Toyota's Evolving Approach to Saving Water

November 11, 2024

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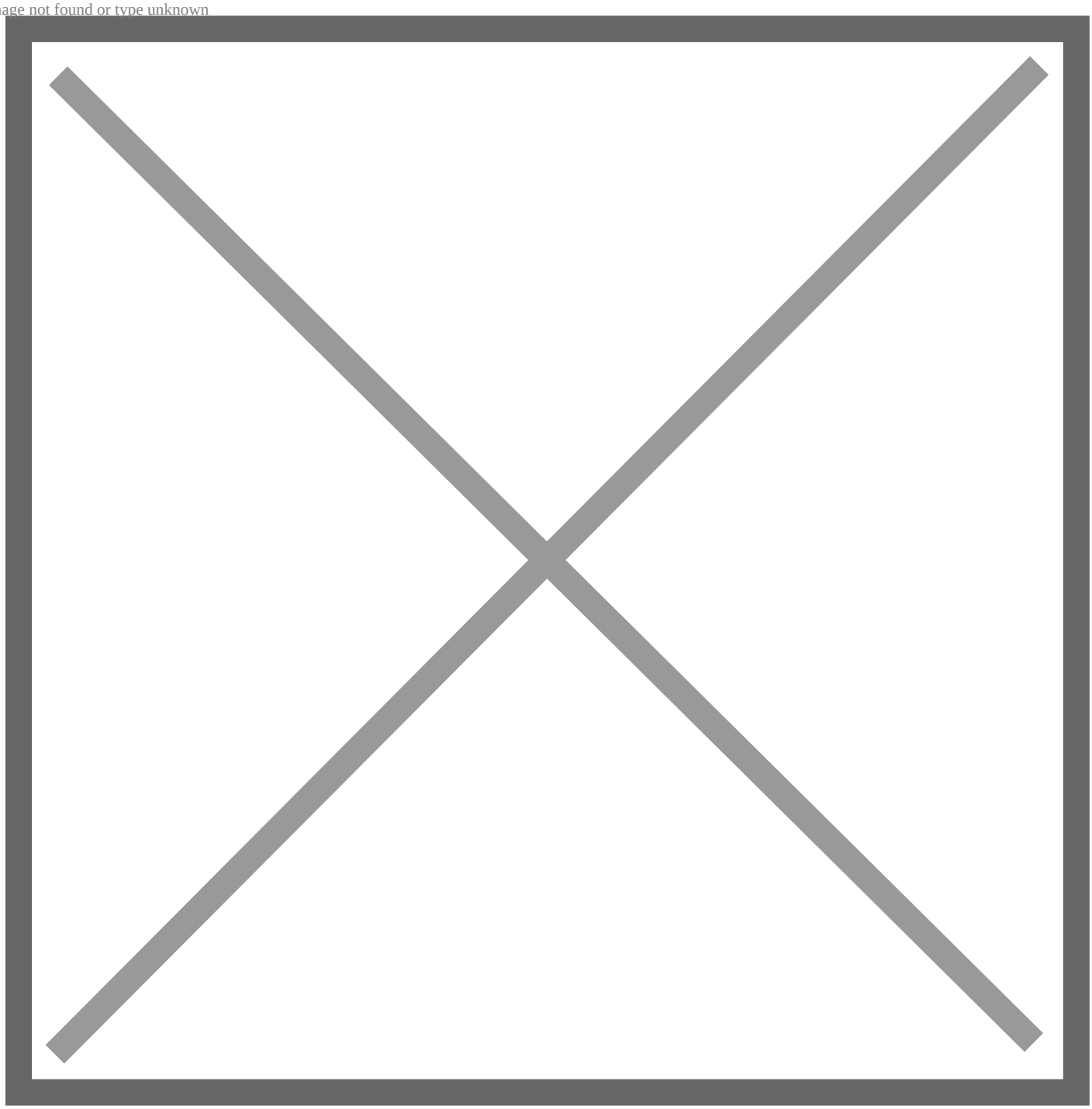

For Mark Yamauchi, Toyota’s efforts to save water over the years adds up to a lot more than the numbers of gallons saved—instead, it represents an understanding of the critical role water plays in our society and Toyota’s work to support the future of water conservation.

When Yamauchi took over managing the water program in 2015, the prevailing attitude was that water was cheap and relatively plentiful, and Toyota needed a lot of it. Cutting down on water usage didn't seem as urgent as some other sustainability goals.

There has been a growing awareness of water issues, both within Toyota and in the wider world. At Toyota, Yamauchi has worked tirelessly to build awareness that every gallon of water purchased adds costs other than the water itself. For water to be used in manufacturing, it needs to be treated, processed, pumped, moved, and filtered. Each step adds costs in equipment, space, and even time.

Outside the boundaries of Toyota's properties, water scarcity and quality are becoming more prominent sustainability topics as populations grow and climate change affects weather patterns. While there might be areas in North America that have plenty of water, including some areas where Toyota has operations, some Toyota factories operate in communities that are challenged by water shortages or water quality concerns.

"This is an investment for risk mitigation, because all these things are coming," Yamauchi said. "There will be additional stress on infrastructure and supply and treatment of water. So, let's get ahead of that."

A Growing Urgency for Water Stewardship

To illustrate the problem, globally, 2.3 billion people live in areas where water is under stress[1]. Of the world's 37 largest groundwater reservoirs, 21 are being depleted faster than they can be replenished[2]. Two of the largest reservoirs in the U.S. – Lake Mead and Lake Powell – are at their lowest levels ever[3]. Toyota has closely followed this critical issue over the years. As water scarcity has become increasingly top of mind for many, Toyota shifted from a mindset of conservation to a more proactive approach – stewardship.

With conservation, Toyota has focused on reducing the number of gallons of water used in its own operations. Now, moving toward a more involved level of stewardship, Toyota is thinking about the communities and regions in which it operates, recognizing the need to partner with other stakeholders – like governments, non-profits, and community leaders – to make a long-term, positive impact. Toyota recognizes that its resources and influence can be used as a catalyst to enact changes that go far beyond its property boundaries.

Along these lines, Toyota began rethinking water when it was designing its North American headquarters in Plano, Texas, which the company officially opened in July 2017. A 400,000-gallon rainwater harvesting system supplies the campus' landscape irrigation system. At the time, it was the largest installed system in North America. The Plano headquarters also recycles sink wastewater for toilet flushing in two buildings. Native landscaping was installed, which requires little irrigation, which contributed to the campus receiving LEED certification.

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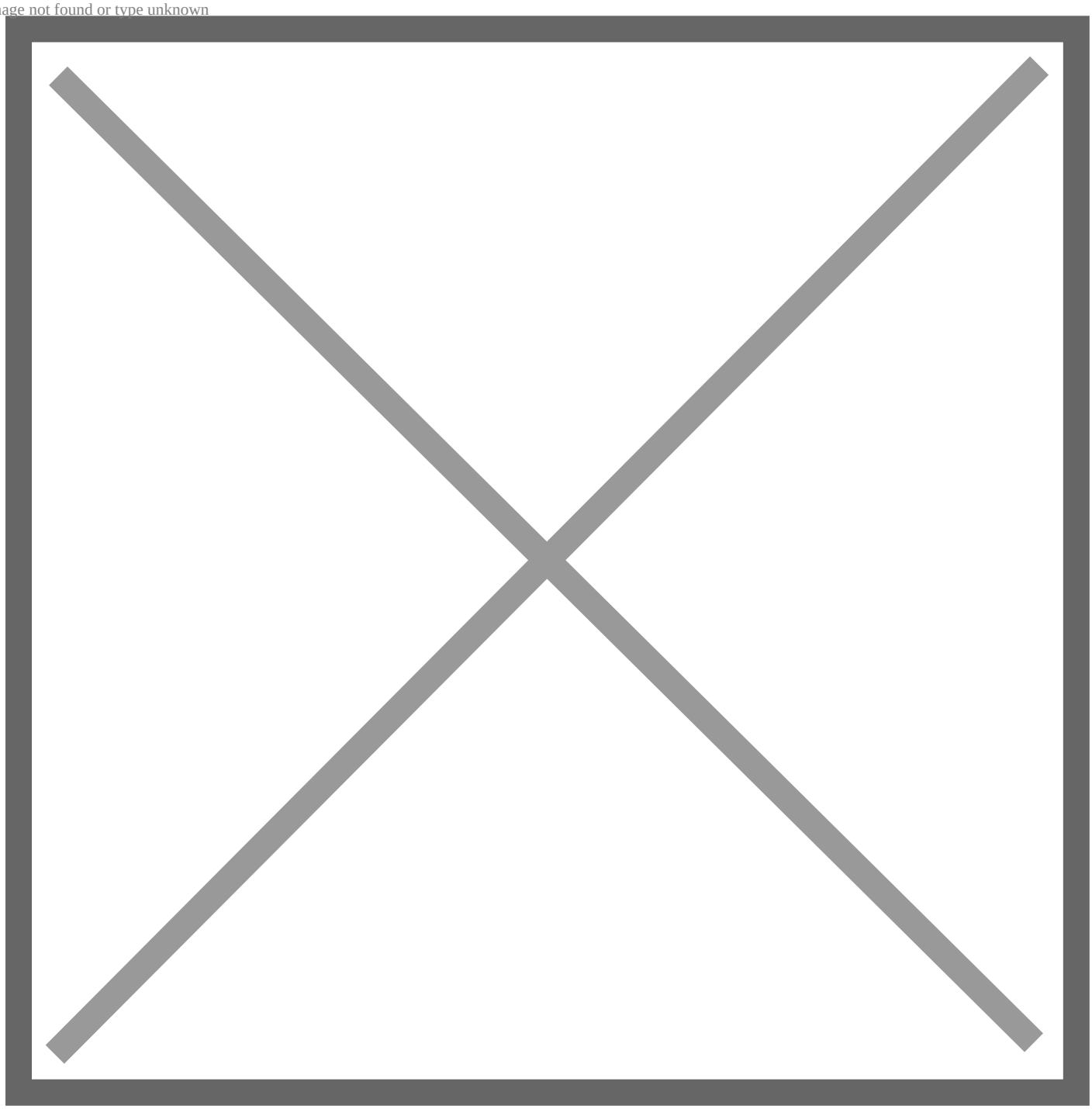
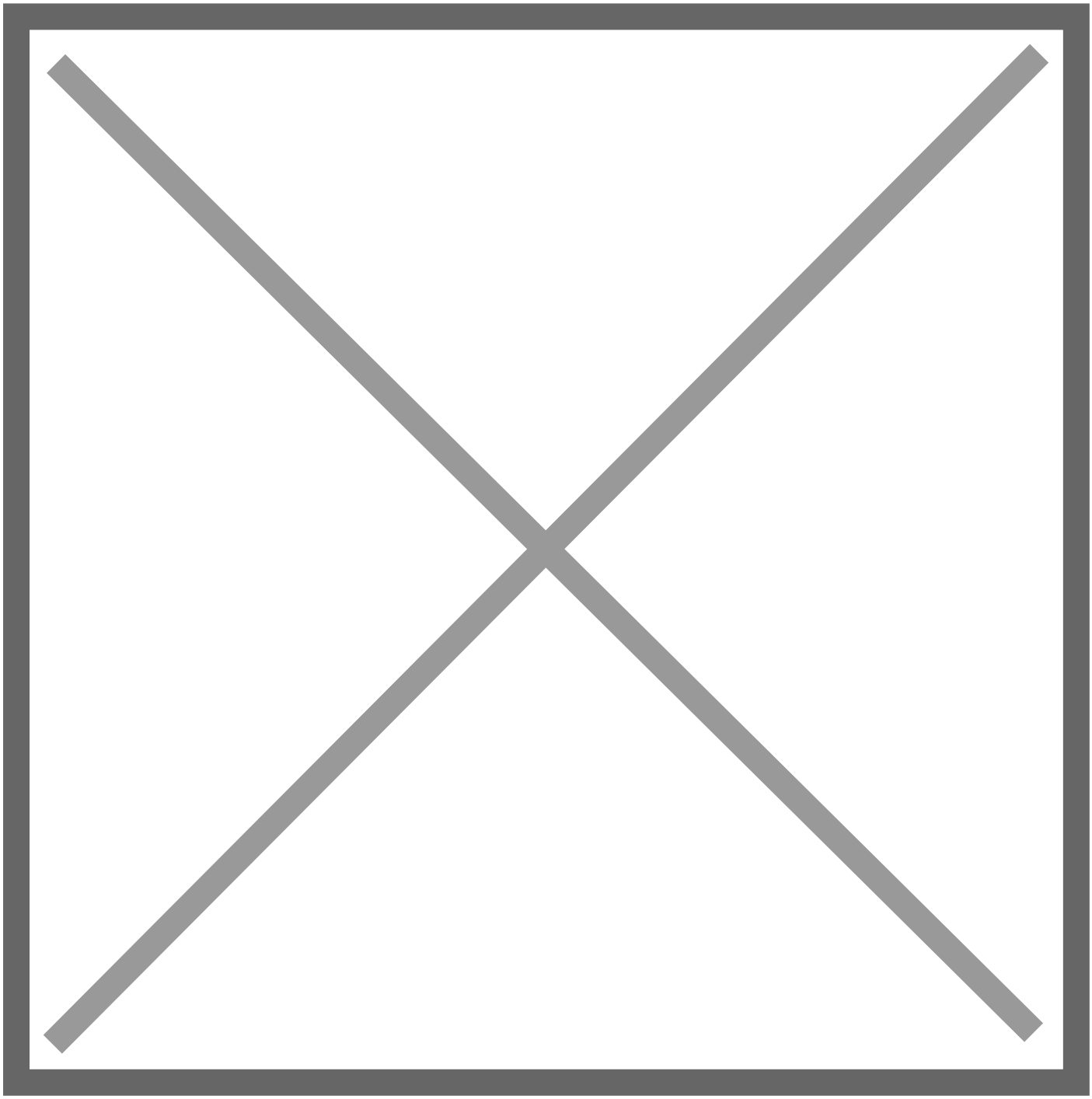


Partnering in Baja California – A Model of a More Sustainable Water Supply

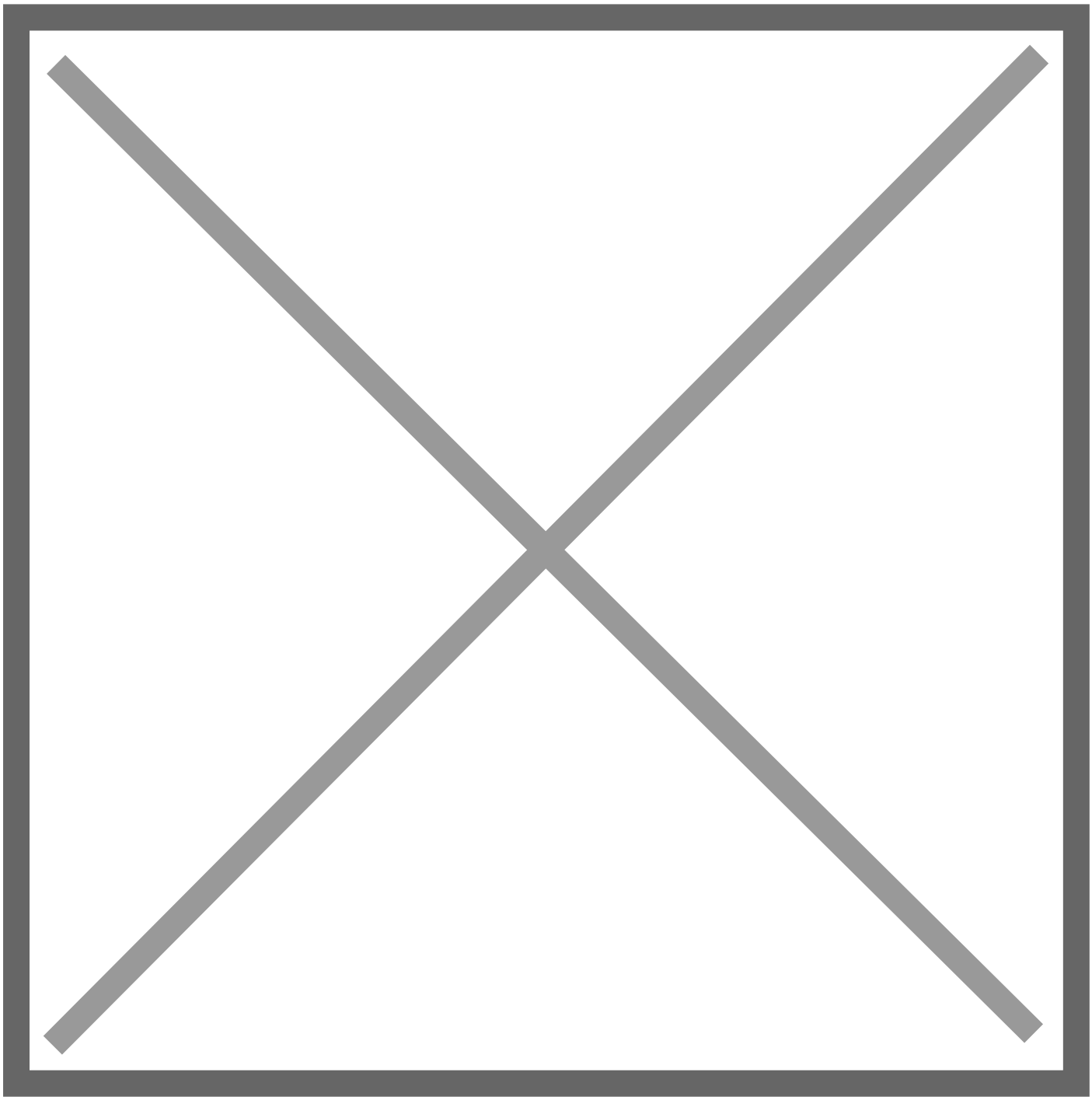
Water stewardship remains important to Toyota with continually improving operations throughout North America. One such example: Toyota Motor Manufacturing Baja California (TMMBC) in Tecate, Mexico has returned more water than used – a critical need for a location that sits in one of the most water-challenged areas of the continent, near the bottom of the Colorado River basin.

After rethinking its manufacturing and painting processes, both of which are particularly water-intensive, Toyota Baja California (TMMBC) is now reusing 600 cubic meters of water a day in industrial operations and saving 23

million gallons a year, enough to support 500 residents in Tecate.



TMMBC assembles more than 150,000 Tacoma pickups each year and draws on municipal water supplied by a local reservoir which is fed from 80 miles away in Mexicali. This water comes from a diversion dam on the Colorado River – a major western river that supplies water to seven U.S. states as well as two states in northern Mexico. Decades of drought have caused a loss of about 10 trillion gallons across the basin – or a reservoir the size of Lake Mead.

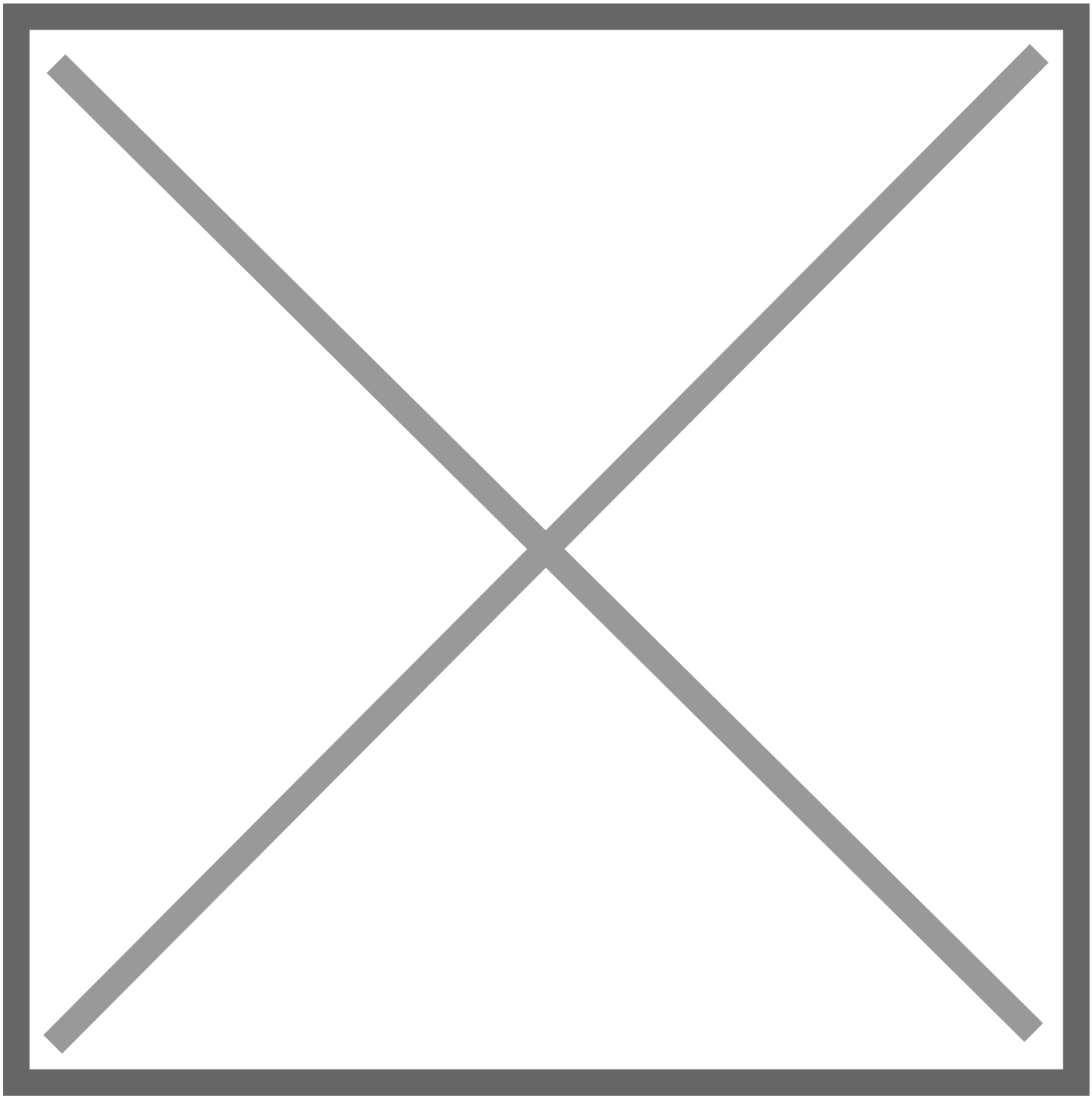


The process to reuse the water at TMMBC involves taking wastewater from the paint shop and treating it to remove phosphates, minerals like zinc and nickel. After that, a membrane bioreactor can remove any suspended solids. The reactor brings the level of solids close to zero, which is necessary to be able to use the reverse osmosis system, which then removes any remaining suspended solids.

“Before it installed its bioreactor, TMMBC was using reverse osmosis to treat the industrial wastewater, but the solids would clog the system’s filter so much that operations would have to be shut down after three hours,” said Jesus Ernesto Rodriguez, an engineer at TMMBC. It would take a full day to clean the reverse osmosis system

before it could be used again. With the bioreactor, the reverse osmosis system only needs to be cleaned during routine maintenance.

“Baja California is a high-risk area for water,” Rodriguez said. “Some seasons, the community just doesn’t have enough water. With the amount of recycling we’re doing, it’s making a big contribution to our neighbors.”



Outside the plant, Toyota has teamed up with The Nature Conservancy (TNC) to help address water issues along the Colorado River, especially in Baja California. The conservation group works with local partners, cities and

farms to help make the water supply more sustainable. More than 500 local farmers attended optimization training workshops to promote water efficiency. Toyota Baja provided $363,000 over three years to acquire, secure, and monitor water volumes in the Colorado River Delta.

Together, Toyota and TNC are protecting more than 16,100 acres of wetlands along the Hardy River and in the Santa Clara Marsh, the lower Colorado River, and in the upper Colorado River Estuary – where the underground aquifer gets replenished. Overall, this partnership alone has released 264 million gallons of water into the Hardy River, restoring continuous water flow to nine miles of the river.

Rivers and Lakes We're Used To

The work at TMMBC and the Colorado River Basin are just two examples of Toyota's efforts in water stewardship. Projects in other parts of the continent are tailor-made for the local circumstances and landscape. Along the Wabash River in Indiana, Toyota is working with TNC to restore oxbow lakes (horseshoe-shaped bodies of water located where the river bends) that provide important habitats for fish and wildlife. Toyota and TNC are also looking at ways to reduce nitrogen, phosphorus, and sediment that fill the river from nearby agriculture.

In addition, Toyota is working with its network of 1,900 dealers across North America to reduce water use in showrooms and vehicle lots. One program that the company is offering includes The Dealership Environmental Excellence Program (D.E.E.P.), which has been recognized by the U.S. Department of Energy.

D.E.E.P. is a voluntary, easy-to-implement program designed to help dealers reduce energy, water, waste, and carbon emissions.

Toyota provides technical assistance to dealerships to help measurably improve environmental performance and recognizes dealers that demonstrate significant reductions in energy and water use while engaging their local communities. There are 116 Toyota and Lexus dealerships across 33 states participating in this program, and Toyota aims to get that number up to 630 by 2030.

"Through all these and other efforts, what's stood out is how different parts of the company are inspired and eager to help support this important water change," said Yamauchi. "Once Toyota team members get on board with a goal, they come up with creative solutions that are good for the environment and good for the business."

"When Toyota does something, people really stand up and take notice," Yamauchi said. "We have such a great company. When we leverage that brand value, it can lead to big changes."

[1] SOURCE: Drought in Numbers 2022, United Nations Convention to Combat Desertification, page 4 (https://www.unccd.int/sites/default/files/2022-06/Drought%20in%20Numbers%20%28English%29.pdf)

[2] SOURCE: Water Resources Research: Volume 51, Issue 7, July 2015, *Quantifying renewable groundwater stress with GRACE* (https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2015WR017349)

[3] SOURCE: Latest projections from the Bureau of Reclamation https://www.newsweek.com/lake-mead-lake-powell-water-levels-colorado-river-shortage-1940243