

# ENGR 399

- **Open the in-class quiz now...** today, quiz questions will be distributed throughout the lecture. Quiz access code = hello
- Asynchronous assignment 2 is posted, and is due by Sunday midnight. There are three options... do ONLY ONE of the three options
- If you turned in Week 2 in-class assignment but didn't like your grade ... come to my office hours Thurs 11:30-12:30 in Adelbert 209... if you can effectively answer the questions in person you will get full credit!

Last week I went to the Marian K Shaughnessy Nurse Leadership Academy in Palm Springs, California



CASE WESTERN RESERVE  
UNIVERSITY  
Frances Payne Bolton  
School of Nursing  
**Marian K. Shaughnessy  
Nurse Leadership Academy**

## Executive Summary

### VISION

Transformation of health globally through nursing leadership.

### MISSION

To empower nurse leaders to advance health globally.

### CORE VALUES

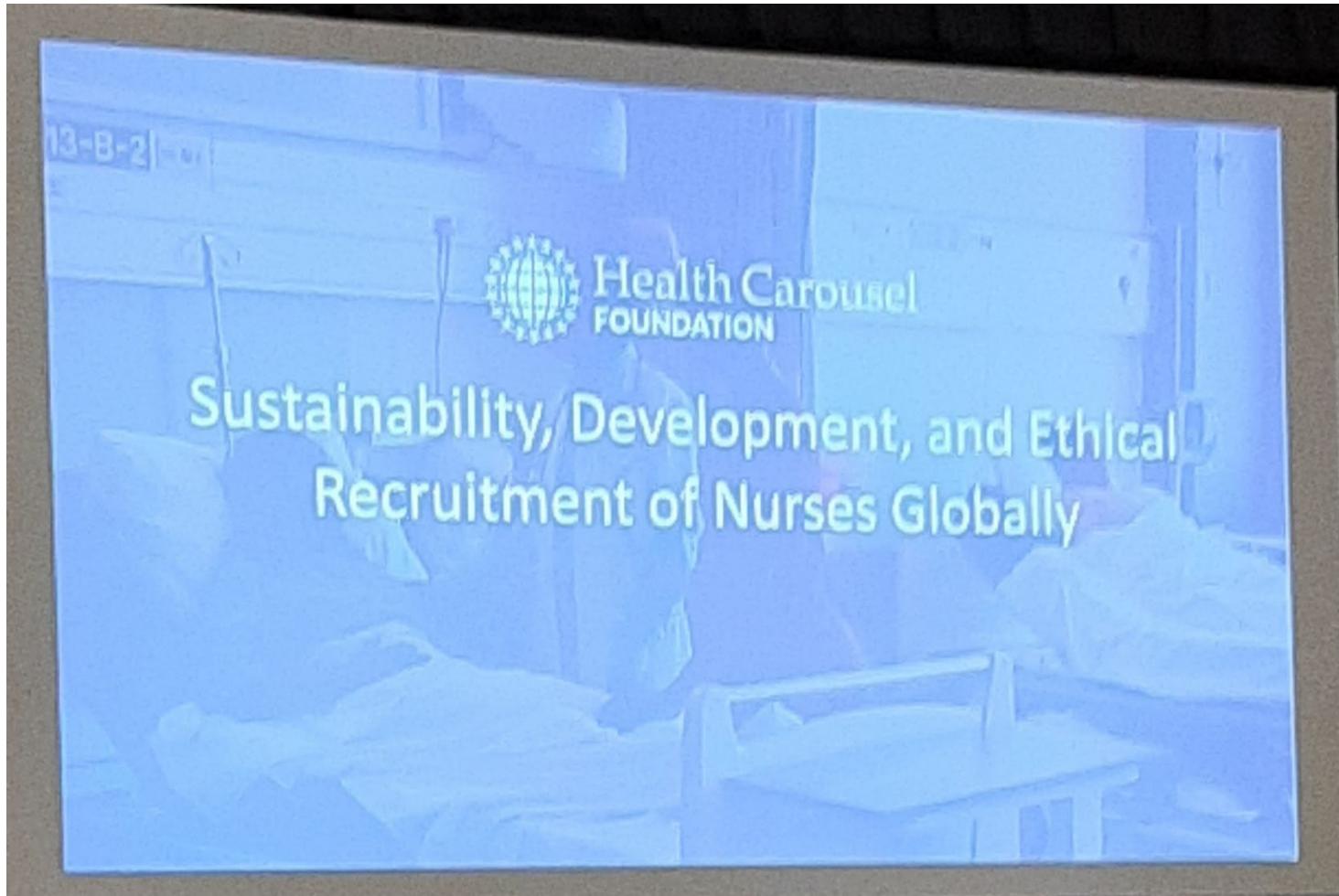
- INTEGRITY
- DISCOVERY
- ACCOUNTABILITY
- INNOVATION
- GLOBAL CITIZENSHIP

This talk was by a company that recruits nurses from lower-income countries to work in US hospitals

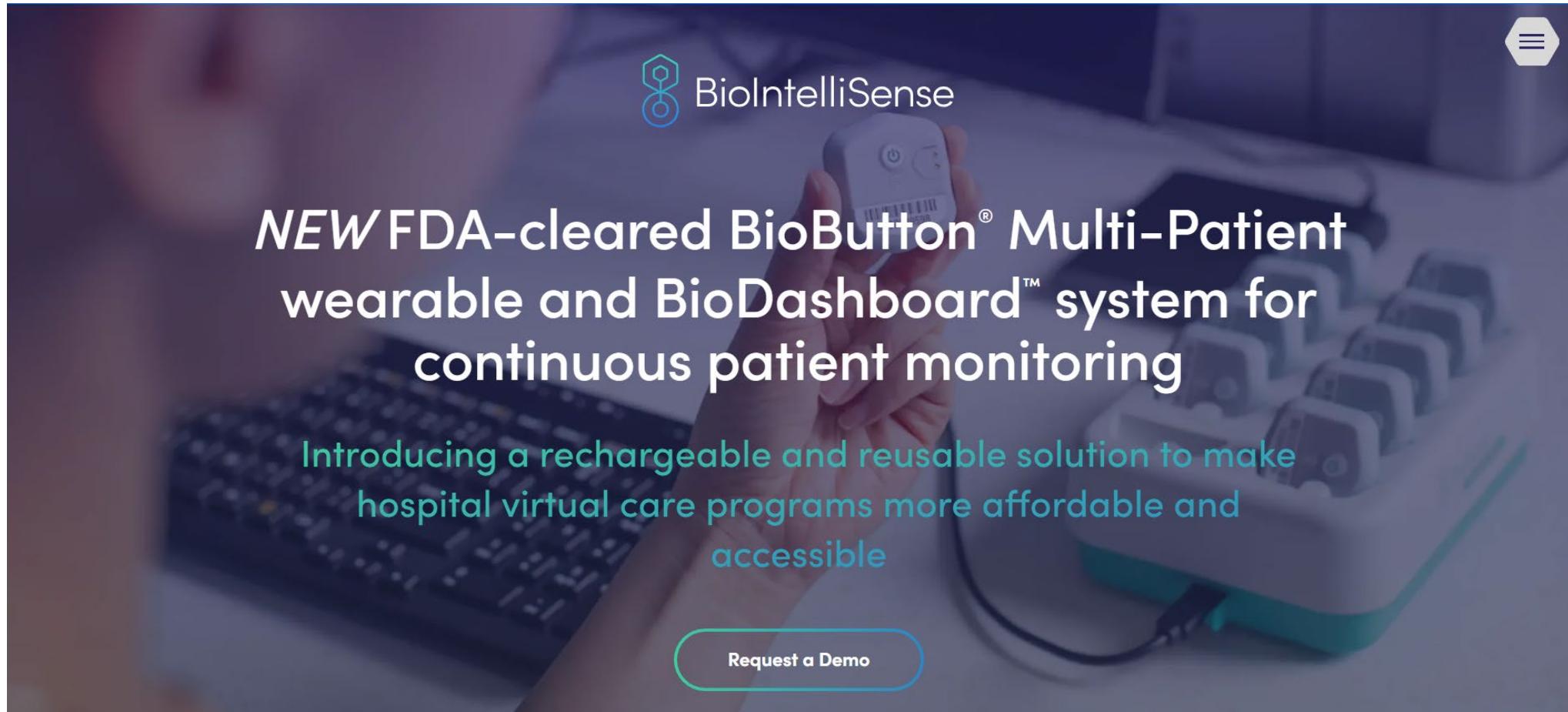
What are the ethical issues?

What are consequentialist and deontological views?

The company is taking the ethical issues seriously



# This company gave a presentation at the academy



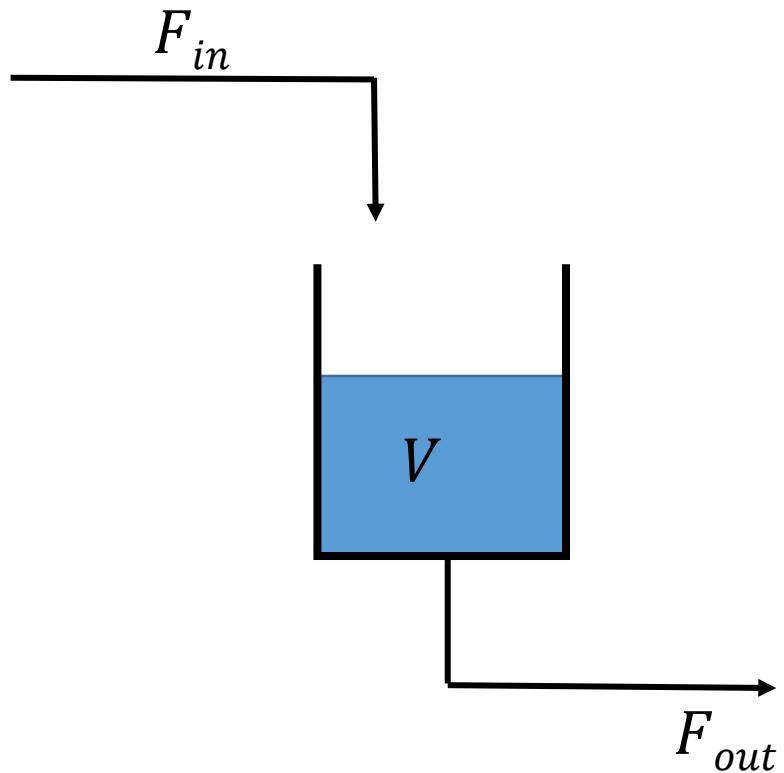
Relationship to our course (Async 1A; Async 2C):

They are developing pulse oximetry capabilities, and their talk addressed the historical problems with this technology not working well for dark skin, and their efforts to overcome this problem

# This lecture... what we will cover

1. Ethical ownership and distribution of natural resources
2. Does technology that redistributes resources "have politics"?
3. Is it useful to distinguish "intentional" and "unintentional" harms from technology?
4. The "imperious immediacy of interest" and unforeseen consequences

# The engineering analysis underlying today's lecture



What is the differential equation describing the  $V$  change with time?

$$\frac{dV}{dt} = F_{in} - F_{out}$$

$V$  Volume ( $\text{m}^3$ )

$F_{in}$  Flow rate in ( $\text{m}^3/\text{s}$ )

$F_{out}$  Flow rate out ( $\text{m}^3/\text{s}$ )

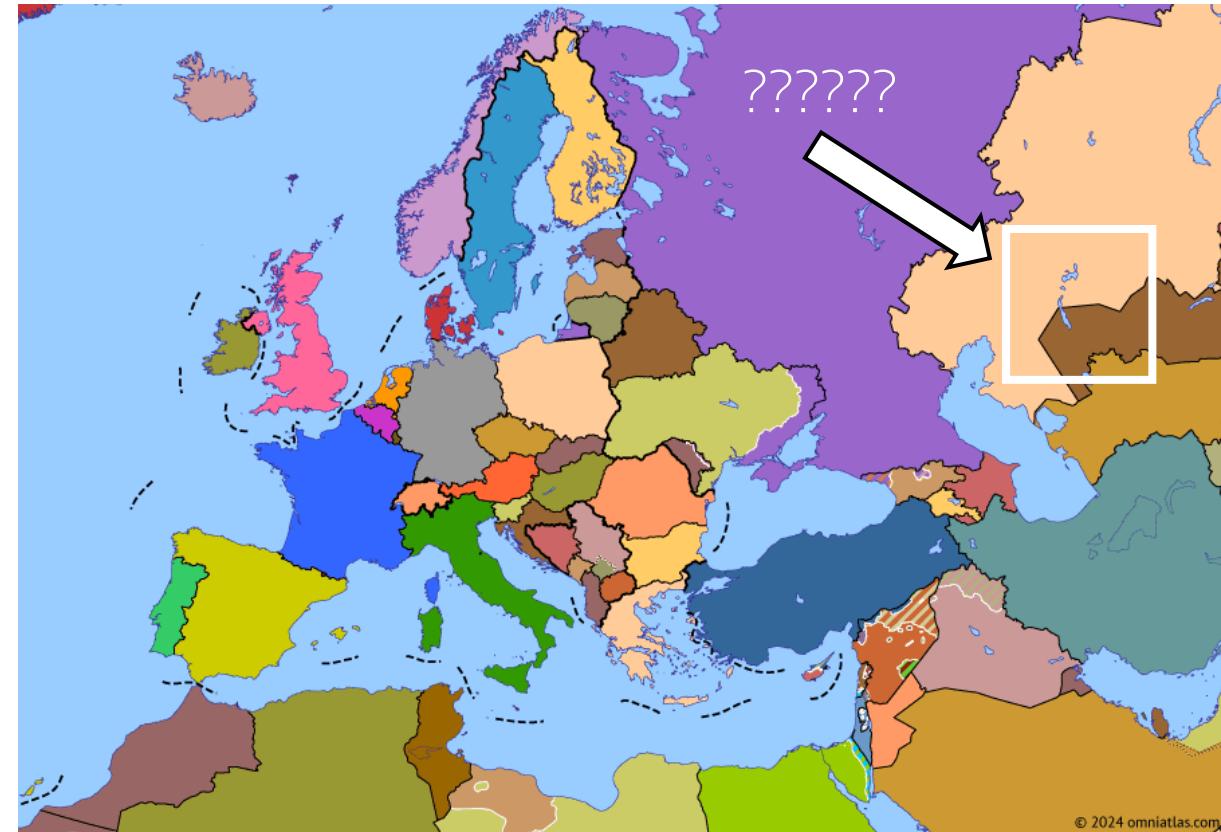
(taken from my lecture in ECHE 367, *Process Control*)

# What's different? (besides political borders)

1963

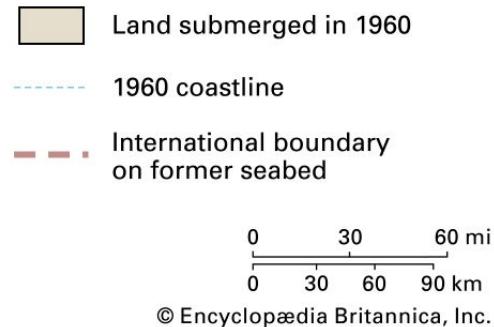


2024



# THE SHRINKING ARAL SEA 1960–2014

It was once the world's fourth largest body of inland water but has shrunk to a fraction of its former size because of the diversion of its inflowing rivers for agricultural irrigation.



© Encyclopædia Britannica, Inc.



# Historical context to understand the situation

## Russian Empire



In 1800's, the Russian Empire conquered and colonized Central Asia

# Union of Soviet Socialist Republics (USSR): 1922-1991



The Russian Empire was overthrown in 1917. After a few years of civil war, the USSR was formed in 1922

The USSR was dominated by Russia, but included 14 other republics including Kazakhstan, Uzbekistan, Turkmenistan

The USSR broke up in 1991, and the republics became independent countries

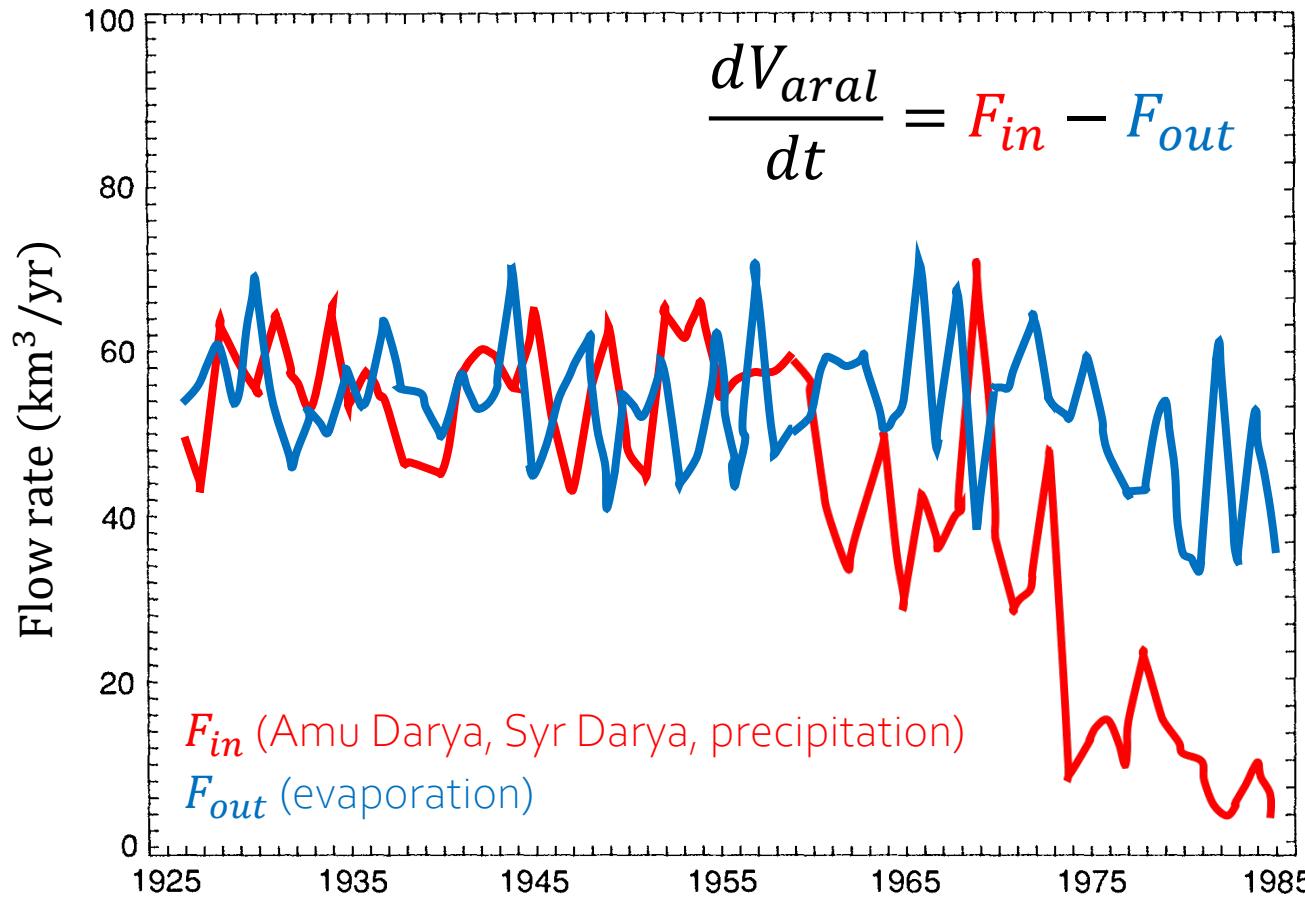
# The USSR decided to turn desert into cotton farms



This area is desert...

Diverting water from the Amu Darya and Syr Darya for irrigation turned the desert into one of the highest cotton producing regions in the world!

# Let's do our engineering analysis for the Aral Sea



What happens when  $F_{in} < F_{out}$ ?

$$F_{in} < F_{out}: \frac{dV_{\text{aral}}}{dt} < 0$$

*The sea dries up!*

Flow rate data from:  
P. P. Micklin, *Science* **241**, 1170 (1988).

What did the Aral Sea look like in the 1960s?



@Karakalpak24



I found sea shells in this desert!



...and ships!

April 2024: Atmospheric dust conference in Nukus, Uzbekistan  
(Nukus is the closest city to the Aral Sea)







T-

EPULLA AYLVONY





Second Central Asian Dust Conference (CADUC-2)

15-22 April 2024, Nukus, Uzbekistan

Welcome to Uzbekistan!

Karakalpak State University

Day in the Karakalpak Steppe





# A conference focus: impact from the desertification of the Aral Sea



Dr. Bakhitjan Khabibullaev  
Director, International Innovation Center for the Aral Sea Basin  
Ministry of Ecology and Environmental Protection and  
Republic of Uzbekistan

**WIND AND DUST**

- Another example: on May 27, 2018, salt dust that rose for 18 hours on the territory of the Republic of Karakalpakstan caused the death of many chicks of insectivorous birds. In the city of Nukus, 26 out of 42 chicks in 5 nests of barn swallows and 4 nests of tree sparrows, which were under observation, died due to lack of food, i.e. 61.9%. The reason is that barn swallows and tree sparrows are considered insectivores, and it was noted that these birds were unable to provide food for their chicks during the long period of rising salt dust. On this day, 42 out of 87 sand martin chicks died in the Nukus region due to lack of food, i.e. 48.3%.

# A conference focus: impact from the desertification of the Aral Sea

## **Characterizing land surface dynamics in Aral Sea basin of Uzbekistan using climatic and remote sensing data to project future conditions**

*Ilhomjon Aslanov<sup>1,2\*</sup>, Nozimjon Teshaev<sup>1</sup>, Zafarjon Jabbarov<sup>3</sup>, Christian Opp<sup>2</sup>, Rustam Oymatov<sup>1</sup>, and Geoffrey Henebry<sup>5</sup>*

<sup>1</sup>“TIIAME” National Research University, Tashkent, Uzbekistan

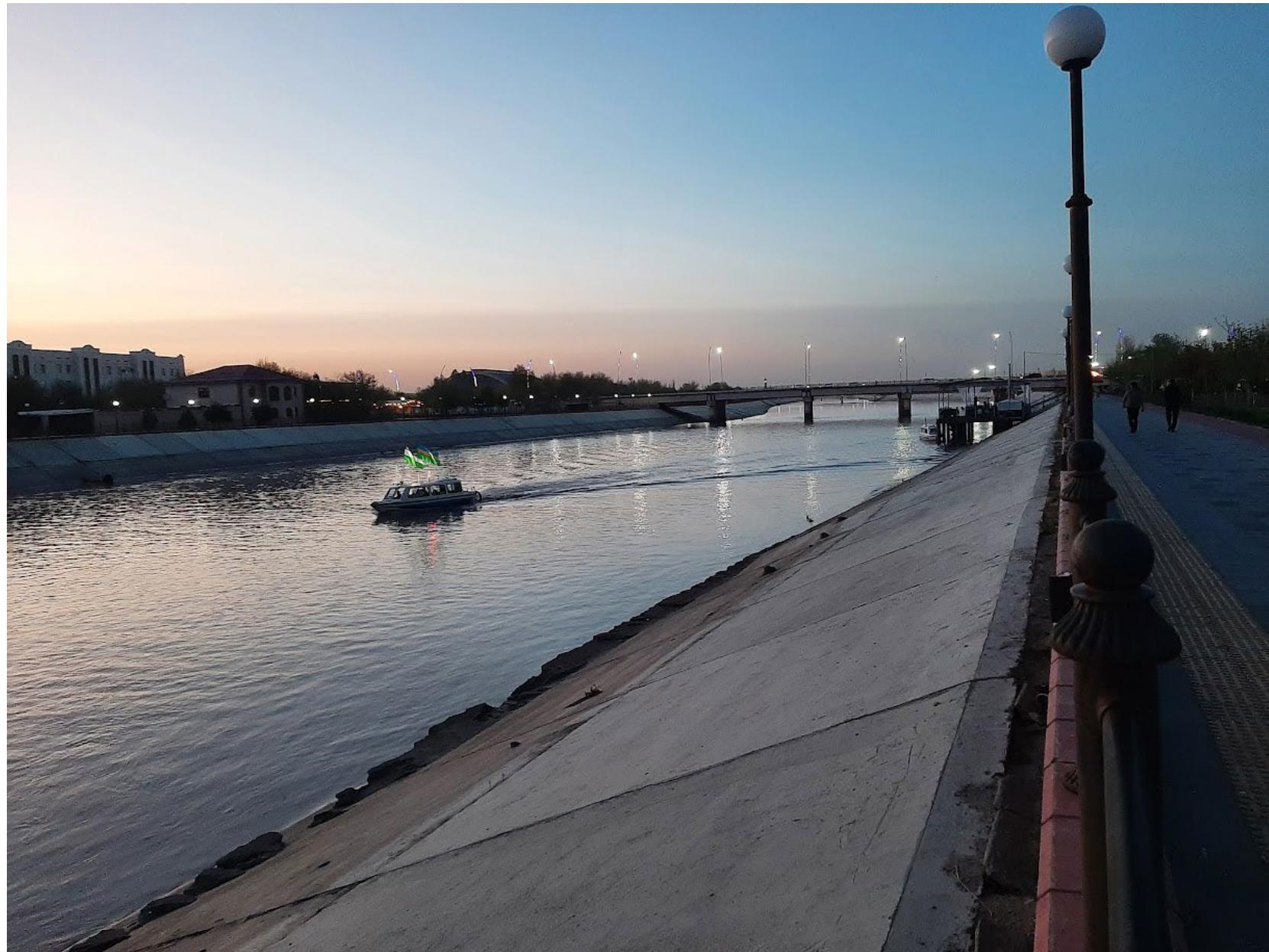
<sup>2</sup> Department of Geography, Philipps University of Marburg, Germany

<sup>3</sup>National University of Uzbekistan, named after Mirzo Ulugbek, Tashkent, Uzbekistan

<sup>5</sup>Department of Geography, Environment, and Spatial Sciences and Center for Global Change and Earth Observations, Michigan State University, East Lansing, MI, USA

Location	km from Aral seabed	$\Delta T$ (1971 to 2020), °C
Muynak	0	3.3
Kungirot	80	2.0
Nukus	150	1.8

Behind my hotel was one  
of the canals that divert  
water from the Aral Sea





# Recall from previous lecture...

## Is the value-neutrality thesis correct?

Consider again the case of guns. You can use a hand gun for many purposes: as a door stop, a paper weight, a decoration in one's house, or an object to stir ingredients in a bowl for dinner—and so on.

But guns weren't designed for these purposes, and they aren't as effective at achieving these ends as other artifacts specifically designed for such purposes. Instead, guns were designed to shoot bullets at ~1,400 mph (depending on the gun) toward a target.

In this sense, the particular design of guns inclines users to use this technology for specific purposes.



# Recall from previous lecture...

**LANGDON WINNER**

## **Do Artifacts Have Politics?**

**IN CONTROVERSIES ABOUT TECHNOLOGY AND SOCIETY, there is no idea more provocative than the notion that technical things have political qualities.**

- Our lecture discussed these ideas in terms of guns. You could say the same thing about other technologies: computers, automobiles, headphones, satellites, microscopes, etc.
- Winner argued against value-neutrality, claiming that some technologies have values ("politics") built into them—these values are inherent in the technologies themselves
- The values of a technology are the result of the design process itself (intentional or inadvertent)
- Philosophers of technology overwhelmingly reject the value-neutrality thesis (but, of course, they might be wrong!)

Q1: Do you think technologies that redistribute resources “have politics”? Explain your answer in the context of the Aral situation.

But that was far away, in Uzbekistan and Kazakhstan.

Can this happen in the US?

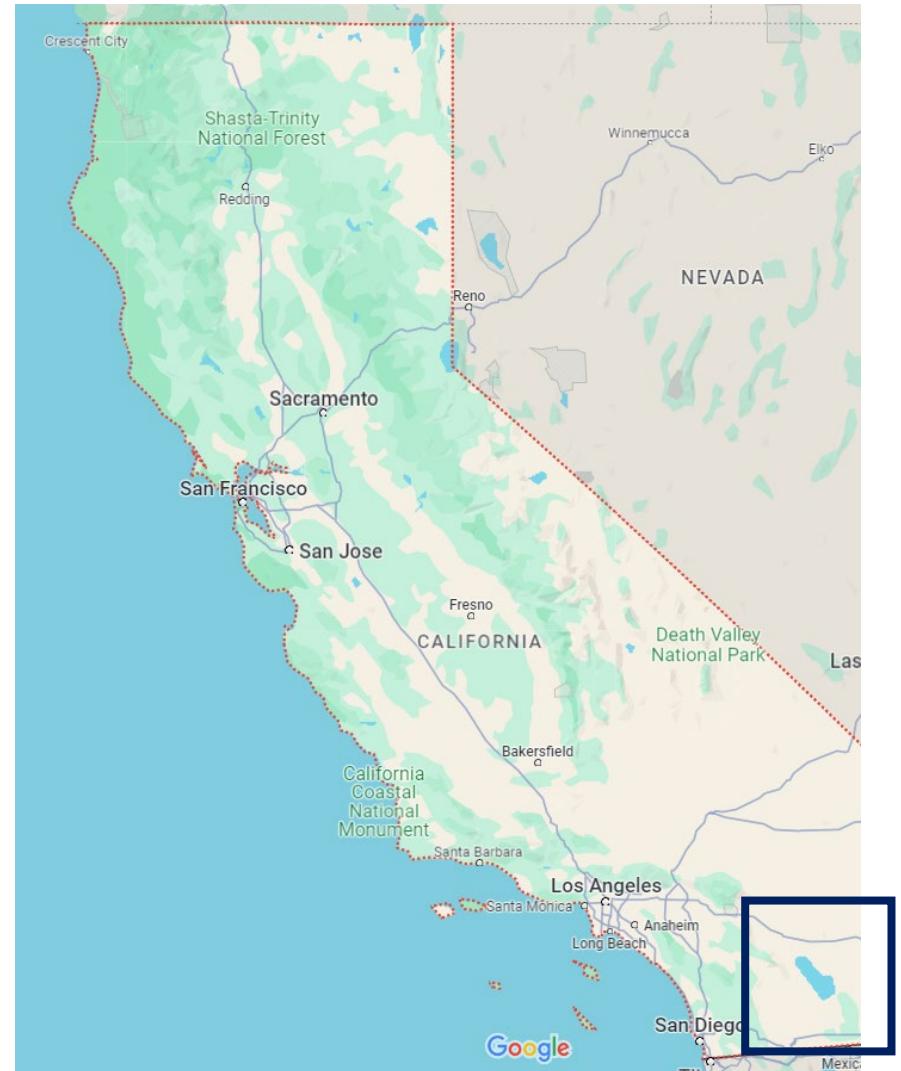
# What's different?

1905



Tulare Lake and Owens Lake have disappeared!

2024



Salton Sea has formed!

# What happened to Owens Lake?



The Advancing City and Tributaries.

Pictorial Cream Sheet (II).

California and the Coast—14 Pages

**The**

LOS ANGELES

**Times**

XXXII<sup>th</sup> YEAR.

THURSDAY, NOVEMBER 6, 1913.—EDITORIAL SECTION.

POPULATION 1,200,000

## GLORIOUS MOUNTAIN RIVER NOW FLOWS TO LOS ANGELES' GATES.

### Los Angeles Investment Company Investigated.

*Federal Authorities Act Under Orders from Washington Chiefs.*

*Complaints that Misleading Statements Have Been Sent Through the Mails by Officials of Elder's Companies to Cause Scrutiny of Books and Possible Rearrangement—Stockholders to Be Protected.*

**F**Ollowing a secret investigation by the Federal authorities of complaints to the effect that officials of the Los Angeles Investment Company have been misleading statements of the rate of return through the United States mails, it is believed that officers of the company will be brought to a trial today. The investigation was ordered by United States Attorney-General Mr. Myron T. Herrick and Postmaster-General Edwards.

The plan of the government officials are twofold. One is to co-operate in every way with leading business men of the city who, it is believed, wish to reorganize the investment company and safeguard the stockholders. The other is to examine closely documents, transfers and instructions of every description to ascertain if there has been any wrongdoing by any of the officers of the company.

It was admitted by the Federal authorities that the man in charge, Mr. Elder, president and general manager of the company, is under fire. He has been generally held responsible for the remarkable rise of the Los Angeles Investment Company during the past year ending in 1913. He now he will be forced to upgrade various factors that have caused the stock to drop from more than twice a share to a quantity of \$1.25 a share.

A level-headed and well-informed business man of the head of a large financial concern, who has had extensive work to do in the affairs of the Los Angeles Investment Company, stated last night that

the company, because it would permit the Federal authorities to inspect its books, has taken steps to start an investigation on the mail route for some weeks past.

#### **ELDER NOT ALARMED.**

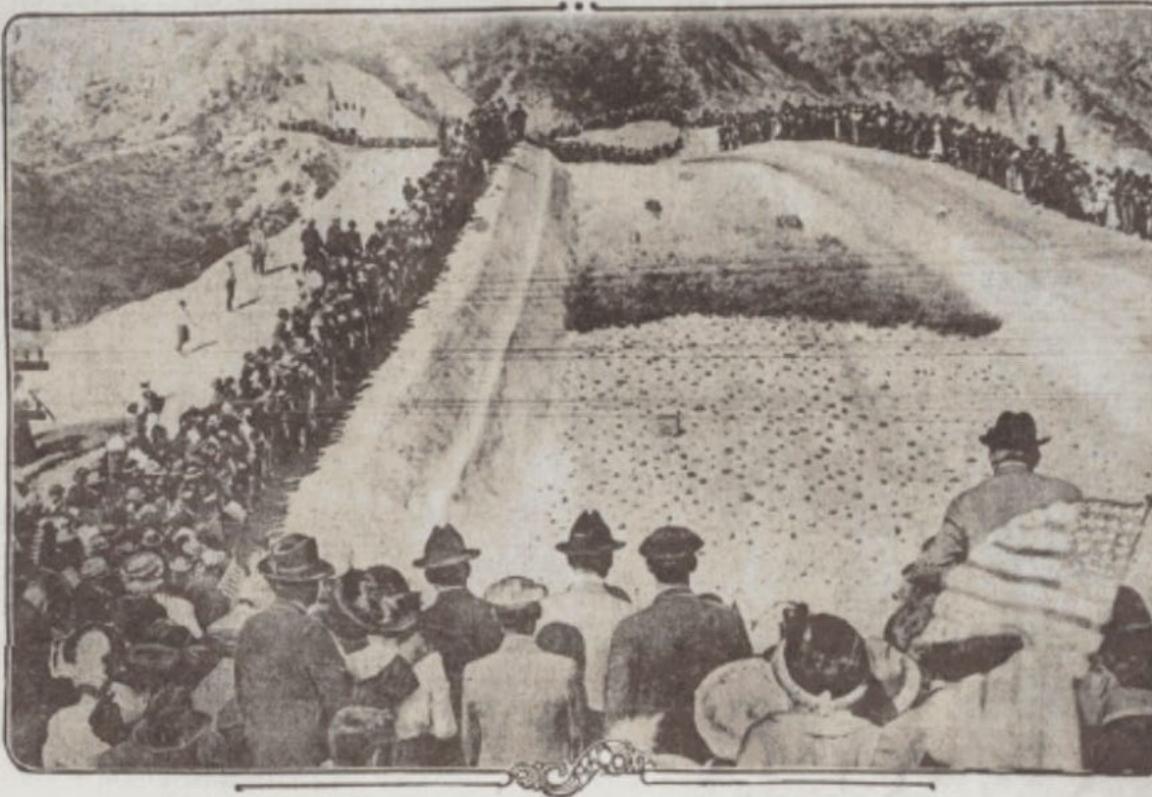
Mr. Elder is not alarmed by any investigation. He said yesterday that he has been fighting serious competition for many years and is willing to do whatever is necessary to drive his interests and his trustees to the maximum and to see he is paid fair rights. He is certainly game and ready to meet any investigation.

He declared he was unable to say whether the present condition of the company which he virtually brought into existence is due to his own mistakes, by advancing his personal interests or by men unfriendly to him personally.

The government officials firmly believe that the investigation will not talk openly for publication and as a rule do not start an investigation in far-reaching in the community without carefully weighing the results.

Beyond confirming the fact that United States District Attorney Edwards and several post office inspectors have been examining the books of the Los Angeles Investment Company, nothing could be learned at the Federal Building yesterday. One source said that Elder may have to give the case over the aid of expert economists, but that the ordinary method of having a committee before the United States Commissioner may be sufficient.

WED President Elder have been associated Secretary W. D. Deeds and Treasurer G. M. Dorte. The three have been nominated for more than sixteen years.



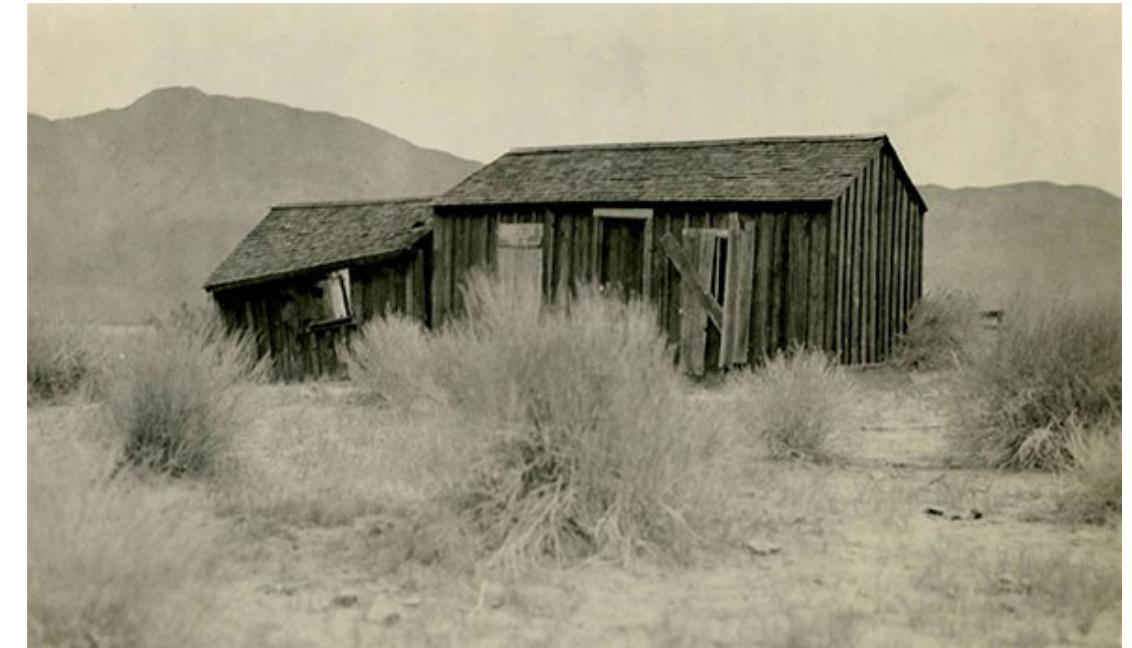
# THIS IS 'THE VALLEY OF BROKEN HEARTS'

## 'WHITE GOLD' CARRIES DISASTER TO PIONEERS OF OWENS RIVER VALLEY

*Here is the fifth of a series of dramatic fact stories of the tragedy that has overtaken the Owens River Valley in Inyo County, where almost the entire population is facing an enforced migration due to the loss of its irrigating water, without which the valley must again become a desert:*

**By C. E. KUNZE**

# Abandoned farms



# 1927: Owens Valley ranchers bomb the aqueduct



## MACHINE GUNS TO HALT DYNAMITE ATTACKS ON LINE

Extraordinary measures to "repulse with deadly force" further attacks upon the Los Angeles aqueduct system in the Owens valley, dynamited twice within 24 hours, in a new war between valley interests and the city, will be taken by the board of water and power commissioners, it was declared today by R. F. Del Valle, president of the board.

While President Del Valle did not so state, it was reported around the city hall that machine guns, gas bombs, automatic rifles and all the weapons of modern warfare be marshaled by the city to protect its water system if necessary.

MAY ASK TROOPS





And many years later...

**THE NEW YORK TIMES. FRIDAY, SEPTEMBER 17, 1976**

## Explosion at California Aqueduct Tied to 'Outsiders' by Residents

By ROBERT LINDSEY

Special to The New York Times

INDEPENDENCE, Calif., Sept. 16—Security patrols were guarding today parts of the 233-mile aqueduct that supplies Los Angeles with 80 percent of its water following a bomb blast yesterday that ripped open a section of the waterway.

Here in the Owens Valley, a Vermont-sized desert flanked by the High Sierras on one side and the Inyo Mountains and Death Valley on the other, people were asking whether the blast was the work of "outsiders," or localites renewing a battle over water that began almost 70 years ago.

Los Angeles won the fight that time, buying up water rights early in this century that made possible the development of a naturally arid coastal basin into the country's third largest city, but leaving this valley with little water for itself.

The Los Angeles Department of Water

no shortage problem because there was ample water stored in downstream.

"We lost a lot of water, 100-million gallons or so, but you'd have to compare this to the amount Los Angeles uses—400-million to 500-million gallons a day," said Duane Georgson, an engineer who supervises aqueduct operations.

### Lack of Impact Statement

When the department increased its underground water pumping more than three years, Inyo County authorities took the agency to court and obtained an order limiting the increase on the ground that it had failed to prepare an environmental impact report required under state law.

"We want to make one thing clear," L. H. Gibbons Jr., district attorney said. "We're not trying to shut water off to the City of Los Angeles. We're trying

## LA aqueduct bomber now works for water agency

by Associated Press | Tue, October 29th 2013 at 5:00 PM



LOS ANGELES (AP) A California man who helped blow up an aqueduct that sent water from Owens Valley to Los Angeles now works for the metropolis' water district, ensuring the waterway is safe.

The [Los Angeles Times](#) reports Wednesday that 54-year-old Mark Berry currently works for the Los Angeles Department of Water and Power. Berry lived in Owens Valley and was only 17 when he and friend Robert Howe stole dynamite and went to the aqueduct in September 1976.

The aqueduct was a symbol of urban poaching as it diverted water from the region to Los Angeles since the early 1900s.

A blast ripped open a spill gate that sent about 100 million gallons of water into bone-dry Owens Lake. Berry was sentenced to 30 days in juvenile detention, while Howe received a 90-day sentence.



"The water diversions that began in 1913 dried up the 110-square-mile Owens Lake, triggering immense sheets of powder-fine, lung-damaging particles that descended on towns downwind. Over the last three decades, the DWP has spent more than **\$2.5 billion** on projects that have reduced dust emissions by nearly 100%."

Langdon Winner, "Do artifacts have politics", *Daedalus* 109 (1980): 121-136.

Indeed, many of the most important examples of technologies that have political consequences are those that transcend the simple categories of "intended" and "unintended" altogether. These are instances in which the very process of technical development is so thoroughly biased in a particular direction that it regularly produces results counted as wonderful breakthroughs by some social interests and crushing setbacks by others. In such cases it is neither correct nor insightful to say, "Someone intended to do somebody else harm." Rather, one must say that the technological deck has been stacked long in advance to favor certain social interests, and that some people were bound to receive a better hand than others.

Q2: Is it useful to distinguish "intentional" and "unintentional" harms from technology? Explain your answer using the LA Aqueduct as the context

# That was a long time ago... can it happen now?

1985



2022



<https://earthobservatory.nasa.gov/images/150187/the-great-shrinking-lake>

# Great Salt Lake "not that far off" from an ecosystem collapse: Toxic dust storms, die-offs loom

As the Great Salt Lake continues to dry up, the ecological future of the region may be bleak

By **ERIC SCHANK**

PUBLISHED JULY 29, 2022 4:33PM (EDT)

## Utah lawmakers consider a pipeline from the Pacific Ocean to the Great Salt Lake

NEWS | OCEANOGRAPHY

### Utah's Great Salt Lake has lost half its water, thanks to thirsty humans

New study suggests consumption—not climate change—is to blame for falling water levels

### Saving the Great Salt Lake could cost billions, House Speaker says

Can this happen in Ohio?



# Sinking a Plan to Sell Great Lakes Water

Ontario company's hope to export Lake Superior water to Asia reveals leaks in international trade rules.

By **Ruth Walker**, Staff writer of The Christian Science Monitor

May 14, 1998, 12:05 p.m. ET | **TORONTO, CANADA**

Canadian businessman John Febbraro's plan to sell part of Lake Superior to Asia has shown that international protections for the Great Lakes are not quite watertight.

Mr. Febbraro, who heads the Nova Group in Sault Sainte Marie, in upper Ontario, was granted a permit March 31 to draw up to 427,000 gallons a day from Lake Superior. He plans to export the water by tanker for sale to thirsty Asians. He doesn't yet have any customers signed up, nor anyone to do the actual pumping. But he insists that he's sticking with his plan, unless and until the United States and Canada agree to a comprehensive ban on commercial water exports.

Environmentalists and free-trade critics say that their worst fears have been realized. "If one Asian shipper and one Canadian water retailer believe it is economically feasible to ship Great Lakes water to Asia, the door is open to putting the waters of all the Great Lakes on the market," US Rep. Bart Stupak (D) of Michigan said last week.

# The Great Lakes Compact



Bans diversion of water out of the Great Lakes Basin, with limited exceptions

## Chicago's \$1 Billion Water Deal Shows Great Lakes Wealth

- Region provides 80% of North America's fresh surface water
- Illinois has a blueprint to grow the \$17 billion water economy



Chicago, Illinois, stands on the banks of Lake Michigan. Photographer: John Zich/Bloomberg



Gift this article

By [Isis Almeida](#) and [Kim Chipman](#)

May 2, 2023 at 7:00 AM EDT

Updated on May 2, 2023 at 12:11 PM EDT

"As American states such as California grapple with harsher and more frequent droughts, the US Midwest is touting its ample water supplies to spur economic growth.

Chicago has just signed a contract valued at \$1 billion to sell its water elsewhere — the first such deal in 40 years — and the city expects more to come."

The Chicago River is at the heart of a current dispute  
*... that has been ongoing for 125 years!*

My daughter at the Chicago River,  
about 15 yrs ago



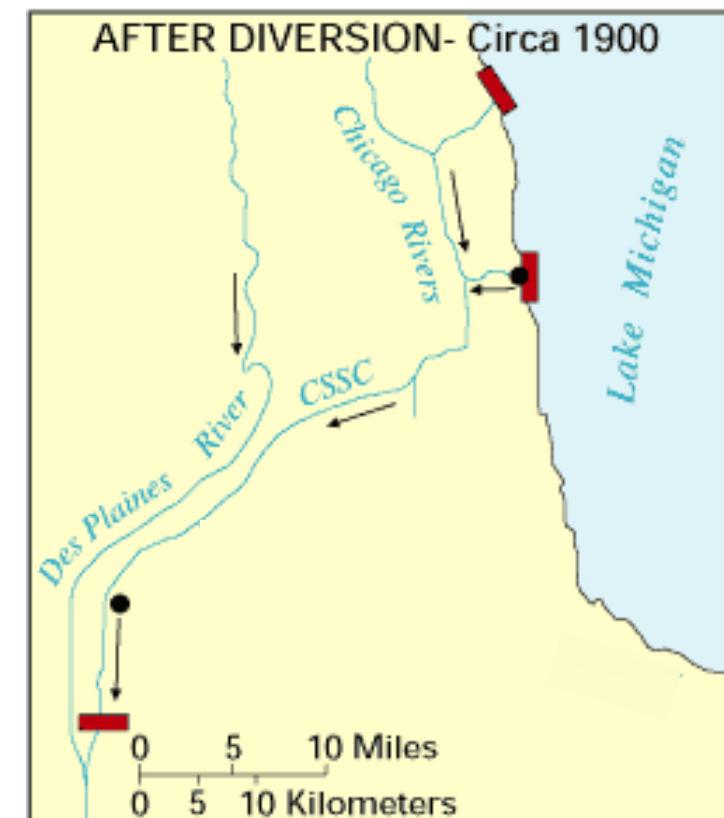
# Engineers reversed the Chicago River in 1900!

Before 1900:

- The Chicago River flowed into Lake Michigan
- Chicago's sewerage in Chicago River was carried into Lake Michigan
- But Lake Michigan is where Chicago gets its drinking water!

After 1900:

- Canal from Chicago River to lower elevation point on Des Plaines River
- Water flows downhill out of Lake Michigan to Des Plaines River
- Flushes Chicago's sewerage away from the Lake



Where does the Chicago River water go?

Des Plaines River



# US Supreme Court battles over the Chicago River reversal

1901: Missouri v. Illinois

- Missouri claimed Chicago sewerage comes to them, causing typhoid fever
- Result: Illinois can continue ... Missouri could not prove causation as source so far away

1927: Wisconsin v. Illinois

- Chicago River water diversion increasing, now diverting 5.5 billion gallons/day from Lake Michigan
- Wisconsin sued that this lowers Great Lakes water levels and hinders waterborne commerce
- Surprise... Missouri joined lawsuit on the Illinois side!
- Result: Illinois must reduce diversion to 1 billion gallons/day

1967: Wisconsin v. Illinois

- Wisconsin sued that Illinois water diversions creeping back up
- Result: Illinois can increase diversion to 2.1 billion gallons/day

## Chicago's \$1 Billion Water Deal Shows Great Lakes Wealth

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Chicago, Illinois, stands on the banks of Lake Michigan. Photographer: John Zich/Bloomberg

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## OPINION

# 100-year Joliet water diversion deal offers stark warning for Great Lakes Compact: editorial

Published: May. 14, 2023, 5:51 a.m.

But if Chicago starts running short on its daily water-withdrawal limits, it might be tempted to go back to the courts to get the daily withdrawal limit increased on the basis of hardship and need.

That should not be allowed to happen.

The other Great Lakes Compact states should draw red lines now, warning Illinois that its “screaming exception” in the binding 2008 compact was directly tied to a binding 1967 consent decree.

Maybe that will induce Chicago to tread cautiously on its water diversions.

N

# Opinion

The New York Times

## Pipe the Great Lakes to California? We Might Have To.

**Jay Famiglietti**

A professor at Arizona State University and the director of science for the Arizona Water Innovation Initiative.

**D**RIVING north through California's Tehachapi Pass on Interstate 5, you spill down out of the mountains onto a breathtaking expanse of farm fields like few others in the world. Rows of almond, pistachio and citrus trees stretch as far as the eye can see, dotted by fields of grapes. Truckloads of produce zoom by, heading for markets around the country.

The Central Valley of California supplies a quarter of the food on the nation's dinner tables. But beneath this image of plenty and abundance, a crisis is brewing — an invisible one, under our feet — and it is not limited to California.

Coast to coast, our food-producing regions, especially those stretching from the southern Great Plains across the sunny, dry Southwest, rely heavily and sometimes exclusively on groundwater for irrigation. And it's disappearing — fast.

What happens to the nation's food produc-

The United States has no plan for the disruptions that will befall our food systems as critical water supplies dwindle, causing the price of some foods to skyrocket and bringing us closer to the time when we may have to consider pipelines to replenish or replace depleted groundwater.

Some of the world's largest countries are already forging ahead with these kinds of projects. China's South-to-North Water Transfer Project and India's National River Linking Project redirect volumes of water the size of Lake Mead to dry regions from wet ones each year. The United States could do the same.

But it's not something we should be rushing toward. Americans, particularly those living in places like the Great Lakes region, have already shown that they have little stomach for infrastructure projects that would move their local water to remote locations, even if it is to produce the food they eat every day.

It's not just the political climate that makes tapping water resources in the East such an undesirable prospect. We've built systems of canals to move water around California and the Colorado River basin, but constructing a transcontinental pipeline or river diversion, at the scale required to sus-

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If farmers' water runs out, the nation will need to explore extreme measures.

tain U.S. agriculture, would be staggeringly more complex, expensive and environmentally disruptive.

It would require significant landscape changes and human displacement. And because water is so heavy, it is extremely expensive to transport. Building the necessary conveyances would require decades of planning, have major environmental consequences and cost taxpayers astronomical sums — easily tens to hundreds of billions of dollars, and far more when you take the human and environmental costs into account.

The United States can still avoid this outcome. If we want to sustain groundwater supplies for future generations, we will need reliable estimates of what's available in key aquifers, how its quality changes with depth and how much can be safely pumped without the risk of running dry. That means we must prioritize the systematic exploration and evaluation of what's in the ground and make a plan to end or greatly reduce groundwater depletion.

But we won't be able to do that without a national water policy. The current patchwork of groundwater policies across the



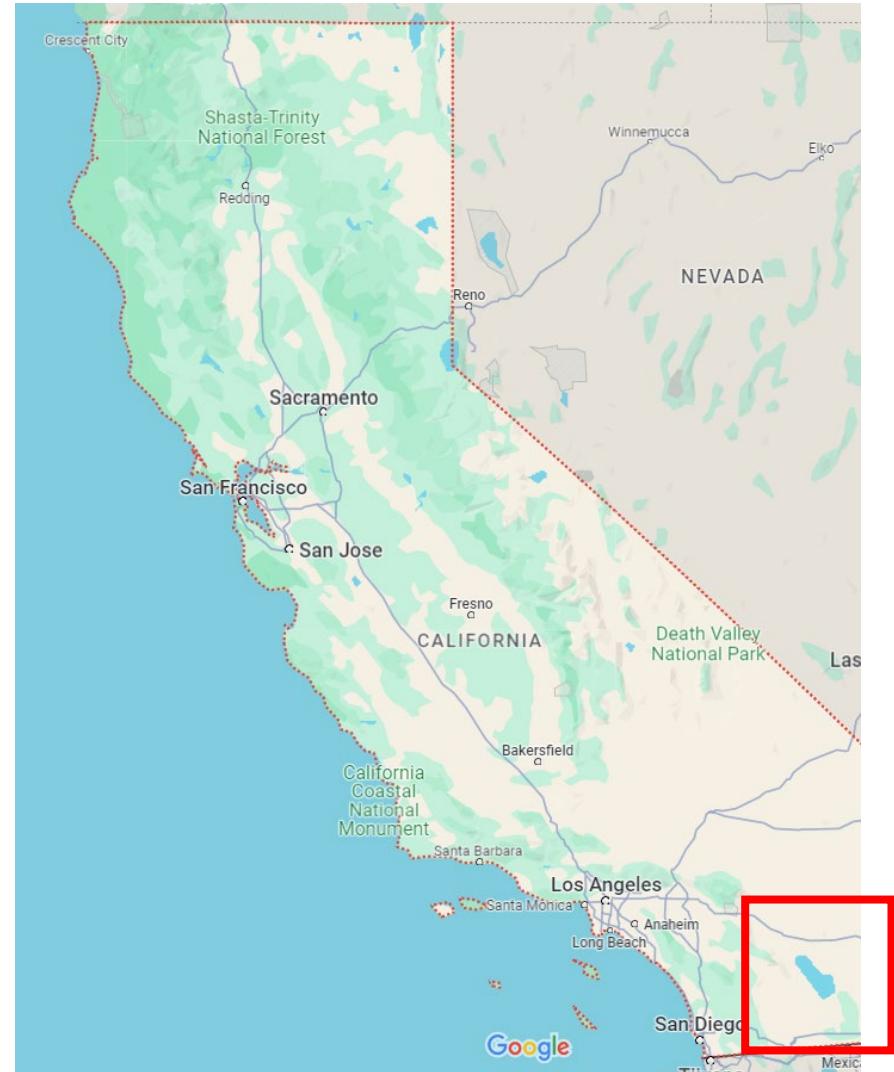
Q3: Regulations restrict what can be done with Great Lakes water. What is one argument discussed in lecture that supports this restriction, and what is one argument discussed in lecture that supports relaxing the restriction? Do you think the restriction should be relaxed?

# The Salton Sea... California's largest lake

1905

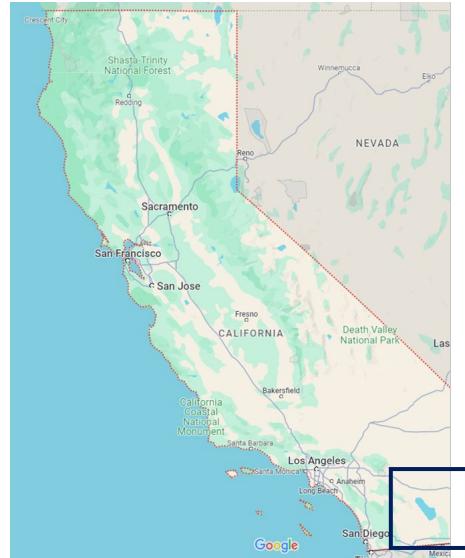


2024



Salton Sea

# The key to understanding the Salton Sea is the Imperial Valley



JAN 19, 2022  
**Winter vegetable season looks promising in California's Imperial Valley**

LATEST NEWS

- Blueberry industry to trek to Seattle for 2025 Blueberry Convention DECEMBER 13
- Specialty crop competitiveness assistance funds available DECEMBER 11
- New strategic plan released by Michigan State Extension DECEMBER 11
- Report: Fresh potatoes top seller in fresh vegetable pound sales DECEMBER 10
- Southwest Michigan Horticultural Days scheduled DECEMBER 9
- Court injunction blocks federal rule that could have imprisoned growers DECEMBER 6

[See All News »](#)

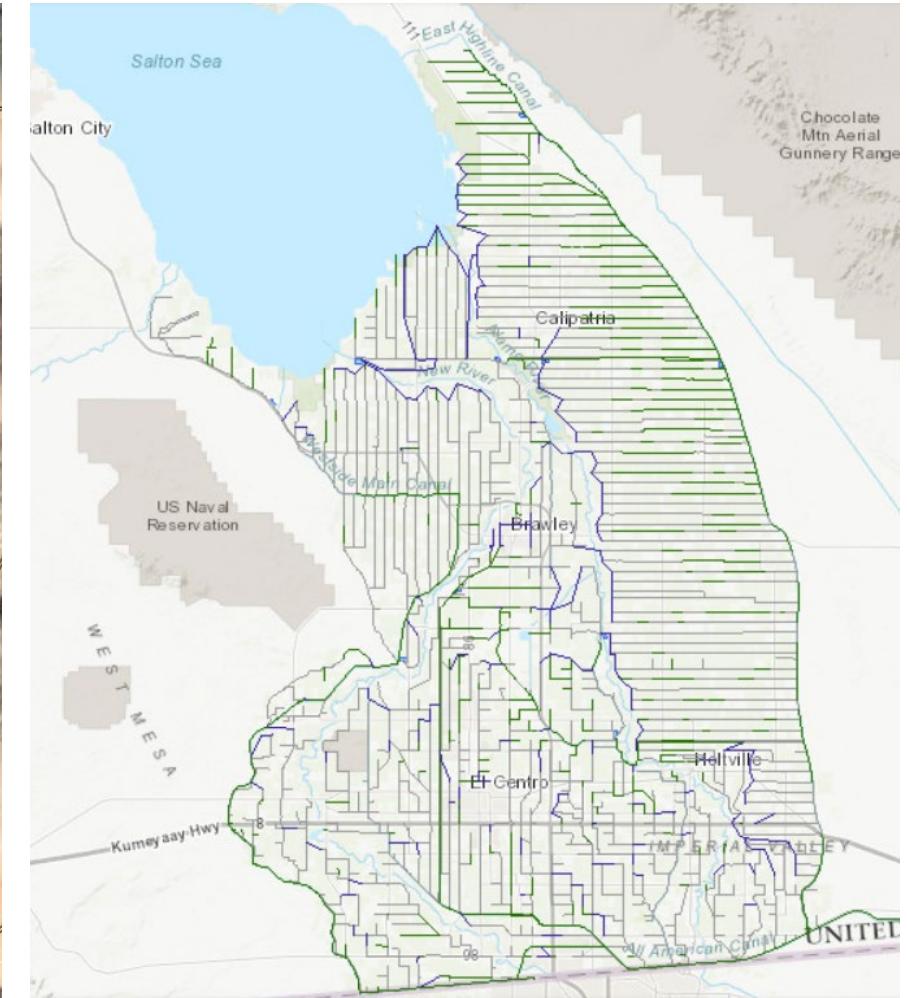
*"The Imperial Valley produces an estimated two-thirds of vegetables consumed in the U.S. during winter months."*



This was last Wed, when it  
was REALLY cold in CLE

# But the Imperial Valley is in the middle of desert?!?

*Lots of irrigation canals are needed!*

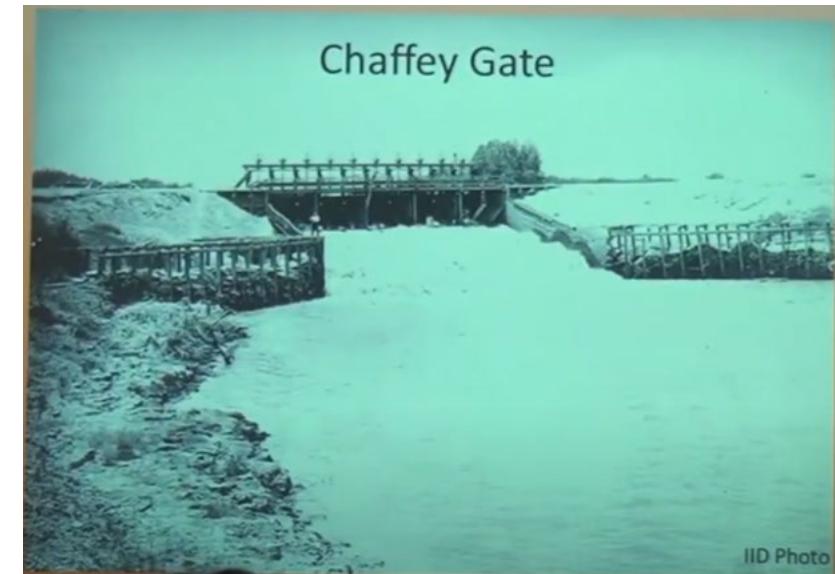


# Where does the water for irrigation come from?

*The Colorado River!*



The Alamo Canal, built in 1900, was the original canal to bring water from the Colorado River to the Imperial Valley



Flow into the canal was controlled by this structure

# But something went wrong!!!



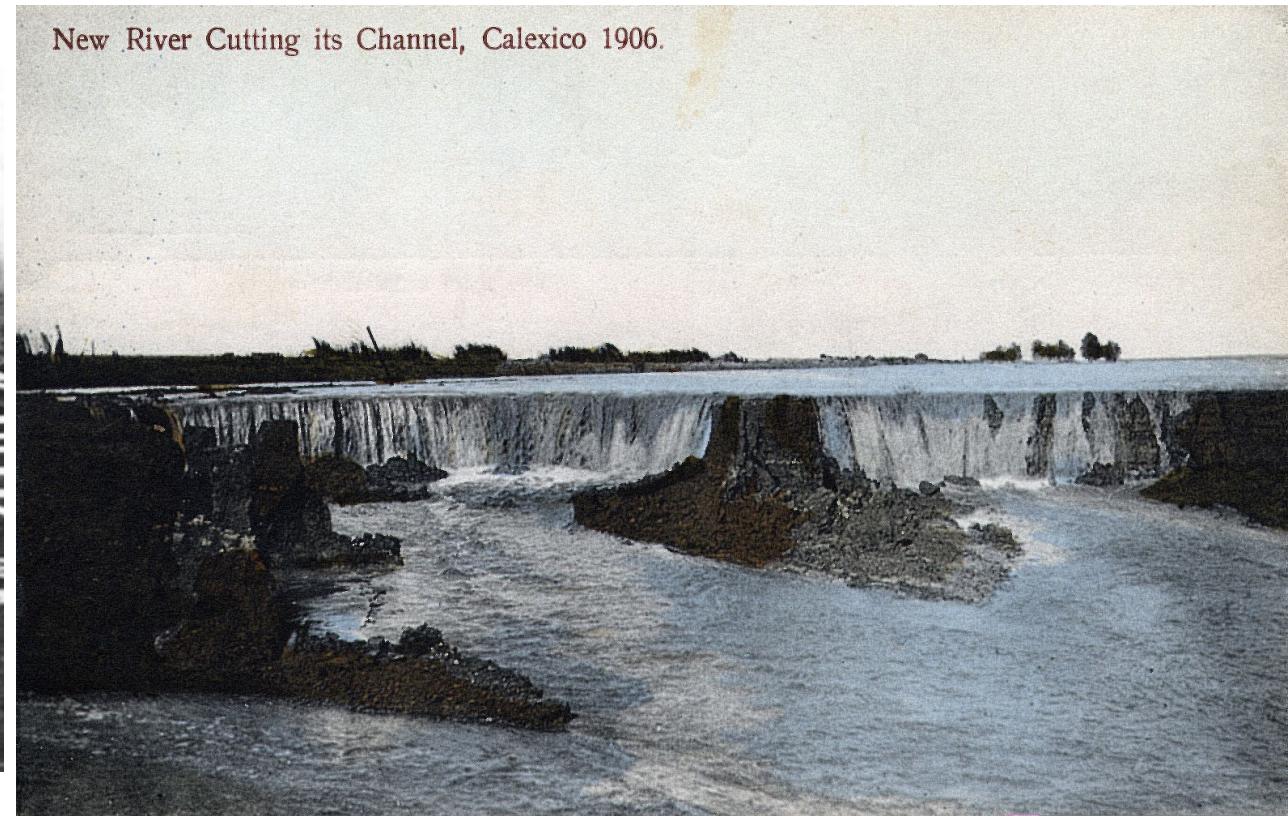
- Colorado River originates in Colorado and Wyoming
- Winter freezes reduce flow in Colorado River
- The inlet to Alamo Canal at Chaffee Gate was not at river bottom, but higher – in winter not much water was flowing into the canal

- A deeper bypass that avoided Chaffee Gate was built to get water in winter... and the bypass would be filled in after winter when water level rises
- The bypass had no control structure, since it was only to be used when water was low
- In 1905 they didn't fill in bypass in time, and since there was no control structure, spring floods caused the entire Colorado River to be diverted into the canal

For two years the entire Colorado River ran through the Alamo Canal... and created the Salton Sea

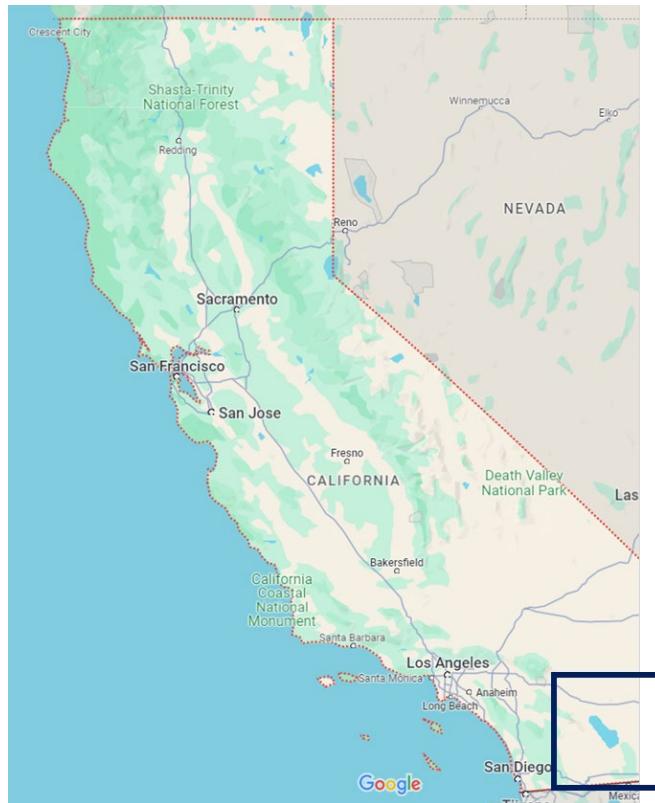


New River Cutting its Channel, Calexico 1906.



*This was supposed to be a canal!*

# And that's how the Salton Sea came to be!



But no rivers flow into the Salton Sea!

The water input is mainly runoff from farms



## 'The air is toxic': how an idyllic California lake became a nightmare

The shrinking Salton Sea was once a tourist destination. Now it's home to dangerous algal blooms, endless dust and noxious air

By [Maanvi Singh](#) in Calipatria and Salton City

Just to be safe, Noemí Vázquez keeps inhalers in almost every room of her house. She stashes them in her kitchen cupboard, a couple in her purse, one in the bathroom, and, of course, by her bedside.

And then there's the large, black Puma knapsack where she keeps her nebulizer, several inhalers, and the montelukast pills she takes to treat her wheezing. Her four-year-old granddaughter has her own asthma kit - a neon pink and purple Trolls-themed lunch box that holds a small, child-sized nebulizer and a few inhalers. "She's smart! She knows: this is her bag," Vázquez said.



## Air quality and wheeze symptoms in a rural children's cohort near a drying saline lake



Jill E. Johnston <sup>a,\*</sup>, Elizabeth Kamai <sup>a</sup>, Dayane Duenas Barahona <sup>a</sup>, Luis Olmedo <sup>b</sup>,  
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- Between 2017 and 2019, children were exposed to 98 to 395 dust event hours annually.
- Every additional 100 dust storm hours per year among children living near the Sea (<11 km) was associated with a 9.5 percentage point increase in wheeze (95% CI: 3.5, 15.4), a 4.6 percentage point increase in bronchitic symptoms (95% CI: 0.18, 10.2).
- There was no association of dust storms or PM<sub>10</sub> with wheeze or bronchitic symptoms among the children residing farther from the Sea.

[Travel](#)

# I Went to California's Post-Apocalyptic Beach Town

By Jamie Lee Taete September 26, 2013, 6:07am

[CITIES](#) [PLAN YOUR TRIP](#) [GUIDES & DESTINATIONS](#) [EXPERIENCES](#) [NEWS & TRENDS](#) [VIDEO](#)[TRAVEL](#) • [ART](#)

## This Seemingly Apocalyptic Desert Lake Is Alive with Art

If an acid trip was a place, this magical barren landscape would be it.

By [Krista Diamond](#)

Updated on June 17, 2022 at 3:50 PM

ESSAY / CULTURE LAB

## Can Art Save the “Post-Apocalyptic” Salton Sea?

In this *Mad Max*-like California landscape, artists and activists are inventing renewable alternatives to the capitalist system that’s developing but also destroying the region.

By [MEREDITH REIFSCHEIDER](#)

14 AUG 2024







# THE UNANTICIPATED CONSEQUENCES OF PURPOSIVE SOCIAL ACTION

ROBERT K. MERTON

"‘imperious immediacy of interest’ refers to instances where the actor's paramount concern with the foreseen immediate consequences excludes [effective] consideration of further consequences of the same act.... the immediate interest is a psychological generator of emotional bias, with consequent lopsidedness in the required calculation”

Q4: What is the “imperious immediacy of interest”, and explain how this may have played a role in the formation of the Salton Sea?

The original canal went through Mexico... in 1930's a canal fully within the US was built





At the All-American  
Canal last week



60  
MINUTES