

Location: Los Angeles Department of Water and Power

Address: La Kretz Innovation Campus
525 S. Hewitt Street
Los Angeles, CA 90013

Purpose: Bi-Monthly Meeting

Date and Time: April 11, 2023 from 11:30 a.m. – 1:00 p.m.

Distribution: Los Angeles WaterReuse Association Chapter Members and Supporters

Below is a summary of the highlight from the April 2023 bimonthly member meeting of the Los Angeles Chapter of the WaterReuse Association.

The presentations from this meeting can be found at:
<http://www.watereuse.org/sections/california/losangeles/meetings>

1. Host & Sponsor Presentation: Los Angeles Groundwater Replenishment Project (Sebastien Rossouw/LADWP)

The driving goals behind the Los Angeles Groundwater Replenishment Project (GWR) are very wide in scope, so much that they require close collaboration with multiple City of Los Angeles (City) departments, including the Los Angeles Department of Water and Power (LADWP) and LA Sanitation and Environment (LASAN). The Green New Deal articulates the project goals: complete recycle of wastewater by 2035 and sourcing a minimum of 70% of all water locally by 2035. The project represents significant investment by the City. The City currently has support from the federal government in form of \$224 million in WIFIA low interest loans. The plan is to take tertiary effluent from the Donald C. Tillman Water Reclamation Plant (DCTWRP), treat it to indirect potable reuse standards, convey it via a 54" existing pipeline, and send it to the Hansen Spreading Grounds. The goal is to spread 17,000-acre feet of water per year, which is enough water for 68,000 households. The surface spreading is to replenish the San Fernando Groundwater Basin. This is a very important groundwater basin as it represents the City's local storage supply. Historically, in dry years, it has provided up to 23% of the total water supply for the City of Los Angeles. GWR has been vetted extensively. It has 13 years of piloting history, starting with the Phase 1 Pilot in 2010 of full advanced treatment (FAT). Phase 2 started in 2016, with six parallel treatment trains to compare ozone based and FAT based treatment. In 2022, LADWP and LASAN explored ozone-based treatment further with the Ozone Demonstration Project. In the 13 years, the City learned about the strengths and weaknesses about the respective treatment processes. For ozone, the pros relative to FAT include that it is simpler to construct and easier to operate, as well as less expensive. It is also almost completely efficient; it does not carry the burden of waste streams. The cons are that it does not protect against some key contaminants of emerging concern (CECs). FAT is a very high degree of treatment, treating beyond what is required for surface spreading. FAT treats to a sub-surface injection standard. It also provides removal of many CECs. It does however bear the burden of being less efficient than an ozone based treatment process. In addition, 10-20% of the total flow becomes a waste stream. Ultimately, the City decided to go with FAT because it provides an effective mechanism by which the City can protect the groundwater while replenishing the aquifer. On February 17, 2023, the City issued a notice to proceed (NOI), kicking off design for the advanced water purification facility (AWPF). The City enlisted at the services of a variety of consultants including progressive design builder Jacobs that will spearhead design in Phase 1 and potentially construction in Phase 2. The other consultants Hazen, Carollo, Woodard & Curran, and

Trussel Technologies Inc. are operating in an advisory capacity to ensure project success. The facility will have a learning center to educate interested parties and a space where shareholders, regulators, and funders can learn more about the project. The City has also investigated the opportunity for a direct potable reuse (DPR) pilot and has been looking at driving additional flow to the AWPf to hit the target of 17,000-acre feet per year. Additionally, the City has been working on improving the Hansen spreading grounds. Essentially, trying to prepare the spreading grounds for the 17,000-acre feet per year of spreading. Additional goals of the project include operational flexibility and increase control and monitoring. The City would like to have a fair amount of data and like to have remote access. Lastly, the City is hoping to have 100% design by 2024 and produce product water by the end of 2027.

2. **Technical Topic: Advanced Water Treatment: Lowering Carbon-Footprint of Water Recycling** (John Crisman/Andrea White, Moleaer, Inc.)

Moleaer has 2,200 commercial installations across 51 countries treating 760 million gallons per day of water. Moleaer has 86 employees and growing and nine patents around their technology. They serve many markets most of them have one thing in common, which is water.

Nanobubbles are a form of clean chemistry. It uses air and water to create nanoscopic nanobubbles. They are 100 nanometers in diameter, which is about the size of bacteria or a virus. They are also able to interact at a molecular level with other compounds. Currently, Moleaer is looking at using nanobubbles to improve the treatability of wastewater. Essentially, taking slowly biodegradable materials and converting them to readily biodegradable materials and in doing so you remove the source of inefficiency across the plant. This enables process intensification. When put in to the raw screened influent, the process intensification occurs in a compounding effect to all downstream process units. Meaning that if you improve the primary clarifier performance, you then improve the efficiency of the secondary process, and so on. With the integration of nanobubbles. Moleaer is looking a lot at the reduction of energy use, as well as reduction in chemical use. Nanobubbles also increase treatment capacity and improve the dissolved oxygen levels by making the aeration system perform more efficiently.

Nanobubbles target FOG and surfactants, which make wastewater treatment inefficient by impeding the transfer of oxygen and solid separation. Surfactants are slowly biodegradable, they impede oxygen uptake, and have a toxicity effect because surfactants are used in cleaning products. Surfactant molecules have a hydrophilic head group, meaning it wants to stay in the water, and a hydrophobic group, which means, it wants to get out of the water. The hydrophilic properties of the surfactants is what drives the interaction with the nanobubbles. The nanobubbles surface is also hydrophobic. The force of attraction between the molecule and the nanobubbles allow the surfactant molecules to line up around the surface of the nanobubble and when the nanobubble is destabilized, it collapses, releasing enough force to break apart water molecules and form the hydroxyl radical. The same amount of force is also enough to break the hydrocarbon tails down on the surfactant chains and transforms a slowly biodegradable material into a more readily biodegradable material.

Goleta Sanitation District (GSD) installed a nanobubble demonstration project on May 2022. It is full scale treating. GSD has an average daily dry weather flow of 4.2 MGD. Essentially, air is being introduced to the process using a compressor. Moleaer has been tracking surfactants and has seen significant removal. Moleaer conducted a mass balance across the primary clarifiers and there is now 40-54 % surfactant removal. Since integrating nanobubbles into the process, GSD has noticed several benefits across the treatment process. The primary effluent hydraulic equalization basin had a long history of stable foam and odors and poor oxygen transfer to the surface due to surfactants in the waste stream. As soon as GSD integrated the nanobubbles, the foam disappeared and that is

because 50% of surfactants have been removed across the primary clarifier. This improved the primary clarifier removal efficiency by 10%. It is significant when you are looking at in on a load basis, which means there is 10% less load that the rest of the process needs to treat. For the activated sludge portion of the process, the aeration energy tracked from the blowers, once added the nanobubbles, saw a 22% reduction of average power draw on the blowers. Additionally, the old biomass grown under the environmental pressures and toxicity of surfactants was replaced with healthier biomass that was selected to live in an environment free of those materials. Moleaer and GSD began to see the number of process upsets go down, and when the entire old biomass was replaced by the new biomass, there was an additional reduction of 21% in energy usage, totaling to a 43% energy reduction. In their disinfection process, Moleaer and GSD saw a similar trend. There was a decrease in chemical demand when the nanobubble started up with a total of 44% less chlorine required for disinfection.

For GSD, the reduction in net energy saves \$32,000 per year. The reduction in sodium hypochlorite and sodium bisulfite usage saves \$15,000 per year. The elimination of bio-augmentation, which GSD was using in response to the toxicity events, saves GSD \$44,000 per year. They were also able to improve their treatment capacity by 20-25% and to take a treatment train out of service, which saved GSD \$36,000 per year. The total avoided cost for the facility is \$127,000 per year. GSD also anticipates nutrient regulations on their ocean discharge. Through the nanobubble treatment, GSD is getting very close to what they think is going to be their nutrient limit, which means that the project they are going to have to implement for nutrient removal is going to be much smaller in capital cost and could save them up to \$50 million depending on the scope of the project. Overall, GSD has benefited from nanobubble treatment.

3. Water Recycling Legislative/Regulatory Updates (*Raymond Jay*)

California Legislation

- Water Supply Conditions: Drought throughout the state has significantly decreased. There are still some areas with lower level droughts; however, LA County is completely out of drought. The water supply condition report indicates that Oroville Reservoir is at 86% capacity, San Luis Reservoir is at 99% capacity, and Diamond Valley Lake, Metropolitan Water District's local reservoir, just starting to fill that up and should be filled in a couple of months. On the Colorado side, things are not looking quite as good. Water recycling is still recommended.
- CA Legislative Calendar: The next important date is April 28, where fiscal bills have to go in front of their policy committee. This is where many bills are removed. June 15, is the last day to pass budget. September 14, will be the last day to pass bills.
- Water Legislation of Interest: WaterReuse California now has a web site that tracks legislation.
- California Legislative Information website: link to research bills, their status, and detailed description. Use key words to find bills. Link to web page below:

(<http://assembly.ca.gov/legislativedeadlines>).

https://leginfo.legislature.ca.gov/faces/billSearchClient.xhtml?session_year=20232024&keyword=water%20recycling&house=Both&author=All&lawCode=All

2023 Water Legislation Introduced

- SB 366 (Caballero): The California Water Plan: long-term supply targets; requires that there be more of a stakeholder influence that goes into the building of these water plans, which come up every 5 years; WRCA = Support
- SB 745 (Cortese): Drought Resistant Building Standards; require the building standards commission to really try to make sure that new housing developments have gray water and other type of piping in them to try and reduce the drought; this reduces some of the flexibility for local agencies that want to decide how they do conservation and this would force new buildings to be installed with additional piping even though the area might not have any capability to put recycled water in the building; WRCA = O/A
- AB 682 (Mathis): SWRCB: online search tool: funding applications; will help those trying to apply for funding to get a better understanding where the project is currently within the application process; WRCA has not taken a formal position on this bill but it seems like WRCA will likely support it in the future once it comes back for some more discussion
- AB 1573 (Friedman): Water Conservation: Landscape Design: model ordinances; this bill had some discussion about non-functional turf in it but it has recently been amended to reduce the amount of discussion around non-functional turf; it requires additional modeling and ordinances so that newer facilities, particularly commercial/industrial would have to limit the non-functional turf areas; WRCA is trying to push that recycled water for non-functional turf should still be allowed; WRCA = Watch

Link to more information:

<http://watereuse.org/sections/watereuse-california/legislative/regulatory-committee/>

California Budget

- Budget due June 15th
- Expect a budget deficit for FY 23/24
- \$270 million in budget for recycled water
 - \$100 million recycled water;
 - \$170 potable reuse
- WRCA comment letter on March 17, 2023 asks for \$500 million this year; WRCA still working on trying to get some of that funding
- Budget Trailer Bill with new RW fee

Regulatory Update

- Direct Potable Reuse Regulations
 - SWRCB to adopt regulations by December 31, 2023
 - Expect update draft and Formal Rule making to begin in May 2023
 - Potential revision to DPR Regulations
 - Waivers, BAF flexibility, source control, & other changes
 - Alternative clause & DiPPRA unlikely to change

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/dpr-criteria-panel.html

- Water Use Efficiency Regulations
 - Formal Rule making to begin in May 2023
 - Includes potential Potable Reuse Bonus Incentive up to 15%
<https://water.ca.gov/Programs/Water-Use-And-Efficiency/2018-Water-Conservation-Legislation/Urban-Water-Use-Efficiency-Standards-Variances-and-Performance-Measures>
- On-Site Treatment and Reuse of Non-Potable Water
 - SWRCB overdue to adopt regulations by December 1, 2022
 - SWRCB rulemaking process: Expected to begin in Spring 2023
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/onsite_nonpotable_reuse_regulations.html
- Cross Connection Control Handbook
 - Allows swivel ell as a change over device; Board Adoption Meeting: TBD
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/cccp.html
- Local, State and Federal Funding Opportunities
<https://watereuse.org/wp-content/uploads/2023/03/Summary-of-Funding-Opportunities-as-of-04-01-23.pdf>

Federal Update

- FY23 Appropriations
 - Still working on the appropriations
- Large Scale Water Recycling Program
 - Draft guidance on Feasibility Studies released
 - Funding for feasibility studies expected for the summer
- Alternative Water Supply Program
 - Letter requesting additional funding
- BABAA Waivers
 - Letter requesting additional waivers
- PFAS
 - WRA submitted comment letter
 - EPA Public Hearing on Regulations on May 5th

4. Regulatory Agency Spotlight – Regional Water Quality Control Board (*Adam Taing*)

LARWQCB regulates Ventura County and Los Angeles County. There is some monitoring in Kern and Santa Barbara. This includes 120 miles of coastline and a storage capacity of 52 million acre feet, which means there is quite a bit of room to capture and store water.

- Water Supply Strategy: Strike Team
 - Identify and resolve permitting and funding obstacles
 - Tracking permitting and funding status of recycled water projects
 - Develop public, digital dashboard

- Participating Organization includes the Water Boards, WaterReuse, and CASA
- The recycled water goal is 800,000-acre feet by 2030. Los Angeles will be contributing to at least 50% of the goal.
- Division of Water Quality (DWQ) wants everyone to be aware of the Annual Volumetric Reporting for this year, there is a January version, and DWQ encourages wastewater operators and agencies to share information with DWQ regarding new projects so that those projects can get on their list and DWQ can start discussing it.
- The Strike Team will produce a charter, which will identify the scope and responsibilities of the respective participants, as well as memorializing any type of decision-making made by the team.
- Pretreatment Program
 - Practice of removing pollutants from industrial wastewater before they are discharged to municipal sewage treatment systems
 - Title 40 of the Code of Federal Regulations (CFR) 403 et seq.
 - State Water Board provides general program oversight
 - Regional Water Boards perform pretreatment compliance audits, inspections, review reports, and enforcement
 - National Water Reuse Action Plan (WRAP)
 - Comprised of multiple industries that come together and create a knowledge compendium for all of the United States to use as a resource
 - Action item: Action 2.2.4 – Enhance wastewater source control through local pretreatment programs
 - Develop best practices to mitigate and reduce pollutants
- Regulatory Updates
 - Proposed Maximum Contaminant Levels for PFOS and PFOA
 - PFOA - 4.0 ng/L; PFOS – 4.0 ng/L
 - Public Comments due May 30, 2023

5. CA State Section Update (*Rafael Villegas*)

- Last Board of Trustees Meeting: February 10, 2023
- WRCA Summary of Funding Opportunities
 - Monthly Local, State, and Federal Funding Opportunities List distributed on 4/4/2023
- 2023 WaterReuse California Annual Conference
 - Indian Well, CA – November 5-7
 - Save the Date, registration opens soon!

6. LA Chapter Update *(Jennifer Jacobus)*

- February 2023 Meeting Summary Approval: Approved
- Open Volunteer Opportunities
 - Meeting Summaries
 - 2023 California WaterReuse Conference Technical Committee
- Ad Hoc Urban Irrigation Manual Update Committee
 - Co-Chairs:
 - Monica Sanchez/LACSD
 - Erika Bensch/LACSD
 - Jesus Gonzalez/LADWP
- Emerging Professionals Committee Update
 - Chair: Seto Cherchain Scherchian@BrwnCald.com
- Communications Lead
 - Chair: Oliver Slosser oslosser@lvmwd.org
 - Another chapter newsletter is coming
- Awards Champion
 - Chair: Everett Ferguson eferguson@wrd.org
- Technical Topics Committee
 - Chair: Alex Franchi alex.franchi@aecom.com
 - Email Alex Franchi for any technical topic ideas

7. Membership Roundtable *(Alex Waite)*

- City of Santa Monica received the award for Innovation Project of the Year at the WaterReuse Symposium for the Santa Monica Sustainable Water Infrastructure Project
- Good turn out from the LA Chapter
- There was a tour of the Atlanta Aquarium behind the scenes. Attendees saw various facility pumps that are not open to the public.

8. Next Meetings

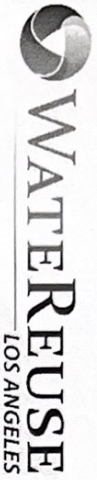
- June 13, 2023
 - Water Replenishment District of Southern California
 - Sponsorship opportunity
- August 8, 2023
 - Host opportunity
 - Sponsorship Opportunity

9. Adjournment 1:00 p.m.

Los Angeles Chapter Officers for 2023/2024

Jared Lee, President	626-379-8443
Alex Waite, Vice President	424-399-6733
Jennifer Jacobus, Secretary/Treasurer	213-448-2586
Rafael Villegas, Chapter Trustee	213-367-1289
Fred Gerringer, Past President	626-319-1107

JLee@burbankca.gov
alex.waite@santamonica.gov
jjacobus@rinconconsultants.com
rafael.villegas@ladwp.com
fgerringer@hazenandsawyer.com



Los Angeles Department of Water and Power

Tuesday, April 11, 2023

LAST NAME	FIRST NAME	ORGANIZATION	INITIALS	ADD TO DISTRIBUTION LIST
Afework	Karina	City of Los Angeles	KSA	Karina.afework@lacity.org
Alvarez	Maria	Atkins		
Amha	Yamrot	Stantec	YD	
Back	Elisha	Woodard & Curran		
Brittain	Michael	City of Los Angeles		
Chen	Annie	City of Los Angeles	Ac	
Cherchian	Seto	Brown & Caldwell	Sc	
Chow	Denise	LA Sanitation and Environment		
Christmann	Rebecca	Waterboards		
Clark	Jim	Black & Veatch	JVC	
Collins	Lauren	Eurofins		
Dilaura	Donna	Walnut Valley Water District		
Dorn	Chris	Woodard & Curran	CMD	
Ezeh	Troy	LA Sanitation and Environment		
Fuller	Kyle	Brown & Caldwell	KF	
Gerringer	Fred	Hazen		
Gonzalez	Jesus	LADWP		
Han	Andrew	Los Angeles Department of Water and Power		
Jacobus	Jennifer	Rincon Consultants		
Jaquez	Greg	MNS		
Jay	Raymond	Metropolitan Water District of Southern California		

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LAST NAME	FIRST NAME	ORGANIZATION	INITIALS	ADD TO DISTRIBUTION LIST
Kureishy	Dinaz	City of Santa Monica Public Works	DK	
Lee	Crystal	City of Los Angeles		
Lee	Jared	Burbank Water and Power	JL	
Leon	Luis	AECOM		
Lluvia	Lopez Garces	Los Angeles Department of Water and Power	LLG	
Lopez	Nick	Burbank Water and Power	NL	
Lutz	Michael	Los Angeles Bureau of Engineering		
Martin	Amy	Brown & Caldwell		
Mutter	Jacquelin	HDR		
Neeman	Jeff	Black & Veatch	JNV	
Nye	Joseph	HDR	JNH	
Ortega	Ken	Atkins		
Panasyan	Mariam	City of Los Angeles	M.P.	
Perez	Bertha	Walnut Valley Water District		
Plancarte	Brianna	Los Angeles Department of Water and Power		
Sato	Stephen	LA County Public Health		
Shabani	Farzaneh	Carollo	FS	
Stewart	Kevin	Los Angeles Department of Water and Power		
Taffler	Dawn	Kennedy/Jenks		
Thamiz	Lisa	LA Sanitation and Environment		
Tsui	Thomas	SWRCB Recycled Water Unit		

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LAST NAME	FIRST NAME	ORGANIZATION	INITIALS	ADD TO DISTRIBUTION LIST
Villeagas	Rafael	Los Angeles Department of Water and Power	<i>RV</i>	
Waite	Alex	City of Santa Monica	<i>hw</i>	
Whitman	Eliza Jane	Woodard & Curran		
Wu	Pei-Shin	Brown & Caldwell	<i>pw</i>	<i>pwu@brwncald.com</i>
White	Andrea	Molear		
Crisman	John	Molear		
Lockett	John	LADWP	<i>DL</i>	
Rossouw	SEBASTIAN	LADWP	<i>SR</i>	
TEE	MARISA	LYGOS	<i>TM</i>	<i>tmoriga@lygos.com</i>
Guel	Charles	LADWP	<i>CG</i>	<i>charles.guel@ladwp</i>
A Tamy	Adam	LADWP	<i>AT</i>	
de HOSFEL	MARVIN	LADWP	<i>mg</i>	<i>marvin.schroeder@ladwp</i>
LOE	Crystal	BOE	<i>CL</i>	
M. Lutz	M. Lutz	BOE	<i>ML</i>	<i>michael.lutz@lacity.org</i>
Mutter	Jacquelin	HDR	<i>JM</i>	<i>jacquelin.mutter@hdrinc.com</i>

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Zoom Attendee Report

WaterReuse LA Chapter Meeting - April 2023

35

Attended	User Name (Original Name)	First Name	Last Name	Email
Yes	WaterReuse Association			zdorsey@watereuse.org
Yes	WaterReuse LA Chapter (Panelist)			Mmerk@watereuse.org
Yes	Frank Fuchs	Frank	Fuchs	frankf@westbasin.org
Yes	Maria Depaz	Maria	Depaz	maria.depaz@ladwp.com
Yes	Ginachi Amah	Ginachi	Amah	Ginachi.Amah@waterboards.ca.gov
Yes	Suad Cisic	Suad	Cisic	scisic@brwnncald.com
Yes	Nika Saleminik	Nika	Saleminik	nikasaleminik@lacs.org
Yes	Ileana Wald	Ileana	Wald	ileana.wald@waterboards.ca.gov
Yes	Bertha Perez	Bertha	Perez	Bperez@wvwd.com
Yes	Rosario Cortes	Rosario	Cortes	rcortes@watereuse.org
Yes	Mark Tettermer	Mark	Tettermer	tettermer@irwd.com
Yes	Amy So	Amy	So	amy.so@ladwp.com
Yes	Darrell Johnson	Darrell	Johnson	djohnson@lvwmwd.com
Yes	Rebecca Christmann	Rebecca	Christmann	rebecca.christmann@waterboards.ca.gov
Yes	Emily Wood	Emily	Wood	woodem@cdmsmith.com
Yes	Karina Gonzalez	Karina	Gonzalez	karina.x.gonzalez@lacity.org
Yes	abraham razon	abraham	razon	abraham.razon@lacity.org
Yes	Steven Webb	Steven	Webb	steven.webb@waterboards.ca.gov
Yes	Chandler Sheilds	Chandler	Sheilds	chandlers@westbasin.org
Yes	dusty moisio	dusty	moisio	dmoisio@rwd.org
Yes	Thomas Tsui	Thomas	Tsui	thomas.tsui@waterboards.ca.gov
Yes	Donna DiLaura	Donna	DiLaura	ddilaura@wvwd.com
Yes	Brianna Plancarte	Brianna	Plancarte	brianna.plancarte@ladwp.com
Yes	Alex Cross	Alex	Cross	across@watereuse.org
Yes	Aide Ortiz	Aide	Ortiz	aortiz@waterboards.ca.gov
Yes	Camille Castillo	Camille	Castillo	camillec@westbasin.org
Yes	Scott Miller	Scott	Miller	miller.scottevan@gmail.com
Yes	Scott Miller	Scott	Miller	miller.scottevan@gmail.com
Yes	alex curry	alex	curry	alex_curry@ci.pomona.ca.us
Yes	Du Tran	Du	Tran	du.tran@ladwp.com
Yes	Ufuk Erdal	Ufuk	Erdal	Ufuk.Erdal@arcadis.com
Yes	Denise Chow	Denise	Chow	Denise.Chow@lacity.org
Yes	Abiye Briggs	Abiye	Briggs	abriggs@ph.lacounty.gov
Yes	Dawn Taffler	Dawn	Taffler	dawntaffler@kennedyjenks.com
No	Jennifer Jacobus	Jennifer	Jacobus	jjacobus@rinconconsultants.com
No	Dean	Dean	Wang	dean.wang@lbwater.org
No	Mariam	Mariam	Panasyan	mariam.panasyan@lacity.org
No	Michael	Michael	Salas	michael.salas@lbwater.org