

Pre-conference Workshops

Attendance only with separate registration—not included in regular conference registration

Green Stormwater Infrastructures: Now that they're in your system, what do you do with them?

**Sunday September 18 10:00 AM–1:00 PM;
followed by tour of local facilities
from 1:00 PM–4:00 PM**

Cost (lunch included): \$100 Members, \$115 Nonmembers

Moderator: Carrie Pak, Clean Water Services
Speakers will include designers and practitioners from regional and national locations.

Target audience: Operators and managers of stormwater facilities and design engineers with an interest in learning maintenance of vegetated swales and porous pavements

Over the past decade, the Pacific Northwest has become the hot bed of green stormwater infrastructures management advancements. Green stormwater infrastructures, or low impact development practices, have become an invaluable tool for an effective and efficient approach to wet weather management. Everywhere you turn, it's easy to see green stormwater infrastructures being integrated into the landscape of our urban settings. As the number of these facilities proliferate, it is vital that we learn from success and failures of the past—not only from design perspectives but also from a maintenance standpoint. This workshop will provide in-depth review of theory and operations of green stormwater infrastructures, including vegetated swales and porous pavements.

The workshop will provide maintenance considerations for:

- Vegetated swales in urban settings, including ideas for engaging property owners for daily maintenance
- Lessons learned from using infiltration based BMPs
- Local experience with porous pavement functionality
- Maintenance costs and considerations
- Tour of local green stormwater infrastructures

Inventorying and Reducing Your Organization's Carbon Footprint: A How-To Guide

Sunday September 18 10:00 AM–5:00 PM

Cost (lunch included): \$100 Members, \$115 Nonmembers

Sponsored by: PNCWA Sustainability Committee

Speakers: Sally Brown, Ph.D.,
University of Washington
Dana Devin-Clarke, *Brown and Caldwell*
Sarah Deslauriers, *Carollo Engineers*
Steve Fancher, *City of Gresham, Oregon*
Dawn Lesley, *Kennedy/Jenks Consultants*
Jennifer Belknap Williamson,
City of Gresham, Oregon

Target audience: Engineers, policy makers, environmental scientists, utility managers

This workshop will provide hands-on guidance for tracking and managing Greenhouse Gas (GHG) emissions from municipal operations. Municipal leaders and experienced engineers will present sector-specific guidance on how to perform inventories for conveyance systems, treatment processes, biosolids utilization, and general operations using the most current available data and methods, including the BEAM (Biosolids Emissions Assessment Model) GHG calculator tool.

Examples of programs at large utilities including Gresham and King County will be provided, illustrating how organizations are including GHG inventories and management goals in project decision-making and planning criteria. Case studies will be presented on the incorporation of GHG data in comprehensive triple bottom evaluations of projects, including the socio-economic and project finance implications. Information on how State and Federal policies related to GHG reporting as well as cap and trade may affect wastewater facilities now and in the future will be presented to assist participants in long-term planning.

Workshop participants will complete a hands-on exercise to evaluate the carbon footprint of an example municipality and rank alternatives for meeting future carbon emission reduction goals.

Nutrient Removal in Practice

Sunday September 18 9:00 AM–5:00 PM

Cost (lunch included): \$100 Members, \$115 Nonmembers

Speakers: Ryan Anderson, *City of Yakima*
James Barnard, *Black & Veatch*
Nate Cullen, *Clean Water Services*
Glen Daigger, *CH2M HILL*
Henryk Melcer, *Brown and Caldwell*
JB Neethling, *HDR*
Rod Reardon, *Carollo Engineers*
TBD, *City of Boise*

Target audience: Operators, utility managers and engineers who are operating/designing facilities for nutrient removal or anticipate upcoming nutrient limits

As nutrient limits are being implemented across the country, wastewater treatment plants are required to evaluate upgrade options and undergo significant capital upgrades. In the Pacific Northwest, stringent phosphorus and ammonia limits have been imposed at numerous facilities. Each decision along the design process presents different capital, operational and maintenance requirements. There is not a one-size-fits-all solution to meet the limits and the variety of treatment strategies is heavily dependent on the existing infrastructure, effluent limits, wastewater characteristics and ability to secure sufficient capital budget for the proposed modifications.

Incorporation of nutrient removal in a facility is rarely an endpoint in the treatment process evolution. A holistic evaluation of the impact on the treatment plant can result in further optimization, increased operational efficiency, and improved process stability. In many regions the initial nutrient removal limits have been reduced further over time requiring further modification to the treatment process.

This will focus on the impacts of selected treatment strategies on the operation of the facility. Both industry experts and municipalities will present their experience with what the impact of the design process has on the facilities. The workshop will provide roundtable discussions to encourage participants to provide their own experiences and further stimulate discussion and sharing knowledge.

Optimizing the Performance and Capacity of Your Secondary Clarifier

Sunday September 18 1:00 PM–5:00 PM

Cost: \$60 Members, \$75 Nonmembers

Sponsored by: PNCWA Plant Operations and Maintenance Committee

Speakers: Dick Finger,
Seattle Metro/King County (retired)
Randall Samstag, *Carollo Engineers*
Edward Wicklein, *Carollo Engineers*

Target audience: Operators and engineers of activated sludge treatment facilities

The workshop will focus on optimization of performance and increasing the capacity of individual activated sludge sedimentation facilities, including settleability control and secondary sedimentation tank optimization. The workshop will present basic tools for establishing plant capacity beginning with clarifier state point analysis and the interaction of aeration tank solids concentration with secondary clarifier configuration and operation. The workshop will present tools and techniques for improvement of activated sludge settleability by both chemical treatment and biological process control. Advanced tools for analysis of tank capacity including field testing and computational fluid dynamics (CFD) modeling will also be presented. The workshop will include case studies from plants where capacity has been increased by process or tank modifications as well as an interactive session in which influences on the capacity of an activated sludge clarifier will be investigated.

A portion of the workshop will be reserved for group computation of example problems using state point analysis and capacity analysis tools. The overall workshop goal is for attendees to gain a basic understanding of the fundamental factors determining activated sludge clarifier capacity, gain some experience in use of basic analysis tools, and understand how to approach a capacity upgrade project.

Facility Tours

City of Vancouver's Marine Park and Water Center

Monday September 19 2:45-5:00 PM

The City of Vancouver has two secondary wastewater treatment/water reclamation facilities, both operated by Veolia Water North America. One of these facilities is the Marine Park Water Reclamation Facility, a showcase treatment plant combining performance with odor control and landscaping to act as a good neighbor to surrounding areas. The plant process is conventional treatment followed by UV disinfection. All of the facilities are covered with tankage located indoors. The exterior of the facility is designed to fit within the area and has won architectural awards for its design.

Located adjacent to the Marine Park plant, Vancouver's Water Resources Education Center opened in 1996. Creation of the center was part of the Columbia River Renaissance project, encouraging residents to rediscover the Vancouver waterfront and re-establish the historic connection with the Columbia River. City of Vancouver officials realized that along with planning and managing water and sewer infrastructure to meet a growing population and increased economic opportunities, the City needed to take a strong leadership role advancing stewardship of the community's high quality water resources. The Water Center mission: Teach people of all ages how to better care for and make wise decisions about water.



City of La Center Water Reclamation Facility

Tuesday September 20 1:15 PM-3:45 PM

The City of La Center Wastewater Treatment Plant has been in the same location since 1967 when the first wastewater system was constructed. The plant has been upgraded about every 5 years to keep up with growth, technology and regulations. It was upgraded to a Water Reclamation Facility in 2004 when it was converted to a sequencing batch reactor followed by a disk filter and UV disinfection. The plant serves approximately 2,510 residents in La Center as well as four cardrooms and other commercial businesses in the city.

In 2009, the City upgraded the treatment plant and dedicated the new facility in April 2011. The expansion project exemplifies excellence in engineering in the design team's ability to do big things in small places—allowing for a six-fold increase in treatment capacity on the existing less-than-an-acre site without purchasing additional property. The new facility is a membrane bioreactor with a capacity of 1.5 MGD, designed to be expanded to over 6 MGD. The expansion is being designed in phases, including a new headworks, additional solids handling and upgrades to the MBR to add capacity as needed based on the 20-year growth expectations in the City's comprehensive plan.

Currently there are 4000 Kubota flat plate membranes in the facility. There will be a short presentation on how a flat plate membrane works as a part of the tour.



Durham Advanced Wastewater Treatment Facility

Wednesday September 21 8:00 AM–Noon

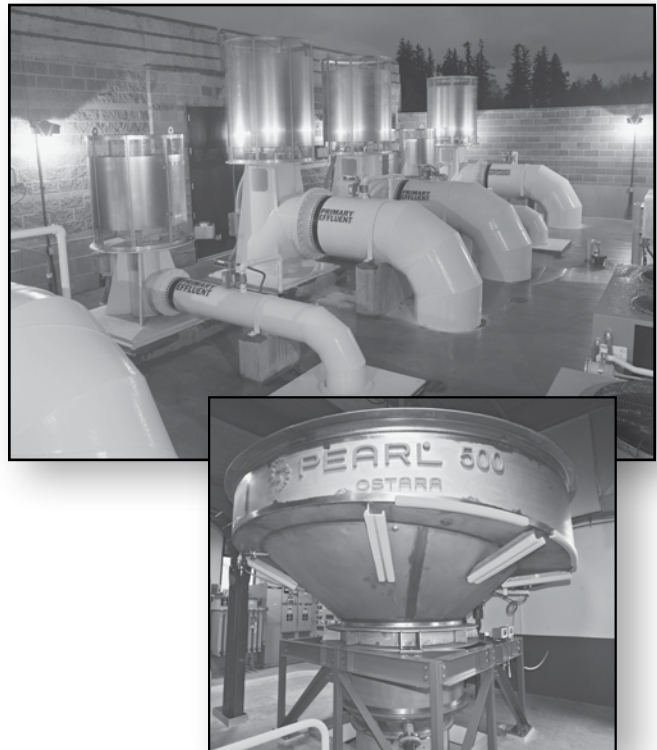
The Durham WWTF cleans an average of 22 million gallons of wastewater per day and serves a population of approximately 250,000 in the Cities of Beaverton, Tigard, Sherwood, and Tualatin, the communities of Durham and King City, and portions of Clackamas and Multnomah Counties.

This tertiary treatment facility:

- Uses the most current technologies and processes to achieve optimal performance
- Recycles more than 100 million gallons a year of cleaned wastewater for irrigation
- Recycles more than 14 dry tons of biosolids daily for use as a soil amendment
- Generates more than 4 million kilowatt-hours of power per year

The plant's new \$2.5 million struvite recovery system is the nation's first nutrient recovery facility. It produced 500 tons of slow release fertilizer over two years, removing 38 tons of phosphorus and 17 tons of ammonia that once clogged up the treatment works. Alum use has dropped 23 percent; 12 percent less biosolids must be trucked from the plant; and sales revenue is generated per an exclusive agreement with Ostara, the company that developed the technology.

Permit compliance is accomplished by monitoring, testing, evaluating and adjusting of the process parameters 7 days a week, 24 hours a day. This Clean Water Services facility was awarded a 2005 U.S. EPA National Clean Water Act Recognition Award for the best operated and maintained large, advanced treatment facility.



Facility Tour FAQ

1. Facility tours are offered at no additional cost to conference attendees.
2. Pre-registration is required to ensure a space.
3. If there is space available on the tour van at the time of departure, people who have signed the wait list on the message board in the registration area will be able to board in the order waitlisted.
4. CEUs will be available based on tour presentation time.

Monday Morning - September 19

7:00 - 5:30	Registration		
8:30 - 10:00	Opening Session		
10:00 - 10:30	Break & Ops Challenge Viewing Time		
10:00 - 3:00	4-Person Operations Challenge		
	Session 1A Phosphorous Removal	Session 2 CSOs & Wet Weather Treatment	Session 3 Stormwater
10:30 - 11:15	Implementing "Next Level of Treatment" at Spokane's Riverside Park Water Reclamation Facility <i>Lars Hendron, City of Spokane Mark Esvelt, Esvelt Engineering</i>	Challenges and Approaches to Siting CSO Control Facilities <i>Kevin Dour & Dennis Eckhardt, Tetra Tech & Shahrzad Namini, King County</i>	Lessons Learned from Eighteen Years of Disconnecting Downspouts in Portland, Oregon <i>Amber Clayton, City of Portland</i>
11:15 - 12:00	Optimizing Sludge Fermentation to Improve Biological Phosphorus Removal Reliability <i>Li Lei, CH2M HILL</i>	Developing Best Estimates for Combined Sewer Overflow (CSO) Control Volumes to Meet NPDES Requirements through Flow Monitoring, Automated Calibration, and Long Term Simulations <i>Robin Joanne Lee, Brown and Caldwell</i>	Assessing Stormwater Program Implementation Effectiveness <i>Robbin Finch, City of Boise</i>

Monday Afternoon - September 19

12:00 - 1:15	PNCWA Business Luncheon		
1:15 - 2:00	Spokane County's Wastewater Program to Meet the Most Restrictive TMDL in the Nation <i>Dave Clark, HDR</i>	Portland's 2011 CSO System Operations, Objectives & Optimization <i>Virgil Christopher Adderley, City of Portland</i>	Clean Water Services' Watershed Approach to Hydro-Modification <i>Jadene Stensland, Clean Water Services</i>
2:00 - 2:45	Case Study: You want Struvite to be my friend? Design and Construction Implementation of a Phosphorus Recovery Process <i>Jeffrey M. Lindgren, Black & Veatch</i>	Portland's CSO Program Construction Challenges <i>Paul Thomas Gribbon, City of Portland</i>	Boardman Creek Basin Initiative: Strategic Planning to Restore Clean Flowing Streams <i>Brett Arvidson, Oak Lodge Sanitation District</i>
2:45 - 3:00	Break & Ops Challenge Viewing Time		
	Session 1B Inflow & Infiltration		
3:00 - 3:45	Case Study in Inflow and Infiltration Abatement: Sump Pump Disconnection & Pipe Rehabilitation Pilot Project <i>Joe Dvorak, Clean Water Services</i>	Disinfection and Dechlorination of CSOs <i>Jeffrey Lundt, King County WA</i>	Stormwater Facility Retrofit and Performance Optimization Program <i>Paul Fendt, CDM</i>
3:45 - 4:30	Cochran Basin I&I Reduction Effectiveness for the City of Spokane Combined Sewer Overflow Program <i>Beryl L. Childs, AECOM</i>	UV Disinfection for Treatment of Stormwater <i>Jennifer Muller, Trojan Technologies</i>	Development of a New Water Quality Best Management Practice for Roadway Runoff <i>Paul Bucich & Charles S. Wisdom, Parametrix</i>
4:30 - 5:15	Infiltration & Inflow: Source Identification in Semi-Arid Climates <i>Dennis Galinato, Murray, Smith & Associates</i>	Finding a Winning Solution to Reduce Seattle Waterfront CSOs <i>Vicki Sironen, HDR</i>	Collaboration to Consistently and Efficiently Evaluate the Effectiveness of Proprietary Stormwater Treatment Systems for Pollutant Removal and Long Term Maintenance <i>Paul R. Wirfs, OR Dept. of Transportation</i>
5:00 - 7:00	Manufacturers Reception—Exhibit Hall		
7:00 - 8:00	Monday Night Dinner		
8:00 - 9:30	Monday Fun Night		

Operators Track—A great deal at just \$100

Specially packaged and priced for operators only, the Operators Track includes:

- Choice of Sunday workshops
- Sunday Meet & Greet
- Monday's Opening Session
- Monday's training sessions including but not limited to a special Operations track
- Facility tour at no extra cost but must pre-register (seating limited)
- Ops Challenge viewing
- Monday evening Exhibit Hall reception

Sign up for the Operators Track to receive top-notch training and professional interaction at a great price.

Session 4 Collection & Pump Systems	Session 5A Research	Session 6A Operations	
Sustainable Design of Buried Pipelines <i>Sri Rajah, HDR</i>	Assessing the Likelihood of Pathogen Transport in Groundwater <i>Russell Mau, WA Dept of Health</i>	O&M Energy Efficiency Ideas for Wastewater Treatment Plants <i>Walt Mintkeski</i>	
Careful Planning Assures Sewer Capacity in Vancouver, WA <i>Lakshmi Priya Dhanapal & Heather Stephens, Kennedy/Jenks Consultants</i>	Forward Osmosis - Reverse Osmosis Process Offers a Novel Hybrid Solution for Water Reuse and Desalination <i>Carl Lundin, CDM</i>	Tri-City WPBP MBR Performance Certification <i>Michael Trent, Clackamas WES</i>	

Before It's Too Late: Development of a Force Main Prioritization and Inspection Program <i>Steven Drangsholt, HDR</i>	Single-stage Deammonification MBBR Process for Reject Water Sidestream Treatment: Start-Up Strategy and Carrier Design <i>Hong Zhao, Kruger, Inc</i>	Counterfeit Electrical Components Can Destroy Equipment, and Kill <i>Grant Van Hemert, Schneider Electric</i>	Bonus Poster Session
Evaluating Alternatives for Interim Capacity Improvements At the Sherwood Sewage Pump Station <i>Mike Carr, Murray, Smith & Associates</i>	Benchmarking Wastewater Treatment Sustainability <i>Usama Zaher, Washington State University</i>	Oh Crud! - Inspection and Permitting of Mobile Washers <i>Jeff Skinner, CCCSD CA</i>	
	Session 5B Water Quality	Session 6B Biosolids and Digestion	
Evolution of Real-Time Control Strategies to Achieve Sewer System Efficiencies <i>Edward Speer, CDM</i>	The Efficiency of Wastewater Processes in Reducing a Suite of Indicator Trace Organic Compounds <i>Tanja Rauch-Williams, Carollo Engineers</i>	Thicker is Better - Bend Digester Mixing Part Two <i>Michelle Burkhart, CH2M HILL</i>	Vancouver Plant Tour 2:45 - 5:00
Evaluating Self-Cleaning in Existing Sewers Using the Tractive Force Method <i>Paull Mitchell, ADS</i>	Ambient Water Quality Conditions Study in the Columbia River - Determining Critical Seasonal Periods for Receiving Water Ammonia Toxicity <i>David J. McBride, Cosmopolitan Engineering</i>	Return on Investment from Anaerobic Digester Upgrades: Case Studies from Wastewater Treatment Facilities that Switched to Large Bubble Gas Mixers <i>Sudhakar Viswanathan, Infilco Degremont</i>	
Clean Water Services Dawson Creek Pump Station and Force Main <i>Scott Woodbury, Clean Water Services Todd Perimon, Carollo Engineers</i>	South Puget Sound Dissolved Oxygen Study <i>Andrew T. Kolosseus, WA Dept of Ecology</i>	Taking the Fog out of FOG <i>Heather Stephens, Kennedy/Jenks Consultants</i>	

CEUs (requested)

- Up to 1.7 for the main conference
- Up to 2.1 to 2.4 with preconference workshop (depending on workshop chosen)

Separate registration required for pre-conference workshops—not included in regular conference registration.

Tuesday Morning - September 20

7:00 - 5:30	Registration		
7:00 - 8:00	Operators Breakfast		
	Session 7 Public Education & Involvement	Session 8 Instrumentation and Controls	Session 9 Energy Recovery and Efficiency
8:00 - 8:45	How Voluntary Participation Can Affect the Success of a Program <i>Martha L. Burke, Seattle Public Utilities</i>	Value of Online Instrumentation for Wastewater Treatment Plant Operation <i>Mario Benisch, HDR</i>	Low Head Hydroelectric Projects at Pacific NW Wastewater Treatment Plants <i>Terry Stulc, Trindera Engineering</i>
8:45 - 9:30	Public Involvement? A Key to Your Wastewater System Success <i>Mark Holtzen, JUB Engineers</i>	Why Wait for Effluent Grab Sample Results? Find out Now What's Hitting You Up Front! An Overview of On-line, Nitrogen Analyzer Technologies for Wastewater <i>David Kopchynski, Parametrix</i>	Developing and Implementing Energy Management Programs at a Wastewater Utility <i>Frank Dick, City of Vancouver WA</i>
9:30 - 10:30	Break - Exhibit Hall		
10:30 - 11:15	Stormwater Education: Creating A Program That Works <i>Megan M. Hanson, City of Portland</i>	Lessons Learned Implementing Multi-Media for Telemetry and SCADA <i>Terry Stulc, Trindera Engineering</i>	Demonstrating WERF's CHEApet: A new powerful energy tool for WWTPs <i>Matt Noesen, CH2M HILL</i>
11:15 - 12:00	Developing Relationships, Empowering Communities, Public Involvement, and Siting Wastewater Facilities in an Urban Environment <i>Andrew Lee, Seattle Public Utilities</i>	Life-Cycle Cost Effectiveness, High Availability, and Disaster Recovery of SCADA Systems Through Virtualization <i>Mike Karl, CH2M HILL</i>	Blowing Your Money Away: Combining New Technology with an Energy Savings Grant to Retrofit Aeration Systems at a Fraction of the Cost <i>Jeffrey Zahller, HDR</i>
12:00 - 1:15	Networking Lunch		

Tuesday Afternoon - September 20

12:00 - 1:15	Networking Lunch		
	Session 13 Utility & Asset Management	Session 14A Collection & Pump Systems	Session 15A Water Quality - TMDLs
1:15 - 2:00	Financial Sustainability to Support Utility Missions <i>Edward John Cebron, FCS Group</i>	Challenging Access and Site Constraints at City of Redmond Pump Station No. 1 <i>Adam Schuyler, BHC</i>	Septic System and Non-Point Source Pollution: A Tale of Two TMDLs <i>Jim Fisher, Clackamas County WES</i>
2:00 - 2:45	What is CMOM and Why Should You Care? <i>Mary King, City of Portland</i>	Challenges and Approaches to Underwater Open-Cut Pipe Installation <i>Kevin Goss, Tetra Tech</i>	Idaho Antidegradation Implementation Procedures Increase Protection for High Quality Waters <i>Robbin Finch, City of Boise</i>
2:45 - 3:00	Break - Exhibit Hall		
		Session 14B Water Reuse	Session 15B Water Quality - Temperature
3:00 - 3:45	Seattle Public Utilities' Practical Approach to Sewer Cleaning Schedule Optimization for SSO Reduction <i>John R. Evans, HDR</i>	Reclaimed Water - The Next Phase <i>Patrick Skillings, Skillings Connolly, Inc.</i>	Overcoming Barriers to Comply with a Temperature Limit <i>Larry Rupp, Keller Associates</i>
3:45 - 4:30	Enhanced Decision Support Tools Help Maximize Value <i>Lynne Chicoine, CH2M HILL</i>	Tailored Effluent to Fit End Use <i>Peter Schauer, Black & Veatch</i>	Sustainable Solutions for Temperature Compliance <i>Jason Smesrud, CH2M HILL</i>
4:30 - 5:15	Funding Opportunities for Stormwater and Wastewater Projects <i>David Dunn, WA Dept of Ecology</i>	Water Reuse Pilot Using Membrane Filtration in Spokane, WA <i>Michelle LeBaron, AECOM</i>	Indian Creek TMDL - Determination of "Natural" Temperature Conditions <i>Craig B. Anderson, Murray, Smith & Associates</i>
5:15 - 7:00	Beer Tasting - Exhibit Hall		
7:00 - 9:00	PNCWA Awards Banquet		

Tuesday Afternoon Bonus Session on SSOs

3:00 PM – 5:15 PM

Sponsored by PNCWA Collection Systems Committee

WEF's Washington, DC Update
Bob Matthews, CDM

Wednesday Morning - September 21

7:00 - 1:00	Registration		
	Session 19A Phosphorous Removal	Session 20 Innovative Planning & Approaches	Session 21 CSOs & Wet Weather Treatment
8:00 - 8:45	Enhanced Wetlands Treatment of Non-Point Sources: A Sustainable and Cost Effective Alternative Approach to Meet Increasingly Stringent Phosphorus Limits <i>Steve Burgos, Brown and Caldwell</i>	Wastewater Treatment in 2062... What does that look like? <i>Lydia Holmes, Carollo Engineers</i>	10 Years of Operational Experience on High Rate Clarification (HRC) for Remote Combined Sewer Overflow (CSO) System <i>Matt Crow, CDM</i>
8:45 - 9:30	Spokane RPWRF Low Level P Pilot Studies - Final Performance Outcomes <i>Mark Esvelt, Esvelt Engineering</i>	Whither Wastewater? <i>David Jenkins, David Jenkins Assoc.</i>	Combining an Electrical Power Transmission System with Combined Sewer Overflow (CSO) Conveyance and Storage: Strange Marriage? <i>Brian Hemphill, HDR</i>
9:30 - 10:15	Evaluation of a Tertiary Membrane Filter (TMF) Demonstration Pilot to Achieve Ultra-Low Effluent Phosphorus Concentrations <i>Karen Bill, HDR</i>	Is It Sewer or Not? <i>Rick Fuller, City of Tacoma</i>	Integrating Existing Assets into a New CSO Control System <i>Greg Humm, Brown and Caldwell</i>
10:15 - 10:30	Break		
	Session 19B Stormwater		
10:30 - 11:15	Oregon Municipal Stormwater Permits and New Directions <i>Angela Wieland, Brown and Caldwell</i>	Making a \$200 Million Decision in Tough Economic Times <i>Craig Anderson, Murray, Smith & Associates</i>	Using Flow Monitoring to Understand CSO Structure Performance <i>Lisa Tamura, HDR</i>
11:15 - 12:00	Funding a Storm Water Program: Utility Rates, Fees and Begging <i>Gregory L. Seegmiller, JUB Engineers</i>	Characterizing VFA Sources to Optimize Treatment at the Post Point Treatment Plant <i>Anne Conklin, Carollo Engineers</i>	Use of Spatial Rainfall Variability for CSO Facility Design at Spokane, WA <i>Kiana Eller, AECOM</i>
12:00 - 1:00	CEU Forms Turn In		

Many thanks to the following individuals and their organizations for bringing together the PNCWA2011 Annual Conference:

Conference Chair

Susan Gierga,
Murray, Smith & Associates

Technical Program Chair

Court Harris,
CH2M HILL

Conference Committee Members

Doug Berschauer, *CH2M HILL*
Rich Blackmun, *Black & Veatch*
Court Harris, *CH2M HILL*
Tom Helgeson, *CH2M HILL*
Joe Kernkamp, *APSCO, Inc.*
Andy O'Neill, *Rural Community Assistance Corporation*
Mark Poling, *Clean Water Services*
Shawn Redmond, *LOTT Alliance*
Preston Van Meter,
Kennedy/Jenks Consultants
Irene Wall, *Tetra Tech*

Technical Program Committee Members

Craig Anderson,
Murray, Smith & Associates
Mike Carr,
Murray, Smith & Associates
Alan Chang, *CH2M HILL*
Victor Coles, *Retired*
Robbin Finch, *City of Boise Public Works*
Rebecca Gauff, *King County*
Wayne Gresh, *Carollo Engineers*
Muriel Gueissaz-Teufel, *HDR*
Tom Helgeson, *CH2M HILL*
John Koch, *HDR*
Dan Laffitte, *Brown and Caldwell*

Marcos Lopez, *Tetra Tech*
Ron Moeller,
Kennedy/Jenks Consultants
John Peterson, *Clark Regional Wastewater District*
John Phillips, *King County*
Laurie Pierce, *LOTT Alliance*
Bill Reilly, Jr., *Wm. H. Reilly & Co.*
David Scott, *Tetra Tech*
Edward Speer, *CDM*
Lisa Tamura, *HDR*
Celeste Violet, *Clean Water Services*
David Watkins, *J-U-B Engineers*

Session 22 Plant and System Operations	Session 23 Energy Recovery & Efficiency	Session 24A Operations	Durham Plant Tour 8:00-Noon
Real-time Characterization of Aqueous Organic Matrix Using Hybrid, Hyperspectral Optical Measurement <i>Sanjai Tripathi, ZAPS Technologies</i>	Ammonia Nitrogen Recovery and Biomethane Production from Anaerobic Digestate <i>Dennis Burke, EEE Inc.</i>	Maximizing Performance of Wastewater Lagoons <i>Heather Hecht, Lemna</i>	
Oxidation Ditch Modifications to Increase Capacity and Performance <i>John Wilson, Gray & Osborne</i>	Heat Extraction from Plant Influent/Effluent: "Pumped-up Heat Pumps" <i>Bo Vestergaard-Hansen, Brown and Caldwell</i>	Optimizing Your Drying Beds Using Geotextile Containers <i>Randall Wilcox, WaterSolve LLC</i>	
Impact of Waste Biological Solids from Satellite Plants on the Performance of Primary Sedimentation Tanks <i>Lazaro Eleuterio, HDR</i>	Construction of a Food Waste Digestion Facility in Portland Oregon <i>John McKinney, Columbia BioGas</i>	The Spokane County Regional Water Reclamation Facility Biological Startup <i>Terry Dokken, CH2M HILL-OMI</i>	
		Session 24B Pretreatment Programs	
Centrate Treatment Using Ultrafiltration and Reverse Osmosis <i>Dale Richwine, Richwine Environmental</i>	Energy Savings at the City of Edmonds Wastewater Treatment Plant Effluent Pump Station <i>Adam Schuyler, BHC Consultants</i>	Development of Local Limits for Sulfate Discharged to a Municipal Wastewater Treatment Plant <i>Jay Swift, Gray & Osborne</i>	
Getting to Yes. Collaborative Headworks Design at Durham AWWTF <i>Lynne Chicoine, CH2M HILL</i>	Energy Recovery Enhances Wastewater Treatment Sustainability <i>Jyh-Wei Sun, CDM</i>	Fats, Oils and Grease (FOG) Control Programs: Overview and Resources <i>Charles Johnstone, City of Everett WA</i>	

Pre-conference Workshop Chairs

Doug Berschauer, CH2M HILL

Tom Helgeson, CH2M HILL

Pre-conference Workshop Coordinators

Lynne Chicoine, CH2M HILL

Dick Finger, Seattle Metro/King County (retired)

Tom Helgeson, CH2M HILL

Dawn Lesley, Kennedy/Jenks Consultants

Ron Moeller, Kennedy/Jenks Consultants

Carrie Pak, Clean Water Services

Mark Poling, Clean Water Services

Randall Samstag, Carollo Engineers

Peter Schauer, Black & Veatch

Jennifer Belknap Williamson, City of Gresham

PNCWA Mission Statement

Pacific Northwest Clean Water Association (PNCWA) is dedicated to preserving and enhancing the water quality in the states of Idaho, Oregon and Washington. We promote the professional development of our members, the dissemination of information to the public, and the advancement of science and technology needed to protect public health and the environment.