



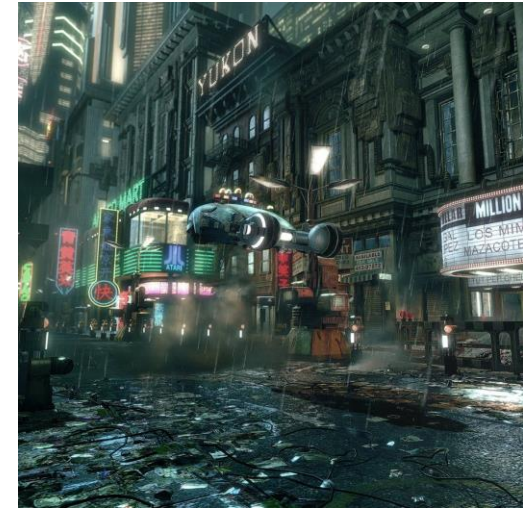
LOS ANGELES
WATERKEEPER®

LA's New *"Mulholland Moment"*:

How Wastewater Recycling Can Transform LA and the West

Internet of Water Coalition -- February Webinar

February 6, 2024



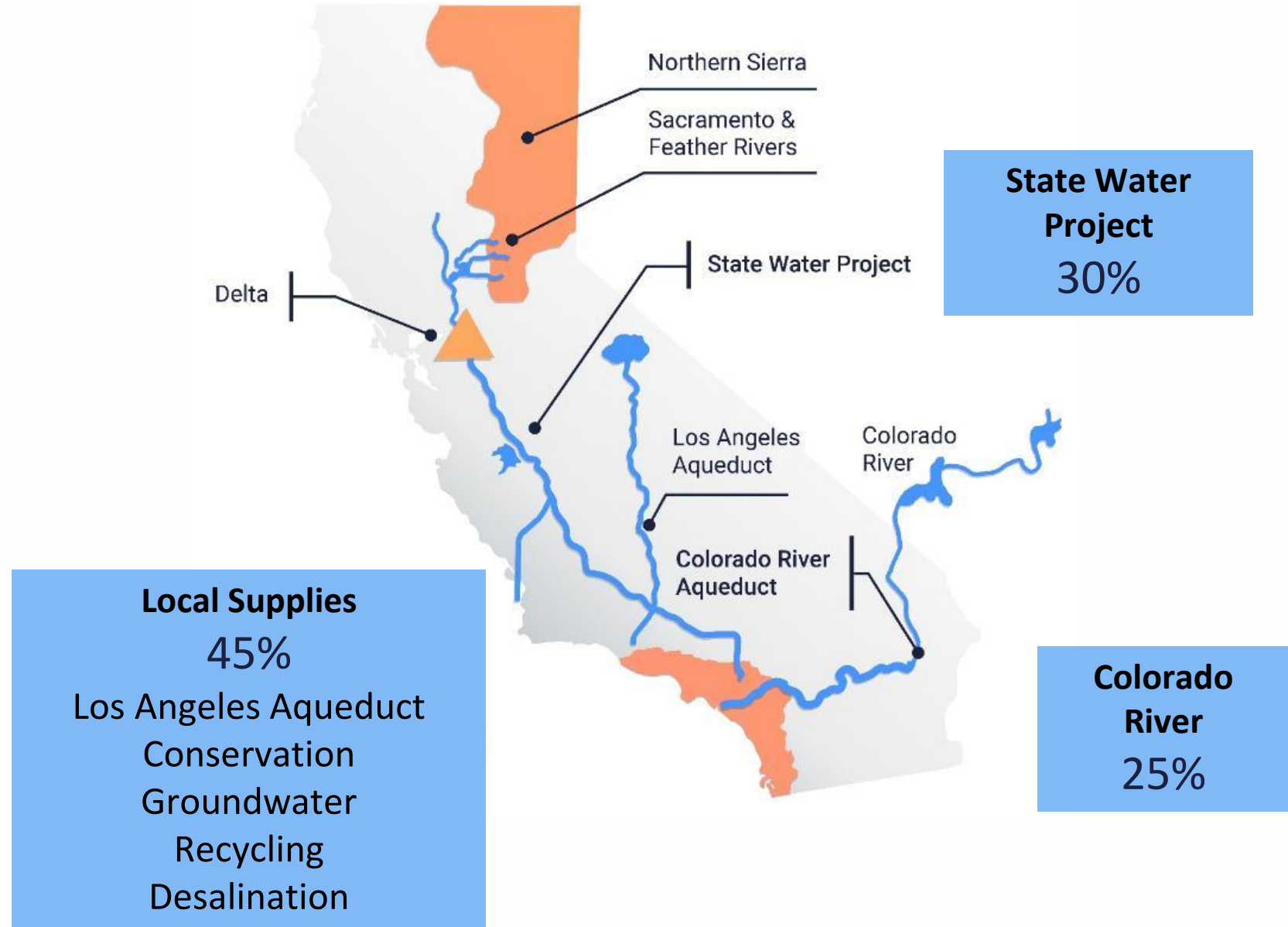
*"I often tell people that Los Angeles makes no sense if you talk about it out loud"
--Lynell George*



‘There it is. Take it’

Metropolitan Overview_

Securing Water for Southern California.





To a New Water Paradigm

“We cannot solve our
problems with the same
thinking we used when we
created them.”

--Albert Einstein

A New “Mulholland Moment”:

- **R**educe (water waste)
- **R**euse (captured urban and stormwater runoff)
- **R**ecycle (purified wastewater)
- **R**estore (contaminated groundwater)

*“Here it is.
Use it”*

Recycle: By the numbers

- LA County uses ~1.2B gallons of water a day
- ~60% of this is imported (~720+MGD)
- 400MGD-500MGD wastewater discharged into the ocean every day
- Planned wastewater purification projects planning to reclaim ~330+MGD
 - ~25% of current water usage
 - Nearly 50% of imported water

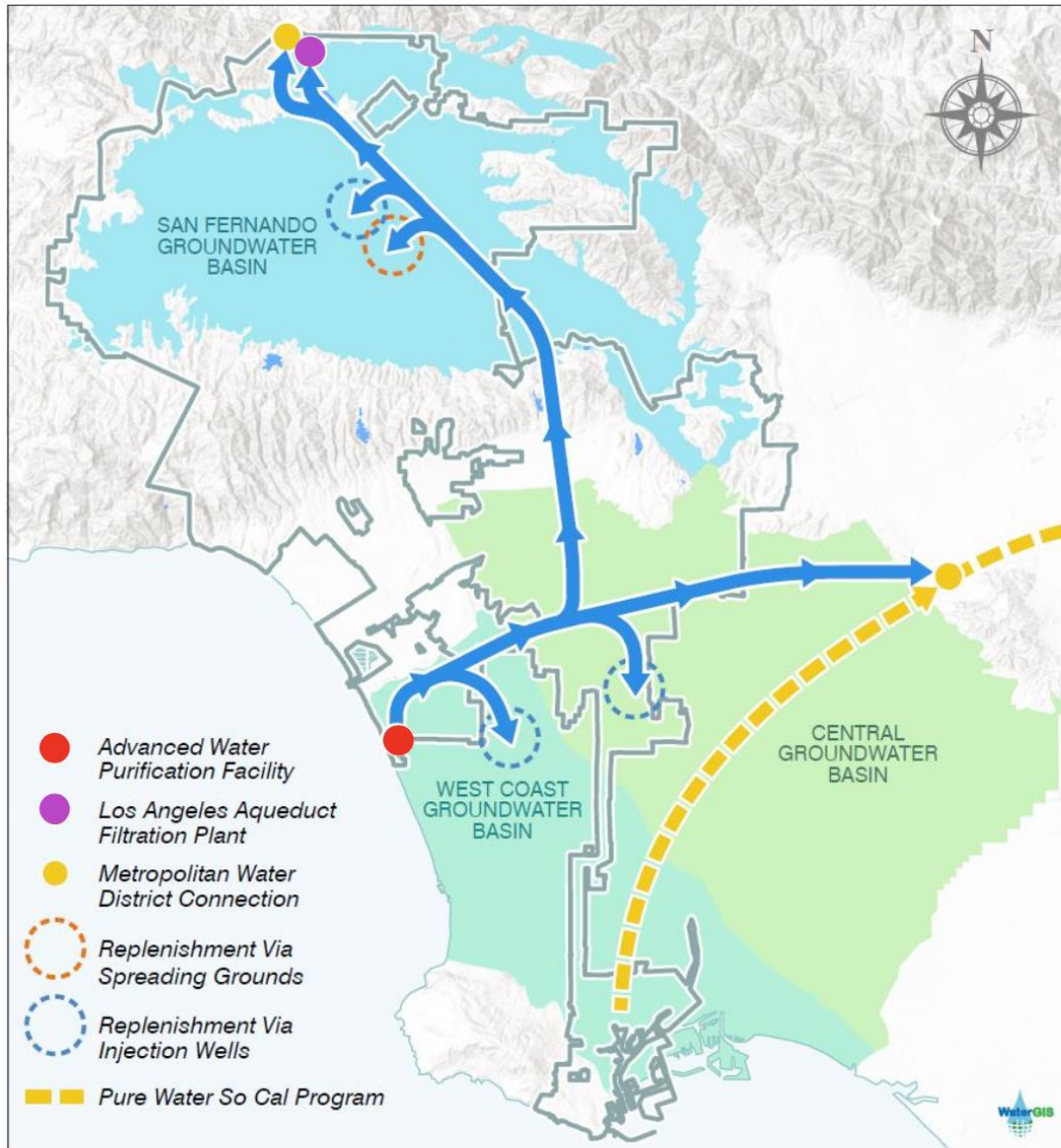




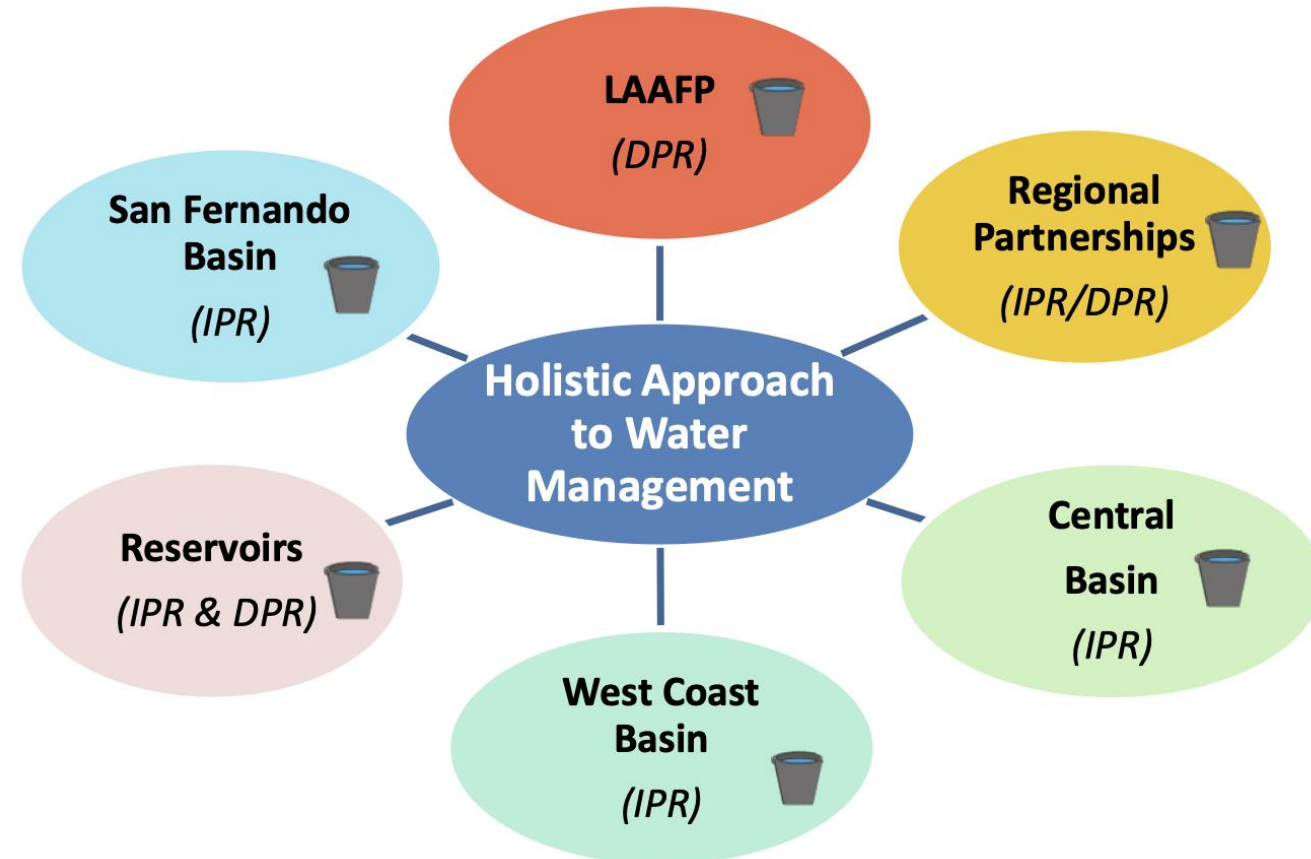
L.A.'s ambitious goal: Recycle all of the city's sewage into drinkable water



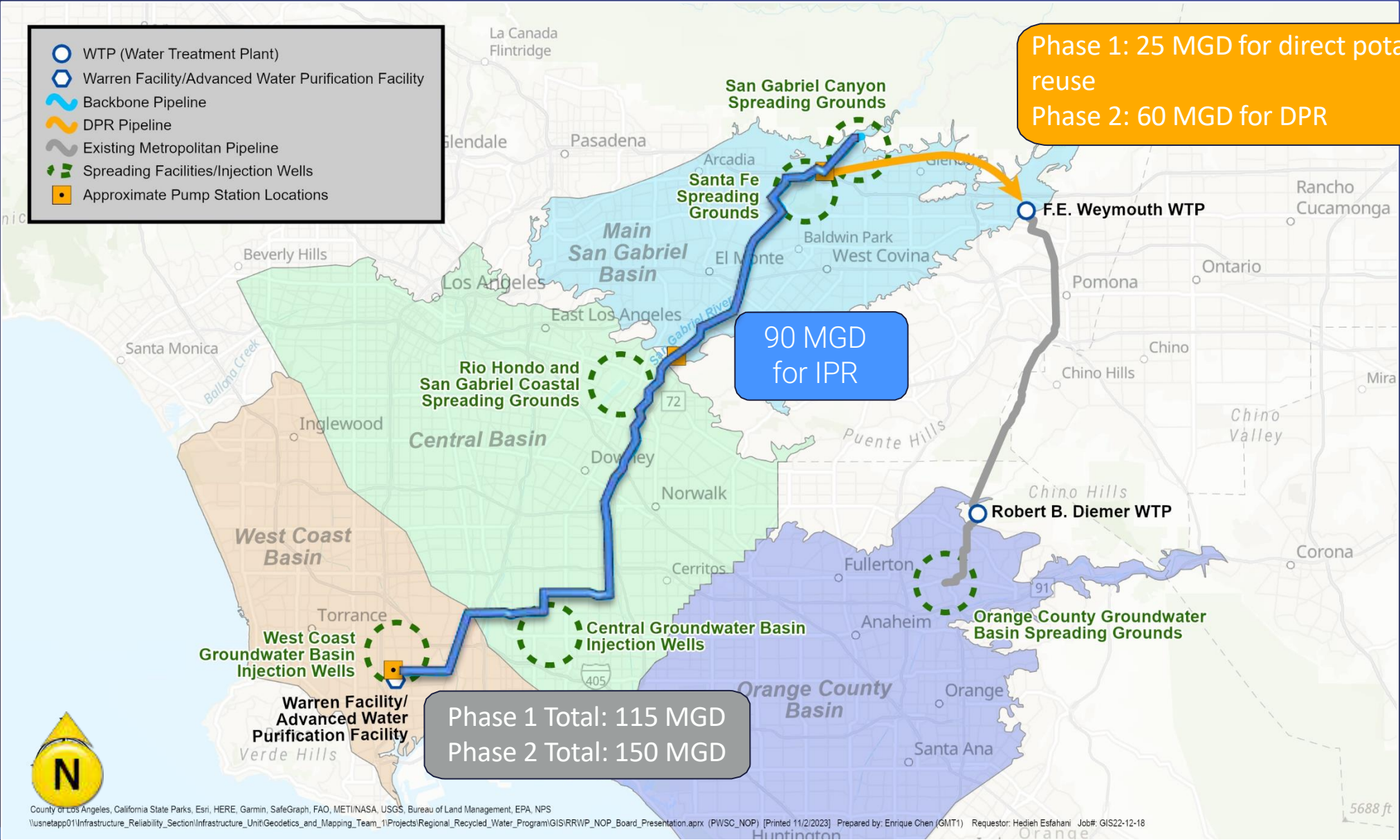
Operation NEXT Supply Management



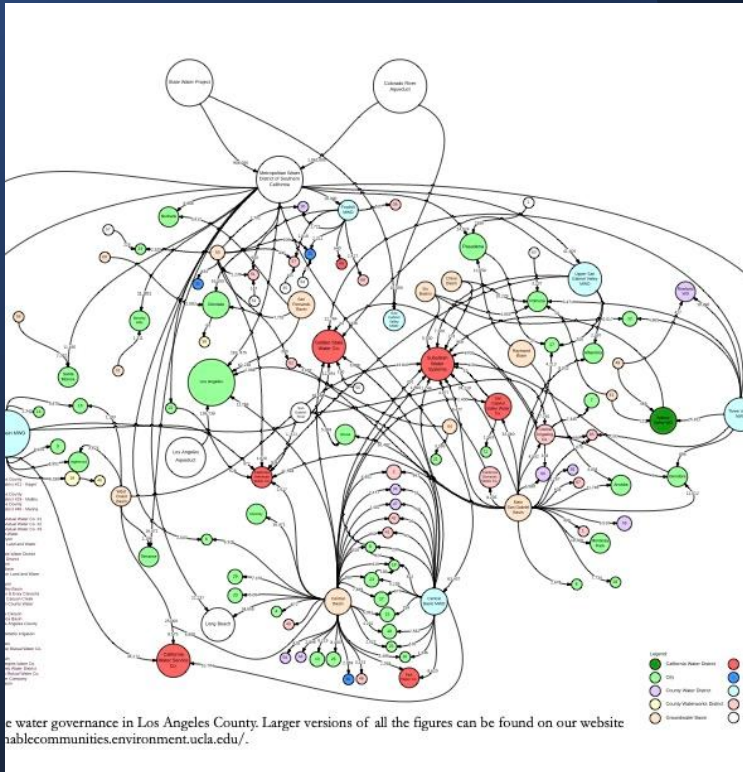
- ❖ **Future Advanced Water Purification Facility (LADWP)**
 - ✓ Start w/ Hyperion as secondary MBR source water (LASAN)
- ❖ **Los Angeles Aqueduct Filtration Plant (LADWP)**
 - ✓ Origin of most of the water supply for the City



Program Overview – Phases 1 & 2



Challenges & Considerations

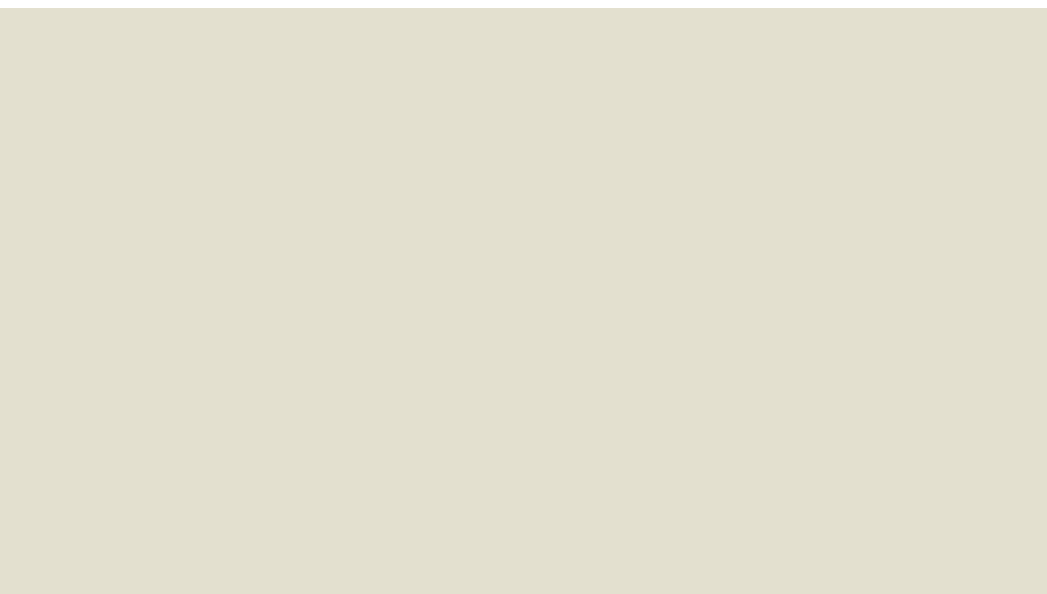
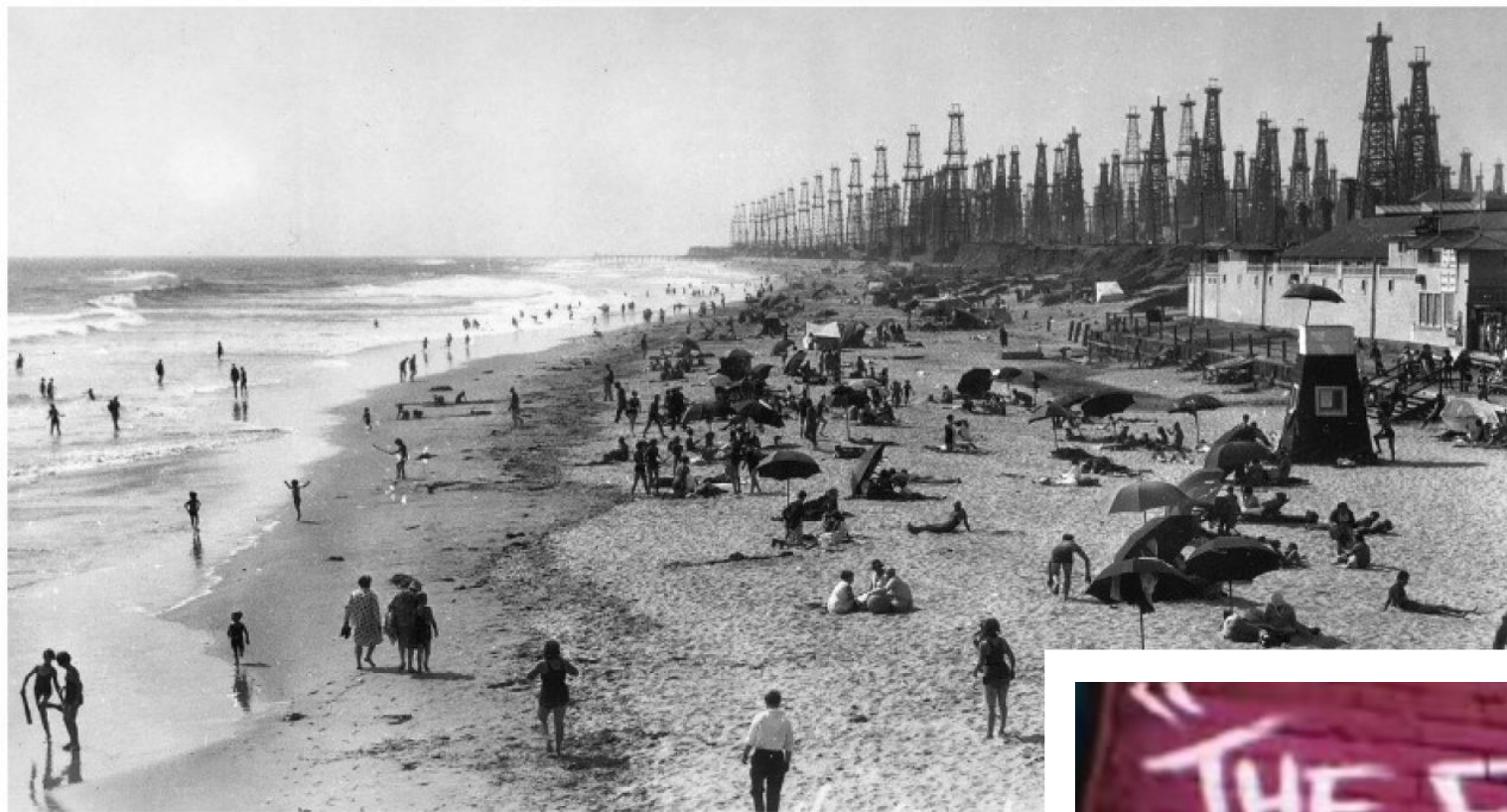


- Centralization vs decentralized approach
 - Upstream v downstream needs (flows)
 - New vs existing infrastructure
- Ensuring all communities have reliability
- What's the balance between IPR, DPR & NPR
- Addressing water quality concerns
- How much systems should be integrated
- How to finance to minimize impact (\$20B!!!)
- Ego-system management (agency squabbles)
- Water rights & governance
- Public engagement/support

The background features a gradient from blue on the left to orange on the right, overlaid with several interlocking puzzle pieces. In the top right corner, there are three navigation icons: a plus sign (+), a solid black dot, and an open circle (o).

Next Steps

- Convene TAC (Feb 22) & develop recommendations
- “Inside game” advocacy (political, CEQA review, etc.)
- Push funding (state, federal, rate increases)
- Partner and community education/engagement



Techno-Social Solutions for Off Grid Food-Energy-Water (FEW) Challenges



Clive Lipchin, PhD

Center for Transboundary Water Management, Arava
Institute for Environmental Studies, Israel

clivearava@gmail.com

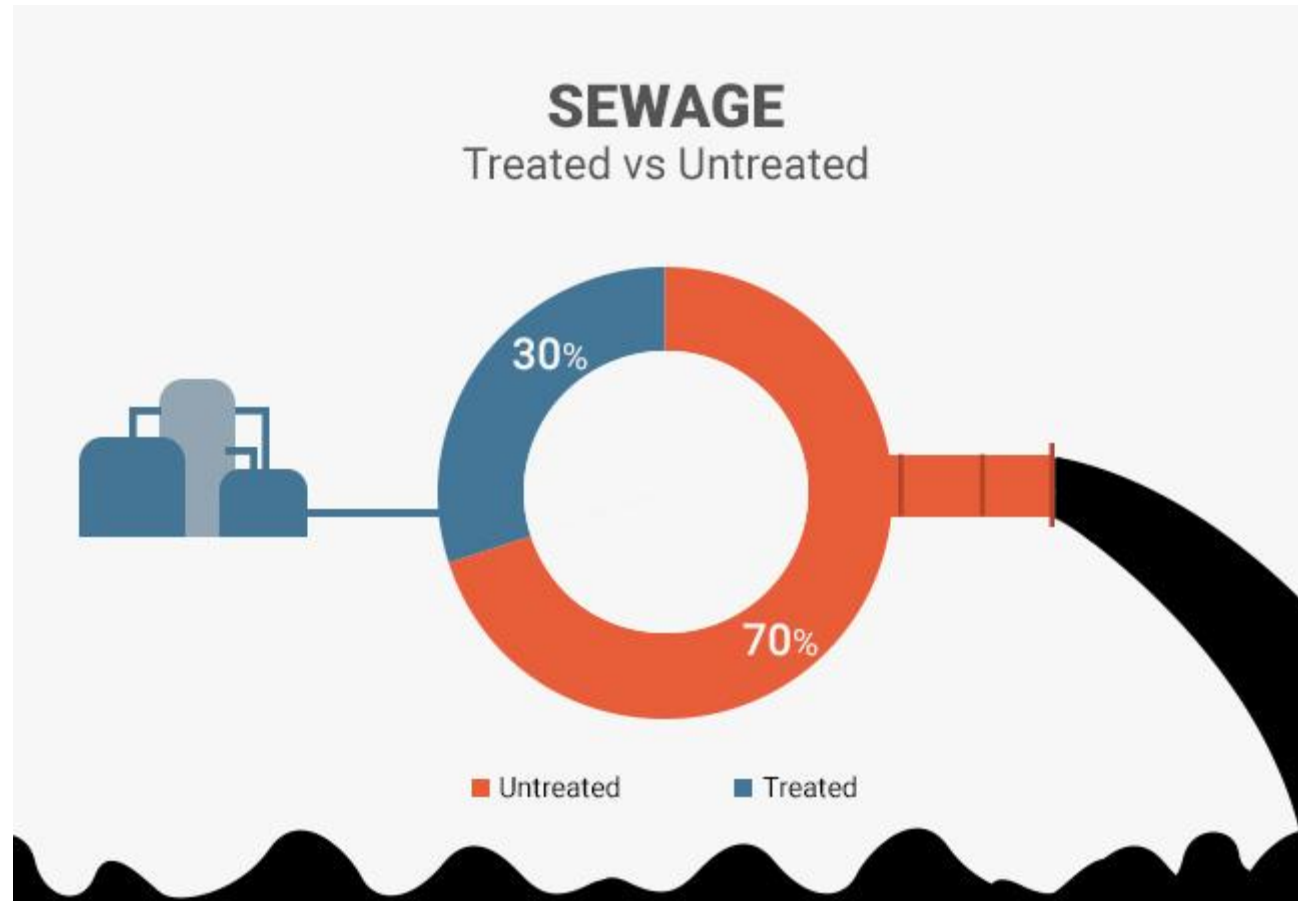
www.arava.org

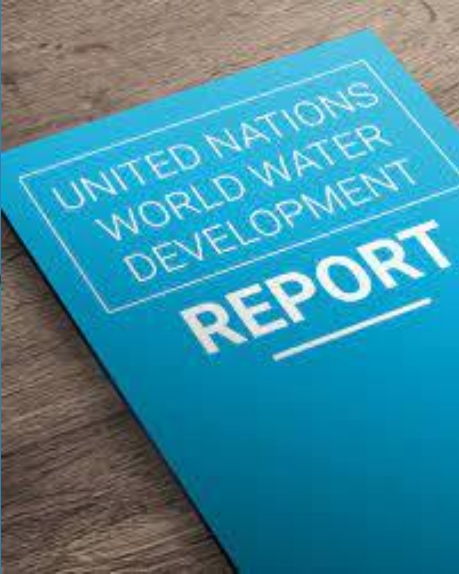
www.lagunainnovation.com

A Global Conversation on Water Data for Reuse
Innovation: Lessons from the LA River to the Global
South



WASH GLOBALLY





In a world where demands for freshwater are continuously growing, and where limited water resources are increasingly stressed by over-abstraction, pollution and climate change, neglecting the opportunities arising from improved wastewater management is nothing less than unthinkable in the context of a circular economy.

UN World Water Development Report (WWAP 2017)

The Problem: Poor Sanitation & Water Scarcity

46%
/ 3.2 billion people

Source: [UN Water](#)

of the world's population lacks access to adequate sanitation due to technological, financial, and/or governmental barriers

System-Wide Risks



Environmental
Pollution



Water Borne
Diseases

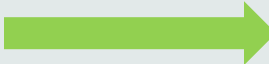

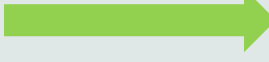

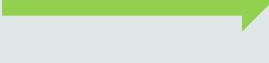


Water Scarcity

This lack of essential infrastructure endangers human health, socioeconomic well-being, and ecological functioning

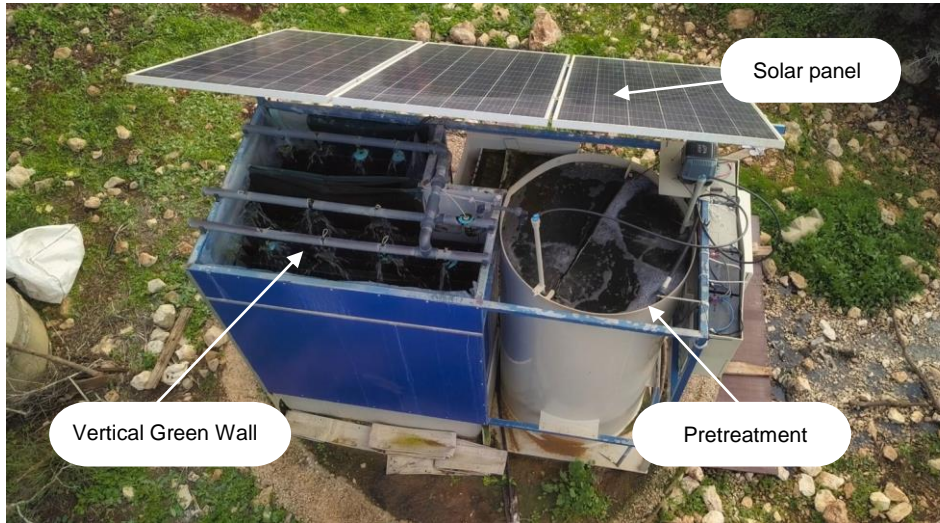
 We're on a mission to change that.

The solutions are here: OFF-GRID technologies

Problem		Off-Grid Solution
Energy Storage		Solar, Winds, Biogas and Heat
Wastewater Management		Wetland, Bacteria & Algae
Drinkable Water		Condensation & Absorption.
Organic Waste Management		Anaerobic Bacteria
Food production		Agro-Voltaic, Wastewater Recycling, Storage and Dripping Irrigation



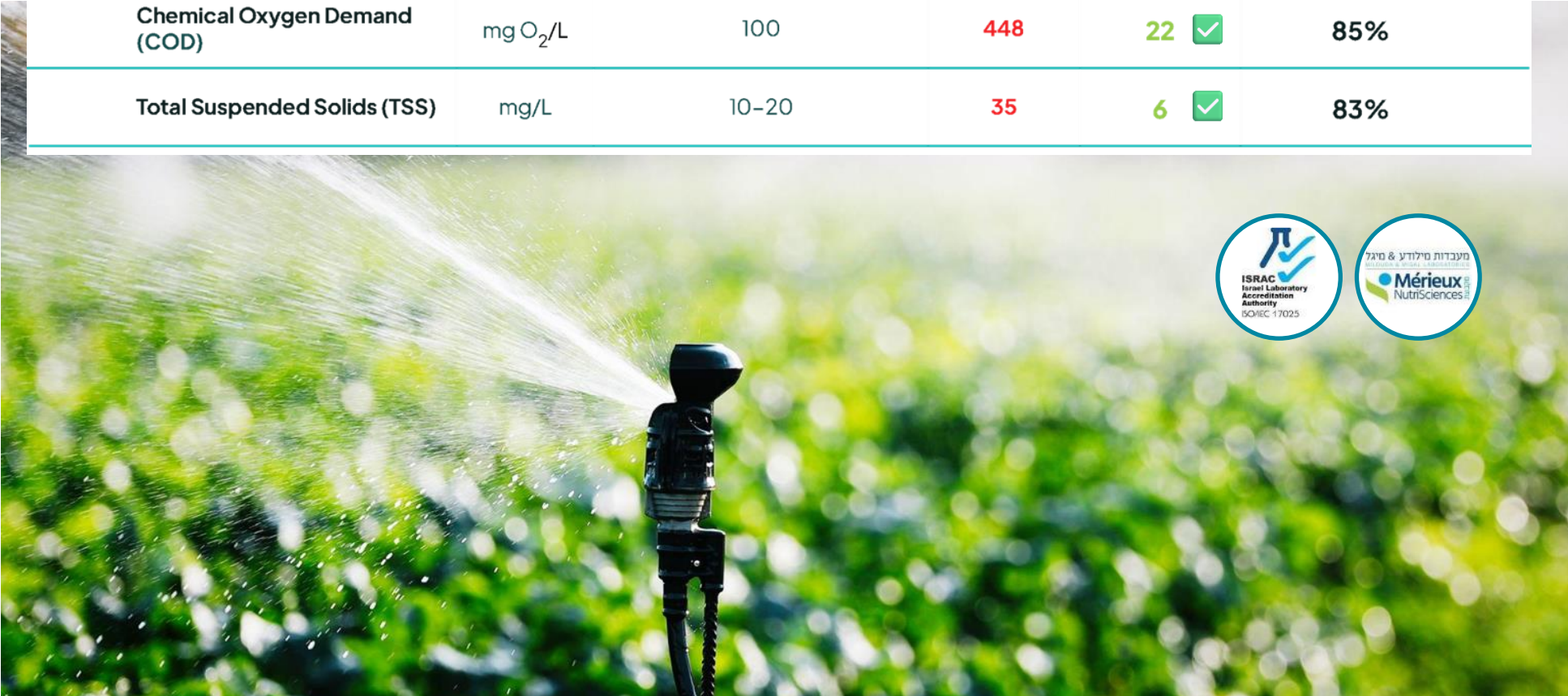
The Laguna system is compact, sludge-free, simple to install, modular and operated by solar panels



Parameter	Unit	Israeli Standards 2002		Palestinian standards 2002	
		Unrestricted irrigation	Rivers	Unrestricted irrigation	Rivers
BOD	mg/l	10	10	20	–
TSS	mg/l	10	10	30	
COD	mg/l	100	70		200
Ammonia-N	mg/l	20	1.5	50	5
Total-N	mg/l	20	10		
Total-P/PO ₄ -P	mg/l	5	0.2	30	5
SO ₄	mg/l	–	–	500	1,000
Chloride	mg/l	250	400	500	–
Sodium	mg/l	150	200	200	–
Fecal coliforms	CFU/100 ml	10	200	<200	<1,000
Boron	mg/l	0.4	–	0.7	2
Hydrocarbons	mg/l	–	1	0.002	1
Anionic detergents	mg/l	2	0.5	15	25
Total oil	mg/l	–	1	5	10
pH	[–]	6.5–8.5	7–8.5	6–9	6–9
Dissolved oxygen	mg/l	<0.5	<3	>0.5	>1

Independently Validated Improvement in Effluent Quality

Test	Unit	Acceptable standard for effluent irrigation	Influent Result	Effluent Result	Improvement (%)
Biological Oxygen Demand (BOD)	mg/L	10-20	216	5 ✓	98%
Chemical Oxygen Demand (COD)	mg O ₂ /L	100	448	22 ✓	85%
Total Suspended Solids (TSS)	mg/L	10-20	35	6 ✓	83%



Field Sampling



Type to filter sites...

- GSM**
-67.000 db | 21-02-2015, 07:33:24
- GPS**
5.600 hdop | 18-02-2015, 15:33:28
- Level**
243.384 cm | 21-02-2015, 11:19:26

Hebron

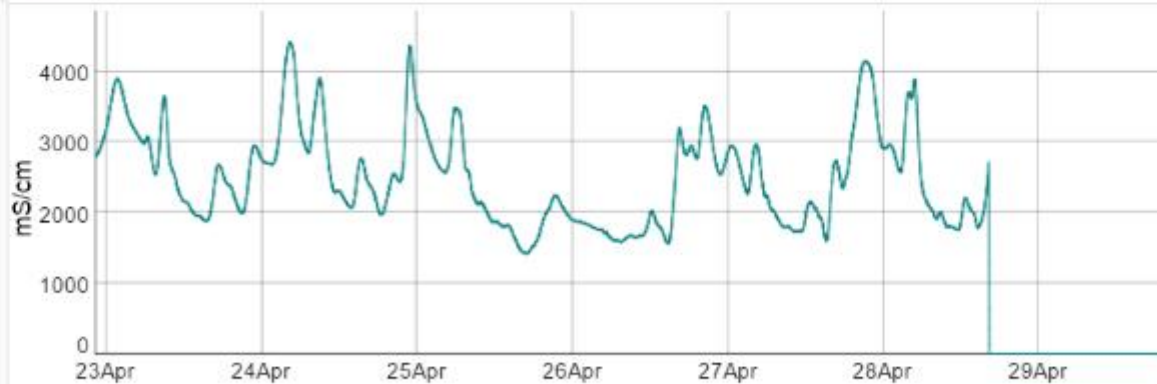
- Dissolved Oxygen**
0.000 mg/L | 2 hours ago
- Conductivity**
4.218 mS/cm | 2 hours ago
- TSS**
N/A
- GSM**
-67.000 db | 6 hours ago
- GPS**
1.400 hdop | yesterday
- Temperature**
22.546 c | 2 hours ago
- Level**
0.000 cm | 5 hours ago
- GSM Level**
-65.000 db | 17 hours ago

refresh in 1 sec.



Charts

Time Frame: 6 hours, 12 hours, 1 day, 3 day, 1 week, 1 month, 3 month, 6 month, 1 year



Legend: Hebron / Conductivity

cm / mg/L mS/cm

From waste to wealth

By unlocking the productive value of treated wastewater, we help communities transition towards a circular economy while mitigating risk factors associated with sewage pollution.



Accelerating SDG Targets

Olive oil yields are estimated to increase by 50% with irrigation from treated wastewater

👉 Equals +\$5,360 in revenue/farm/year

“Water is not just water, it is security and growth.”