



August 29, 2024

Professor David Jenkins Technical Series

Relating Fundamentals of Biological Nitrogen Removal to Retrofit Activated Sludge Plants

Workshop #1

August 29, 2024

SF Bay Regional Water Quality Control Board

1515 Clay Street, Oakland, CA



This workshop will provide the technical knowledge to retrofit conventional wastewater treatment plants to accomplish nitrogen removal goals

To register go to [Prof. David Jenkins Technical Series](#)



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AGENCIES

Agenda

Time Start	Time Finish	Minutes	Topic	Topic Lead
8:30	9:00	30	Registration and Coffee	
9:00	9:10	10	Introduction and Learning Goals	Krishna Pagilla, University of Nevada, Reno
9:10	9:30	20	Nutrient Overview in SF Bay Area	Lorien Fono, BACWA Executive Director
9:30	10:15	45	Developing a Nutrient Management Strategy or Roadmap <ul style="list-style-type: none"> ▪ Mainstream Activated Sludge Upgrades ▪ Intensification ▪ Sidestream Treatment ▪ Multi-Benefit and Regional Solutions 	J.B. Neethling, HDR Leon Downing, Black and Veatch
10:15	10:30	15	Break	
10:30	11:15	45	Nitrogen Removal Fundamentals <ul style="list-style-type: none"> ▪ Wastewater N Concentrations and Trends ▪ Ammonia Removal – Nitrification ▪ Nitrogen Removal – Denitrification ▪ N Removal Effects and Impacts on Sludge Production ▪ Nitrogen Removal Effects and Impacts on Bulking and Foaming ▪ Nitrogen Removal Effects on Aeration and Energy Consumption ▪ Sidestream and Emerging Processes 	Krishna Pagilla, University of Nevada, Reno Rob Sharp, Hazen and Sawyer
11:15	11:30	15	Q&A or Panel Discussion	All
11:30	12:15	45	Lunch Break (Lunch Provided)	
12:15	1:15	60	Mainstream Activated Sludge Case Studies <ul style="list-style-type: none"> ▪ Sunnyvale ▪ USD ▪ Hayward 	Jamie Pigott, Carollo Engineers Irene Chu, Hazen and Sawyer David Donovan, City of Hayward & Linda Sawyer, Brown and Caldwell
1:15	2:15	60	Intensification Case Studies <ul style="list-style-type: none"> ▪ Windsor MABR ▪ Palo Alto MABR ▪ Municipal Airport AGS 	Francesca Cecconi, Black and Veatch Seppi Henneman and Michael Walkowiak, Brown and Caldwell Rion Merlo, Hazen and Sawyer

Agenda (cont.)

Time Start	Time Finish	Minutes	Topic	Topic Lead
2:15	2:30	15	Break	
2:30	3:10	40	Sidestream Case Studies <ul style="list-style-type: none"> ▪ Sunnyvale – Demon ▪ Fresno – Anita Mox 	Cory Lancaster, Jacobs John Witter, Carollo Engineers
3:10	3:50	40	Multi-Benefit and Regional Case Studies <ul style="list-style-type: none"> ▪ West County Wastewater ▪ Central San 	Aaron Winer, West County Wastewater & Andre Gharagozian, Carollo Engineers Central San, TBD & Mallika Ramanathan, HDR
3:50	4:05	15	Q&A or Panel Discussion	All
4:05	4:15	10	Wrap-up and Next Topics	Krishna Pagilla, University of Nevada, Reno
4:15			Adjourn	
		360	Total learning time, minutes	
		75	Total break time, minutes	
		435	Total schedule, minutes	

Learning Objectives



To familiarize the audience with:

- Nutrient regulations and impacts in the SF Bay
- SF Bay case studies for developing a nutrient strategy
- Fundamentals of nitrogen characteristics and forms in wastewater
- Nitrogen removal by activated sludge in BOD removal only plants
- Ammonia removal by nitrification
- Nitrogen removal by denitrification
- Nitrogen removal effects on sludge production
- Nitrogen removal effects on recycle streams
- Aeration and energy considerations in nitrogen removal

Ground Rules



- 1. Punctuality:** We have a lot of information to cover and a lot of learning to do together. We will start and stop on time for all breaks to ensure you get your full worth!
- 2. No Disturbances:** Smart phones will actually play a role in this training but should be turned to vibrate so as to not disturb others during the workshop.
- 3. Participation:** This is NOT intended be one-way communication to audience. To get the most from this workshop, you will need to be an involved and engaged participant in each module.
- 4. Ask Questions:** If you do have a question you don't want to ask in front of others, ask it privately during a break. Please do not think any question you have is unimportant.