterioration.

Storm events then amplify both health and ecological impacts by rapidly increasing flows, mobilizing contaminated sediments, and widening the exposure footprint across the floodplain and along the coast. County and academic reporting link major weather events to spikes in transboundary flow and to surges in downstream contamination that affect beaches and nearshore waters beyond the river mouth. Ocean transport can carry contaminated water northward under certain conditions, expanding the geographic scope of impacts and raising the operational stakes for monitoring, advisories, and response in both countries.

For the U.S., this has also taken on a national security concern as the pollution and its attending health impacts travel to areas where elite U.S. Navy SEALs regularly train, with more than 1,100 illness cases reported amongst SEALs. More than 76% of the bacterial tests conducted exceeded safe level thresholds, and while some illnesses are temporary, others are not, and the long-term cumulative effects will be seen over time.

Both the health and environmental impacts were made exceedingly clear after Tropical Storm Hilary in 2023, followed by an atmospheric river event in 2024. The resulting spread of the pollution further afield resulted in the closure of beaches to Ocean Beach, Mission Beach, and La Jolla Cove, further and further north into San Diego county. This impacts wildlife and fish stocks due to degrading water quality. Looking ahead, atmospheric river events and more powerful storms due to climate change create further urgency to address this challenge as its impacts will be greater and more widespread over time.

This is why the shift in binational management toward a watershed-wide approach is relevant to impacts. The move, reflected in the adoption of IBWC Minute 320 in 2015, expanded cooperation beyond wastewater treatment to include flood control, sediment management, habitat restoration, and integrated watershed planning. The operational logic is that environmental impacts in the Tijuana River basin are shaped by the combined effects of wastewater flows, storm-driven surges, sediment transport, and the physical condition of the river corridor and coastal receiving waters. A narrow focus on treatment capacity alone can reduce some discharges, particularly in dry weather, but it does not fully address the pathways that transmit pollution during system stress. The environmental impacts therefore remain a function of both infrastructure performance and watershed conditions.

Economic impacts are present throughout, even when they are not always expressed in fiscal terms. Beach closures affect local economies that depend on coastal access and recreation. Persistent closures change the expected value of coastal amenities and the viability of businesses linked to tourism and shoreline use. Economic impacts are also felt through the costs of emergency response, the diversion of public resources toward crisis management, and the compliance and litigation burdens that arise when impacts persist. The litigation surge beginning in 2018, including suits by the Cities of Imperial Beach and Chula Vista and the Port of San Diego, followed by Surfrider and the State of California, reflected not only regulatory frustration but also the real costs borne by local jurisdictions and communities. Even where the litigation is formally directed at specific obligations and permits, it is an indicator that impacts have become sufficiently severe and persistent to justify sustained legal action.

The surge of flows and pollution impacts on a wider range of communities in recent years has led to a renewed focus on addressing the wider underlying problems, which the Trump Administration and EPA have sought to fast-track and to secure a comprehensive and durable solution for, and is estimated to be completed by 2027. However, much of this depends on cooperation with Mexico and coordinating improvements on the Tijuana side of the border, as the majority of flows are not captured by wastewater infrastructure. Current tensions on migration can be a complicating factor, which the current administration has sought to uses as leverage to speed up results.

Legal, Institutional & Governance Frameworks

Management of the Tijuana River pollution crisis is primarily a governance problem, not an engineering challenge. The watershed is shared, but legal authority, budgets, operating responsibilities, and liability are divided by a border. The legal structure began with the 1944 U.S.–Mexico Water Treaty, which created the International Boundary and Water Commission (IBWC) in the United States and its counterpart, CILA, in Mexico. The Treaty does not supply modern water quality standards, but it does provide durable institutional standing and directs the Commission to give preferential attention to border sanitation. In practice, the Treaty's role is to authorize a binational channel that can persist across political cycles, while the operational content is negotiated through the IBWC's Minutes process.

Minutes function as the system's implementing instruments. They translate broad treaty obligations into specific commitments, work plans, and institutional arrangements that agencies can then execute. Their value is procedural as well as substantive. They establish a venue for joint technical work, define roles across agencies, and create shared expectations that can be monitored over time. This matters in a basin where problems are highly variable and often event-driven, and where responsibility is dispersed across federal, state, and local actors, in both countries. Over time, the Minutes process has also widened in scope from discrete wastewater fixes toward basin-wide coordination, in the aim of a 'comprehensive solution', reflecting the reality that wastewater, stormwater, sediment, and solid waste move through the same channels and can defeat narrowly scoped interventions.

Domestic law provides the second pillar of governance. On the U.S. side, the Clean Water Act, California water quality laws, and National Pollutant Discharge Elimination System (NPDES) permitting regulate discharges associated with U.S. facilities and outfalls. These requirements shape what USIBWC can legally discharge and when, and they create enforceable compliance obligations that operate independently of binational diplomacy. Litigation by cities and nongovernmental organizations has acted as a enforcement mechanism when diplomatic processes and capital planning have lagged, shifting the debate from general intent to performance and deadlines. This dynamic creates structural tension in a transboundary setting. U.S. regulators and courts can compel U.S. agencies, but they cannot directly compel Mexico-side system performance that determines what reaches the border.

Mexico's legal and institutional responsibilities sit in a different structure. Collection, pumping, and treatment are largely municipal and state utility functions, overseen by federal and state environmental and water authorities. Fiscal constraints and fragmented accountability have historically made sustained operations and maintenance difficult, even when capital projects are promised. The resulting asymmetry is a persistent governance constraint. The U.S. can pressure for faster outcomes, but delivery depends on Mexico-side infrastructure and operating decisions that are shaped by domestic budgets and institutional capacity, which have historically been constrained.

The institutional story over the past decade reflects a gradual shift from episodic problem-solving toward a more formalized governance architecture. Minute 320 in 2015 signaled a move toward integrated watershed management through a Binational Core Group and technical work groups with mandates spanning water quality, wastewater discharges, flood control, sediment, and solid waste. Later instruments translated that planning posture into an implementation posture. Minute 328 in 2022 and subsequent political commitments in 2025 sought to lock in project lists, timelines, and monitoring expectations, while clarifying accountability for recurring failures such as incomplete incident reporting during maintenance and repair events. The two governments have been moving from a posture of shared recognition to one that emphasizes defined deliverables, verification, and protocols that reduce ambiguity over who knew what, when, and what actions followed.

This framework remains constrained by the same structural reality that produced the crisis to begin with. The basin is transboundary, but the institutions that must act are not. Progress depends on synchronizing appropriations, permitting, procurement, construction sequencing, and long-run operations across jurisdictions that answer to different legal and political incentives at different time intervals. Minutes can narrow that gap by specifying obligations and monitoring, and domestic laws can raise the costs for delay, but neither can fully substitute for sustained binational execution and discipline.

Mechanisms of Enforcement and Capital Mobilization

The institutional evolution discussed above was further accelerated by legal and fiscal interventions that converted framework agreements into binding obligations. The 2018 surge in litigation transformed the Clean Water Act from a regulatory backdrop into an active enforcement instrument. The intervention of the State of California through the Regional Water Quality Control Board effectively raised the political and compliance costs of diplomatic lag, shifting discourse from general intent to performance against rigid benchmarks. The resulting 2022 settlement functions as a governance anchor. It insulates long-term infrastructure goals from political volatility and ensures baseline accountability that outlasts individual administrations.

The 2020 USMCA Implementation Act provided fiscal backing to institutional intent by earmarking US$300 million for polluted cross-border flows and placing the EPA at the center of capital planning. This legislative move addressed the primary constraint of the Treaty system by tethering binational mandates to U.S. budgetary authority. In transboundary management, financial authority is the ultimate determinant of whether a commitment is implementable or merely aspirational.

This capital mobilization enabled the transition from the planning posture of Minute 320 to the execution-oriented agenda of Minute 328. The subsequent 2025 Memorandum of Understanding sharpened this posture further, moving beyond slow-motion capital planning toward accelerated delivery with real-time monitoring and joint contingency protocols. These mechanisms attempt to bridge the information gap that has historically hindered emergency responses.

The trajectory demonstrates that resolving a transboundary crisis requires synchronizing disparate levers of power. The Treaty and its Minutes provide the necessary binational venue. Domestic litigation and national funding compel the transition from coordination to delivery. Progress is found in this sequence: converting shared recognition into binding settlements, backing those settlements with appropriated capital, and sustaining the result through rigorous, multi-year compliance frameworks. Without this alignment of diplomatic process, legal pressure, and fiscal commitment, infrastructure planning remains detached from execution capacity.

IBWC Minutes

Across 6 decades, the IBWC Minutes trace a consistent and repeating story arc—short-term emergency measures evolve into large capital projects, which prove to be undersized and delayed to implement, followed by repeated "catch-up" efforts as Tijuana's growth and infrastructure wear outpaces system capacity. The problem also broadens from wastewater flows to include sediment issues, trash/solid waste, and failures of cross-border incident reporting.

1) Early emergency responses (1965–1972): prevent immediate coastal/public health impacts

- **1965 (Minute 222):** The Commission documents an *emergency connection* of Tijuana's sewage system into the San Diego County system to address urgent cross-border sewage impacts, including arrangements around use and reimbursement.
- **1972 (Minute 240):** Emergency deliveries of Colorado River water to Tijuana were agreed for a multi-year period to address water shortage, explicitly recognizing that increased water supply drives increased sewage flows and therefore requires attention to sewage treatment/disposal impacts.

2) Formalizing the "border sanitation problem" and setting technical expectations (1985)

- **1985 (Minute 270):** The Minutes characterize the San Diego–Tijuana sanitation problem as an urgent priority and lay out a staged infrastructure approach (disposal/treatment works), including performance expectations tied to coastal receiving water quality (e.g., fecal coliform criteria referenced for coastal waters).

3) The "international solution" blueprint (1990): build bi-national systems; stop transboundary discharges

- **1990 (Minute 283):** A pivotal reframing, with a conceptual plan for a durable, binational solution, positioned at the highest political level and translated into an infrastructure and governance program.
- **Mexico will assure "no discharges" of treated or untreated domestic/industrial waste crossing the boundary**, anchoring later implementation debates and accountability.

4) Implementation mechanics: plant capacity, cost-sharing, flow accounting, and the "collection gap" (1997)

- **1997 (Minute 296):** Establishes the *distribution of construction, operation, and maintenance costs* for the International Wastewater Treatment Plant (IWTP) program and confirms key system assumptions: **25 MGD (1100 lps)** treatment scale is central, with ocean outfall completion anticipated later (1998 timeframe).
- The Minute gets operationally specific: Mexico's **capital contribution** and **O&M payment structure** are defined (including quarterly payments and an O&M unit cost basis), and flow measurement/accounting is treated as essential. Importantly, the Minute acknowledges the persistent failure: even with treatment capacity, **incomplete capture/collection** (e.g., sewage entering storm drains/canyons) can keep cross-border impacts alive—so conveyance and source control are as critical as treatment.

5) Parallel works in Mexico to "close the loop" (Dec 1997)

- **1997 (Minute 298):** Recommends construction of *parallel works* to complement the IWTP system, including conveyance and an ocean discharge configuration and **rehabilitation of the San Antonio de los Buenos WWTP (SAB)** as part of a more resilient, binational disposal strategy.
- This Minute is notable for explicitly linking border sanitation outcomes to specific tributary/canyon pathways and coastal discharge logistics—i.e., designing around the real routes pollution travels.

6) A strategic pivot: secondary treatment in Mexico to address regulatory/permit limits (2004)

- **2004 (Minute 311):** Recognizes that advanced primary treatment/discharge realities (including permitting pressures) create constraints, and advances a concept to achieve **secondary treatment in Mexico** for flows affecting the Tijuana River area, with U.S. statutory funding authority referenced (up to **$156M**) and planning assumptions that push needed treatment capacity well beyond 25 MGD.

7) Broadening the frame: basin-wide transboundary issues and governance (2015)

- **2015 (Minute 320):** Establishes a **Binational Core Group** and work groups to structure cooperation not only on wastewater, but also **flood control, sediment, solid waste, and watershed management**, with defined tasks (prioritization, cost identification, funding pathways, monitoring).

8) Current (2025): acknowledge chronic drivers, prioritize notification, capacity expansion, O&M durability

- **2025 (Minute 333):** Explicitly states that a comprehensive solution has been difficult due to **accelerated population growth** and **depleted sanitation infrastructure**, and calls for actions spanning wastewater, sediment, and solid waste.
- It highlights a practical governance gap: **planned maintenance/outages and repairs** can trigger discharges that are *not routinely reported* under existing spill protocols, prompting a push for an updated binational notification protocol.
- It also lists concrete proposed actions—e.g., feasibility for an **ocean outfall at SAB**, **expanding SAB capacity (18.26 → 43.37 MGD)**, a new **Tecolote–La Gloria WWTP (3 MGD)**, and creating an **O&M account** framework—signaling an emphasis on long-term operability, not only construction.

What is immediately noticeable is not just the persistence of the problem since the 1960s, with the same issues of accelerating urban growth not being properly accounted for, but that even the last 20-25 years has seen the same targets and discussions around 25 MGD, or matching this within Mexico, and the need to expand to 50 MGD, are still being discussed. Meanwhile, more and more pipes and infrastructure keep failing in Tijuana, and sewage flows are up to 80 MGD or more. Minute 311 from 2004 notes the US$156 million in funds from the U.S. Congress to build facilities in Mexico, adding 25 MGD across the border to pair with the primary treated effluent from the SBIWTP. Two decades later, this concept did not get built and strategies shifted to greater U.S.-side secondary treatment.

Instead of building a new plant in Mexico with that money, the U.S. pivoted. Approximately US$94 million was eventually appropriated and used to build secondary treatment modules at the existing SBIWTP on the U.S. side, which were completed in 2011. The remaining authorized funds effectively vanished back into the Treasury because the specific project they were meant for (Bajagua) ceased to exist. This has been a repeating theme of funds requested, appropriated, but the pollution problem remaining the same, to the frustration of residents.

Infrastructure Solutions & Finance

Efforts to reduce transboundary wastewater flows from Tijuana into San Diego have followed a consistent infrastructure logic. Build interception and treatment capacity, upgrade conveyance so flows reliably reach that capacity, and stabilize operations so the system performs under routine conditions and during surge events. These steps have been pursued through binational agreements and with U.S. and Mexican investments. The constraint has been less a lack of plans than a recurring mismatch between fragile and underinvested upstream systems, highly variable wet weather inflows that tend to overwhelm, and a financing model that has tended to deliver upgrades in episodic bursts rather than as sustained binational asset management, leaving core drivers such as rapid urban growth and storm surges only partially addressed, if at all.

On the U.S. side, the core physical asset remains the SBIWTP. Its prior permitted secondary treatment scale is 25 MGD that has repeatedly faced influent surges, debris loads, and compliance stress during high flow periods. The current operating reality reflects the interim workarounds required when inflow outruns treatment capacity. California regulators at the Water Resources Board report that USIBWC has complied with a 35 MGD monthly average flow limitation under Cease and Desist Order R9-2025-0139, with average monthly flows of 29.22 and 29.34 MGD in October and November 2025. Meaning they are below the processing cap that has been placed by the order. In addition, the EPA notes that the 10 MGD interim expansion was completed on August 28, 2025 and the facility is capable of handling 35 MGD. This operating posture reduces near-term overflow pressure but it does not resolve the long-run mismatch between average design limits, peak event inflows, and the persistent Mexico-side sources that never reach the plant.

The financing focus today is a large rehabilitation and expansion program intended to restore reliability and double average treatment capacity. USIBWC describes a progressive design-build scope to expand SBIWTP to 50 MGD average flow, with a 75 MGD peaking factor, with an estimated total cost of ~$600 million and secured funding of $650 million. The delivery structure is staged. USIBWC's describe an initial $42.4 million phase for full design, awarded to PCL with Stantec as designer, with construction expected to proceed through subsequent packages as design matures and funding is executed. In September 2024, EPA formally transferred USMCA funds to USIBWC for the SBIWTP Rehabilitation and Expansion Project, tying the plant expansion directly to the U.S. federal funding stream created to address transboundary pollution.

Mexico-side infrastructure is critical to achieving planned outcomes and ensuring the credibility of the overall investment strategy. Minute 328 framed the program as a binational portfolio—not just a single plant expansion —with a $474 million investment plan. This includes U.S. work at SBIWTP paired with Mexico-side treatment and conveyance: a new treatment plant at San Antonio de los Buenos (SAB) and collection system improvements. Mexico's foreign ministry describes Minute 328 as 17 sanitation projects across San Diego and Tijuana over 5 years. However, Mexico's funding commitment faces serious challenges. While Mexico agreed to provide $144 million, only 40% had been committed by 2025, and the 2025 Mexican budget allocated zero funds for Tijuana wastewater infrastructure. For financial tracking, the $300 million USMCA commitment should be counted as part of the U.S. share of the Minute 328 portfolio, not as a separate additional layer.

EPA's Comprehensive Infrastructure Solution outlines the system components and their $627 million capital cost. The plan addresses sewage in canyon flows, coastal discharges via San Antonio de los Buenos Creek, and wastewater in the Tijuana River through five elements: expanding the existing U.S. plant, building a new treatment facility on Mexico's side at SAB, conveying canyon flows to the expanded plant, repairing Mexico's sewer system, and constructing a facility to divert and treat up to 60 MGD of Tijuana River water.

The total 40-year lifecycle cost reaches $1.6 billion, including $26 million in annual operations and maintenance. The financing challenge extends beyond securing capital appropriations—it requires establishing a sustainable operations model to fund maintenance, utilities, staffing, and infrastructure renewal across two jurisdictions with different fiscal capacities.

System sizing is also constrained by hydrology and by coastal discharge pathways that bypass the river interception architecture. EPA reports that wet weather events cause an average of 109 million gallons per day of transboundary flows at the Tijuana River point of entry, and it describes San Antonio de los Buenos Creek as releasing 50 MGD to the Pacific each day, with a significant percent characterized as being raw sewage. These numbers show why expanding the SBIWTP is necessary, but hardly sufficient. A 50 MGD average capacity plant with a 75 MGD peaking factor can absorb more captured flow and provide buffering during moderate surges, but it cannot be expected to eliminate all cross-border impacts when wet weather volumes and coastal discharge routes remain this large.

The funding architecture now relies on U.S. federal appropriations and transfers, paired with Mexico-side commitments that must be financed through Mexico's own federal and state channels. EPA's own transition materials indicate that the Border Water Infrastructure Program is expected to be the primary mechanism to fund the long-term projects selected for USMCA purposes. The Mexico-side pipeline is increasingly described in terms of discrete projects with sequencing and start dates. EPA's quarterly public update states that Mexico expects to secure funding for several projects that would begin construction in 2026, and it also notes active initiation of priority items such as Parallel Gravity Line rehabilitation planning and collection system projects. The same update flags an emerging focus on operations and maintenance accounts through a binational workgroup that includes EPA, SEMARNAT, CONAGUA, NADBank, and both IBWC sections. That shift matters because the basin's historical failure has been not only under built capacity, but also fragile uptime driven by deferred maintenance and weak operating resilience.

The financing story over the past quarter century also includes a cautionary episode that shaped today's emphasis on U.S.-side delivery. Public Law 106-457 authorized up to $156 million tied to addressing treatment of sewage emanating from the Tijuana River area in Mexico, but the associated Mexico-facility approach did not become a durable build path and the compliance solution ultimately consolidated around U.S.-side secondary treatment and, now, U.S.-side rehabilitation and expansion. The lesson is not simply that commitments failed, it's that delivery risk rises when the funding instrument is not aligned with a clear implementing entity, enforceable milestones, and an operations plan that can survive political turnover.

The long-term infrastructure system now being assembled has three financial requirements. It needs enough capital to rehabilitate and expand SBIWTP, while adding conveyance and diversion works that keep flows out of the river during both routine and surge conditions. It needs Mexico-side capital to repair collectors, pump stations, and treatment works that determine whether sewage is captured at the source rather than spilling into the river and coastal zone. It needs a binational operations model that funds maintenance and reliability, not only ribbon-cutting. The public numbers suggest meaningful momentum, including secured U.S. funding for the core U.S. plant program and a defined binational project portfolio under Minute 328. The remaining gap is execution discipline across multiple years, with sustained appropriations and operating funding that match the scale and variability of the flows the system is being built to manage.

Funding Source	Amount	Status / Purpose
USMCA (2019/2020)	**$300 Million**	Secured for the expansion of the plant from 25 to 50 MGD.
FY2024 Base Budget	**$156 Million**	Annual construction funding for the IBWC (approved March 2024).
2024 Supplemental	**$250 Million**	Added by President Biden and Congress in Dec 2024 for urgent repairs.
Total Recently Secured	**~$706 Million+**	Combined funds currently available for the plant.

Where we are now

The combined infrastructure portfolio agreed in December 2025 reflects both progress and persistent constraints. To summarize, as of today, the infrastructure response centers on expanding treatment and conveyance capacity on both sides of the border. The combined approach targets increased capture, diversion, and processing of transboundary flows through rehabilitation of aging systems and construction of new facilities.

U.S.-side infrastructure:

- SBIWTP capacity increased from 25 MGD to 35 MGD in August 2025. (WWD Mag)
- Progressive design-build contract underway to reach 50 MGD average capacity with a 75 MGD peak hydraulic flow capacity by December 2027 under a $600 million program. (EPA)
- Five canyon collector systems at the border capture dry-weather transboundary flows with combined capacity of approximately 23 MGD. (SD Parks)

Mexico-side infrastructure:

- San Antonio de los Buenos (SAB) treatment plant operates at 18 MGD and is undergoing rehabilitation. (Coronado Times)
- Arturo Herrera and La Morita treatment plants provide combined capacity of approximately 20 MGD.
- (San Diego Surfrider)
- Parallel Gravity Line rehabilitation initiated in 2025 at $8.42 million. (EPA)
- Diversion of 10 MGD of treated effluent from Arturo Herrera and La Morita to Rodriguez Dam at $13.3 million (The Coronado News)
- Planned 2027 projects include upgrades to Arturo Herrera and La Morita, rehabilitation of the Antiguo Force Main, International Collector Phase II, and enclosure of the open channel from PB1 to San Antonio de los Buenos. (Coronado Times)

Combined current treatment capacity across both sides of the border is approximately 73 MGD, against estimated daily flows exceeding 50 MGD of untreated sewage. The population of ~1.7 million in Tijuana either not connected to centralized wastewater collection systems or overburdening the current system remains the fundamental constraint on system performance and tackling the wider wastewater pollution issue in the Tijuana River and Estuary.

Success will depend on closing the collection gap in Tijuana much faster than population growth widens it. Treatment capacity expansions on both sides of the border remain subordinate to the core constraint: over 2.3 million people and growing, with many unconnected to centralized systems, discharging directly into canyons and ravines. Mexico-side execution capacity determines whether planned infrastructure investments translate into reduced transboundary flows, and this capacity is shaped by domestic fiscal constraints and institutional fragmentation that U.S. policy levers cannot directly control, and heavy handed tactics will only get so far.

Storm frequency and intensity under climate change will continue to expose system limits and amplify cross-border impacts, raising the performance necessary for any durable solution. Long-term outcomes will be determined less by capital commitments than by sustained operations funding, binational incident reporting discipline, and the ability to synchronize infrastructure life-cycle management across jurisdictions with unequal resources and political incentives that do not naturally align.

Sources for Further Learning

International Boundary and Water Commission, United States and Mexico – https://www.ibwc.gov/

California Water Boards - San Diego Regional Water Board – https://www.waterboards.ca.gov/sandiego/

San Diego Coastkeeper – https://www.sdcoastkeeper.org/tijuana-river-sewage/

American Rivers – Most Endangered Rivers 2025 – https://mostendangeredrivers.org/river/tijuana-river/

The River Radius – Tijuana River Series (2025) – https://www.theriverradius.com/

Key Reports

[1] International Boundary and Water Commission – IBWC Minutes – https://www.ibwc.gov/minutes/
[2] US EPA – USMCA Tijuana River Watershed Public Updates – https://www.epa.gov/sustainable-water-infrastructure/usmca-tijuana-river-watershed-public-updates
[3] San Diego State University – Tijuana River Contamination from Urban Runoff and Sewage: A Public Health Crisis at the Border – February 13, 2024 – https://www.sdsu.edu/news/2024/02/public-health-crisis-unfolds-as-tijuana-river-sewage-contamination-escalates
[4] San Diego Coastkeeper – *Understanding the Tijuana River Sewage Crisis – An Overview of Causes and Consequences* – May 2, 2024 – https://www.sdcoastkeeper.org/blog/tijuana-river-sewage-crisis-causes-consequences/
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[9] NBC San Diego – *US and Mexico sign 'Minute 333' to push long-term fix for border sewage crisis* – December 16, 2025 https://www.nbcsandiego.com/news/local/us-and-mexico-sign-minute-333-to-push-long-term-fix-for-border-sewage-crisis/3946801/
[10] Forbes – *Is Organized Crime Activity Threatening Tijuana's Nearshoring Boom?* – February 15, 2024 – https://www.forbes.com/sites/nathanielparishflannery/2024/02/15/is-organized-crime-activity-threatening-tijuanas-nearshoring-boom/
[11] Uniradio Informa – *Cobertura de servicio de agua potable en Baja California es del 97.6%* – August 8, 2025 – https://www.uniradiobaja.com/gobierno/video-cobertura-servicio-agua-potable-baja-california-976-seproa-n835218

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