



# Advanced Activated Sludge Process Control & Nutrient Removal

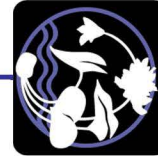
May 31 - June 1, 2017  
**NORTHGLENN**



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



**INDIGO**  
WATER GROUP



Indigo Water Group  
626 West Davies Way  
Littleton, Colorado 80120

To Register: Call 303.489.9226, mail in the enclosed registration form, or register on-line at [www.indigowatergroup.com](http://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.**



Phone 303.489.9226

[sidney@indigowatergroup.com](mailto:sidney@indigowatergroup.com)

**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 31 – Jun 1,**  
**2017**

**City of Northglenn**  
Operations and Maintenance  
Building  
12301 Claude Court  
Northglenn, CO 80241

**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, by telephone, or through our website at [www.indigowatergroup.com](http://www.indigowatergroup.com) We accept major credit cards through our website or checks by mail.

Registration fee is **\$400 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:

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