



Advanced Activated Sludge Process Control

**May 13 - 14, 2015
DENVER**

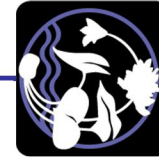


**TU APPROVED
Class Size Limited
to 25 Attendees**



**INDIGO
WATER GROUP**

Phone 303.489.9226
eFax 303.484.3304
sidney@indigowatergroup.com



Indigo Water Group
626 West Davies Way
Littleton, Colorado 80120

*Pair this class with
Nutrient Removal
on May 15, 2015
in the same location.*



To Register: Call 303.489.9226, mail in the enclosed registration form, FAX to 303.484.3304, or register on-line at www.indigowatergroup.com Mail payment by check or pay on-line by credit card.



About the Trainer

Eric Wahlberg is a rare breed: operator, engineer, and PhD rolled up into one. His math for operators course has been a highly attended offering at the Tri-State Conference for more than six years.



Public Works identified Eric as a 2008 Trendsetter for his work in activated sludge process control and the tests he has developed over the years. He has written and presented extensively and is a nationally renowned expert in activated sludge process control.



Indigo Water Group

Indigo Water Group is a small, woman-owned business in Littleton, Colorado that specializes in water and wastewater treatment. We offer a wide range of services from utility plans to specialized on-site training to assistance with laboratory and water/wastewater operations to collection system and process modeling.

Visit our website to download our **FREE** math workbooks and **FREE** sample study questions for the certification exams.

New! Free math videos.



ADVANCED ACTIVATED SLUDGE PROCESS CONTROL AND OPTIMIZATION

Please join us for the Two-Day Activated Sludge Process Control and Optimization course. Indigo Water Group and Wastewater Technology Trainers have teamed up to create a two-day activated sludge process control class. Pair this course with a Nutrient Removal for three days of intense learning!

Training Units for the full 2 day course are **APPROVED for TUs** by the State of Colorado:

Classes are limited to 25 attendees each.

TRAINING UNITS					
	W	WW	I	C	D
Day 1		0.73	0.73		
Day 2		0.72	0.72		
Total		1.45	1.45		

LOCATIONS

DENVER May 13 – 14, 2015	Ramada Plaza Central 4849 Bannock Street Denver, Colorado 80216 (303) 292-9500
---	--

WHO SHOULD ATTEND?

This course is geared toward A and B level operators. The objective is to give front-line supervisors and operators a more in-depth understanding of the activated process and nutrient removal. With improved understanding, effluent quality variability and energy use can be reduced.

COURSE AGENDA – DAY 1

Introduction -- Opportunity
WWTP Overview
BOD Discussion
TSS Discussion
Primary Treatment Impacts
Activated Sludge Aeration Basin
 Fate of organic carbon
 Aeration basin process objectives
 Meeting process objectives
 Conversion
 Separability
Factors Affecting Conversion
 Biological growth environment
 Conversion happens with little operator input
 Meaning of SC Eff BOD
Factors Affecting Sludge Quality
 Mixed Liquor DO concentration
 MLSS Concentration
Troubleshooting versus Process Control
Nitrogen Removal
 Nitrogen is a nutrient
 Nitrification and Denitrification
 Define Anoxic Zone
 Typical N/DN play layout
 mg NH₃ versus mg NH₃-N
Phosphorus Removal
 Phosphorus is a nutrient
 P removal is different than N removal
 Role of VFAs
 Typical nutrient (N&P) plant layout
 mg P versus mg PO₄

AGENDA – DAY 2

Energy, Self-Sufficiency, and Optimization
 Four Steps to Energy Self-Sufficiency
 Chemically Enhanced Primary Treatment
 Lowest SRT Operation
 Turn Down Air Where Not Needed
Activated Sludge Secondary Clarifier
 Ability to separate biomass after conversion
 Process objectives of secondary clarifier
 Process Control Tests
Six factors define secondary clarifier performance
 State Point Analysis derived and explained
 Settling Curve Flux from SVI
MLSS concentration can't be controlled by Qras
 Compaction of MLSS
 Optimum RAS flow
 Using the State Point Analysis to set RAS flow
 Hands on calculations and examples with groups

HOW TO REGISTER

Registration may be done by mailing in the attached form, faxing, by telephone, or through our website at www.indigowatergroup.com. We accept major credit cards through our website or checks by mail.

Registration fee is **\$495 per person**. A light breakfast, lunch, and afternoon snack break, are included. Seminars are scheduled to start at 8:15 am.

Attendee:

e-Mail:

Company:

Address:

Telephone:

TO REGISTER: Call 303.489.9226, mail in the enclosed registration form, fax form to 303.484.3304 or register on-line at www.indigowatergroup.com Mail payment by check or pay on-line by credit card.