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INSIDE:

2013 NWEA/WEAU Joint Conference – May 1-3, St. George, Utah

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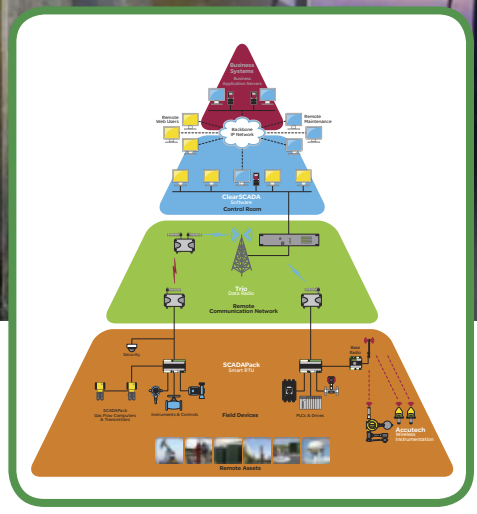

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Item	Description	Each
SP15	15' Sampler	83.95
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SP15MIDDLE	Extra Middle Section	28.95

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SPXL15MIDDLE	XL Extra Middle Section	38.95

Contents

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On behalf of the WEAU

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Visit us online, www.weau.org

The Association proves tough!

Paul Krauth

Well the year of terror is drawing to a close, and it has been an eventful year for me both professional and personally. I would like to thank every one of you for your continued support of OUR association. No rebellions or revolts yet (well maybe one or two). It has been a privilege to serve this year as president. I consider it the highest point of my professional career!

When we started this adventure last spring I pledged to accomplished some changes, let us see how I did.

Transparency

The WEAU Board minutes, meeting locations and agenda are ***usually*** posted on the website. Could we be more consistent? Yes. And I hope this practice will continue in the future.

Connecting to you

Getting the word out on our activities is still problematic. We would be grateful for any suggestions that you might have how we can all increase communication.

Splitting the Secretary-Treasurer position

By now we should have the results from the election. I am making an assumption that the bylaw changes were adopted and we now have both a Secretary and a Treasurer on our board.

Increase involvement of Young Professionals

While we had many successful events with the young professionals (many which I have attended… boy do I feel like an O.F. in THAT group) we can and should do more! I am re-issuing the challenge to all of us; find someone who is not currently involved in the association, and ASK them to join us at a training, committee, or conference, etc.

Increase training

Since last April WEAU has conducted 68 training seminars! and held our mid-year conference, Joint trainings by Biosolids, Collection and Pretreatment committees has fostered an new understanding among the attendees about each the other job and responsibilities. I hope this practice will continue to grow.

What we did not complete is an engineering symposium with some nationally known speakers.

And Finally! The joint conference with the Nevada Water Environment Association actually happened!

Stealing unabashed from T.K. and remembering Bob Okey, Lyle Ford and many others that have left us. "The association's work goes on, the membership endures, the friendships still lives, and our memories shall never die."

On behalf of myself and my mom Thank You ALL for this year. DN

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Update from Dan Olson

Dan Olson was kind enough this go around to bring us all up to speed with what has been going on with the inner workings of the WEAU, a summary of bylaw changes follows. Though this might be boring for some it is always important to keep up with the times.

Thanks a lot Dan – Chad Burrell

The changes to the bylaws have been adopted by an overwhelming 'in favor' vote. With this there are some changes the membership will notice. First, the duties of the secretary/treasurer have been split. This job is very time consuming as anyone who has served in this capacity can attest as well as those that work with them. Clint Rogers was elected to the secretary/treasurer position in the last election. He will continue to operate in the treasurer position but it will be necessary to elect another board member to fill the new secretary position.

Which brings us to the next big change, electronic voting. The new bylaw language allows for 'verifiable electronic balloting' to be used in place of the paper ballots. Electronic balloting can have several benefits to the association. First the cost of electronic ballots can be as low as 10% of the current paper ballot cost to the association. Second, it will be a big time saver for the members of the board.

Look for the new electronic ballots in the future. DN

– Dan Olson

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OPS Challenge 2013

By Ron Clements

For those who may not have heard, our 2013 annual conference will be the biggest in WEAU's history. With the direction of our fearless leader and President, Paul Krauth, we will be attending a joint conference with NWEA this year in St. George. Paul and his trusty sidekicks have devoted countless hours making this possible for all of us. I would also like to thank Paul for all the time he has spent providing the training in the last year for the operators and maintenance. If you have never taught a class you cannot begin to understand how much goes into preparing one. I attended one of Paul's classes for the first time 16 years ago. I remember showing up to his class a little nervous and not knowing what to expect. I was not even working in the wastewater field yet, I was self-employed and I found myself being owned by my company, not owning a company. So anyway I show up and here is this guy who looks like Ogre from Revenge of the Nerds in a football jersey and he is teaching the class. Well to my surprise that man taught me more in eight hours than I had learned from reading the first volume of Ken Kerry over a three-month period.

> "Paul and his trusty sidekicks have devoted countless hours making this possible for all of us."

We now call him the professor. I call him other things but if I were to try to tell you, Chad would just edit it out anyway, huh Chad! I give Paul a lot of grief because he once told me that teaching me was like teaching our nation's children to read. He then laughed and scratched his butt!

Anyway, this year's operations challenge will have twelve teams competing. There are ten teams from Utah and two from Nevada. With having so many teams this year we had to make it a two-day event instead of one, so this year the process test and the question and answer review will be on Tuesday April 30 in the afternoon and the other four events will be on Wednesday May 1. I wanted to also thank Marlo Davis and all the head Judges for their efforts in getting everything ready for game day. I wish all the teams the best of luck and remember to have some fun. DN

WEAU Treatment Training

All classes will be held at CVWRF from 1:15-3:15 pm. The classes are on Tuesdays unless noted. There is no charge for the class. Attendees are responsible for their own manuals. We will be utilizing volume 1 of the Ken Kerri manuals for grades 1 and 2 and Advanced Waste Treatment for grades 3 and 4. Math will also be a part of each class. Math will be applicable to the material being discussed for that week. Please bring a calculator, paper and pencil. Please have the corresponding chapter(s) read for the week attending. The class is designed to help operators prepare for their exam. The schedule outline is subject to change. Please refer to the training calendar for the most up to date schedule.

Taking this class does not guarantee you will pass the test. The more you study outside of class the better your chances are of passing.

Applications due April 12, 2013
Exam date May 16, 2013

GRADES 1 AND 2: Volume 1		
WEEK	DATE	COURSE DESCRIPTION
1	January 29, 2013	Chapters 1, 2 and 3
2	February 12, 2013	Chapter 4 and 5
3	February 26, 2013	Chapter 6 and 7
4	March 12, 2013	Chapter 8
5	March 26, 2013	Chapter 9
6	April 9, 2013	Chapter 10
7	April 23, 2013	Math (both groups)
8	May 13. 2013 (Monday)	Review
9	May 16, 2013 (Thursday)	Exam Day

GRADES 3 AND 4: Advanced Waste Treatment (volume III)		
WEEK	DATE	COURSE DESCRIPTION
1	February 5, 2013	Chapter 1
2	February 19, 2013	Chapter 2
3	March 5, 2013	Chapter 3
4	March 19, 2013	Chapter 4
5	April 2, 2013	Chapter 5, 6 and 7
6	April 16, 2013	Chapter 8 and 9
7	April 23, 2013	Math (both groups)
8	May 14, 2013	Review
9	May 16, 2013 (Thursday)	Exam Day

QUIZ

By Brett Olson

1. 1. What are disease causing organisms called?
   A. Coliforms
   B. Pathogens
   C. Enteric
   D. Indicators

2. What is water from showers and sinks called?
   A. Sewage
   B. Black Water
   C. Grey Water
   D. Secondary Water

3. What rotates in a comminutor?
   A. Motor B. Cutter
   C. Screen D. Teeth

4. What chemicals can be added to help clarification?
   A. Alum
   B. Chlorine
   C. Sodium Chloride
   D. Sulfur Dioxide

5. What are the scrapers called in a rectangular clarifier?
   A. Blades
   B. Flights
   C. Plows
   D. Plenum

6. What is the name of re-circulated clarifier underflow?
   A. MLSS B. MLVSS
   C. RAS D. WAS

7. What's the process of converting sunlight into energy called?
   a) Aerobic Respiration
   b) Anaerobic Respiration
   c) Nitrification
   d) Photosynthesis

8. Which of the following are common de-chlorination agents?
   A. Ferric sulfide
   B. Sulfur dioxide gas
   C. Hydrogen sulfide
   D. Ferric chloride

9. The "heart" of a pump which causes water to move is called _____.
   A. Impeller B. Motor
   C. Shaft D. Volute

10. A treatment plant has a influent flow of 2.1 MGD and a influent BOD5 of 210 mg/L. How many pounds of BOD5 enter the plant daily?
    A. 210 pounds
    B. 441 pounds
    C. 3300 pounds
    D. 3650 pounds

Answers:
1-B, 2-C, 3-B, 4-A, 5-B, 6-C, 7-D, 8-B, 9-A, 10-D

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LABORATORY MATH PROBLEMS

By Tiffini Adams and Sherry Sheffield

1. Calculate the Total Suspended Solids in mg/L given the following information:
Sample Volume = 50 ml
Filter Weight = 0.4582 g
Filter plus Dry Solids = 0.4844 g

_____

2. Calculate the BOD.
Initial DO = 8.0 mg/l
Final DO = 4.0 mg/l
Sample Volume = 15 ml

_____

3. Raw influent has a BOD of 180 mg/l. Final effluent has a BOD of 12 mg/l. What is the percent removal?

_____

4. From the following data, what is the BOD?
Initial DO = 8.2 mg/l
Final DO = 4.2 mg/l
Sample Volume = 6 ml

_____

5. Compute the TSS concentration based on the following data:
Sample volume = 50 ml
Filter weight = 0.3690 g
Filter plus Dry Solids = 0.5190 g

_____

6. An analyst performs a TSS test on 100 ml of raw domestic wastewater. Given the following data, calculate the TSS level for the sample.
Filter weight = 0.4158 g
Filter plus Dry Solids = 0.4285 g

_____

7. Given the following data, determine the seeded BOD for the sample below.

Sample	Seed Bottle
Initial DO = 8.0 mg/l	Initial DO = 8.1 mg/l
Final DO = 4.0 mg/l	Final DO = 5.3 mg/l
Sample Volume = 15 ml	Seed Volume = 6 ml

Volume of Seed in Sample = 1.8 ml

_____

8. If a sample had an initial DO of 8.9 mg/L, a final DO of 6.4 mg/l, and the volume of sample of 9 ml, what is the BOD?

_____

9. A 25 ml sample is filtered for TSS, the weight of the filter is 110.8 mg, and the weight of the filter and residue is 114.9 mg. What is the TSS of this sample?

_____

10. What is the efficiency of a primary tank if the influent BOD is 200 mg/l and the effluent BOD of the tank is 140 mg/l?

_____

11. The results of 5-day BOD determinations for composite samples of wastewater in a trickling filter plant are
Raw wastewater = 300 mg/l
Final effluent = 45 mg/l
What is the percentage reduction in 5-day BOD accomplished by the plant?

_____

12. The results of 5-day BOD determinations for composite samples of wastewater in a trickling filter plant are as follows:
Raw wastewater = 300 mg/l
Primary tank effluent = 200 mg/l
Final tank effluent = 60 mg/l

What is the percentage reduction in 5-day BOD accomplished by the trickling filter and final tank only?

_____

Answers:

1 - 524 mg/L; 2 - 80 mg/L; 3 - 93%;
4 - 200 mg/L; 5 - 300 mg/L; 6 - 127 mg/L; 7 - 63 mg/L; 8 - 83 mg/L;
9 - 164 mg/L; 10 - 30%; 11 - 85%;
12 - 70%

2013 NWEA/WEAU Joint Conference

May 1-3, 2013

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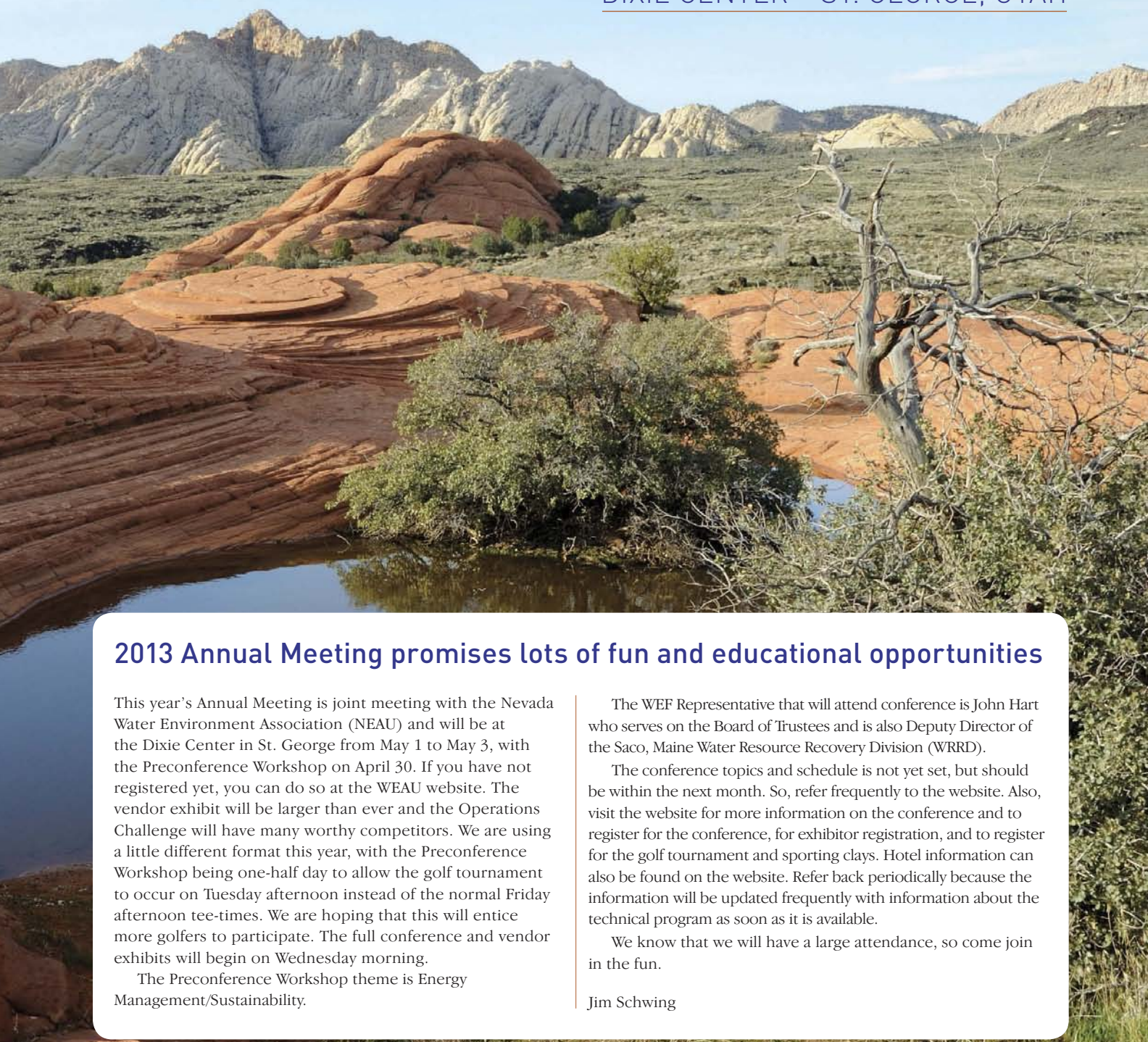

2013 Annual Meeting promises lots of fun and educational opportunities

This year's Annual Meeting is joint meeting with the Nevada Water Environment Association (NEAU) and will be at the Dixie Center in St. George from May 1 to May 3, with the Preconference Workshop on April 30. If you have not registered yet, you can do so at the WEAU website. The vendor exhibit will be larger than ever and the Operations Challenge will have many worthy competitors. We are using a little different format this year, with the Preconference Workshop being one-half day to allow the golf tournament to occur on Tuesday afternoon instead of the normal Friday afternoon tee-times. We are hoping that this will entice more golfers to participate. The full conference and vendor exhibits will begin on Wednesday morning.

The Preconference Workshop theme is Energy Management/Sustainability.

The WEF Representative that will attend conference is John Hart who serves on the Board of Trustees and is also Deputy Director of the Saco, Maine Water Resource Recovery Division (WRRD).

The conference topics and schedule is not yet set, but should be within the next month. So, refer frequently to the website. Also, visit the website for more information on the conference and to register for the conference, for exhibitor registration, and to register for the golf tournament and sporting clays. Hotel information can also be found on the website. Refer back periodically because the information will be updated frequently with information about the technical program as soon as it is available.

We know that we will have a large attendance, so come join in the fun.

Jim Schwing

2013 NWEA/WEAU Joint Conference Agenda

MONDAY APRIL 29, 2013

8:00 AM – 4:00 PM	ATV Ride
6:00 PM – Finish	Speaker's Dinner

TUESDAY APRIL 30, 2013

7:00 AM	Registration
8:00 AM – 12:00 PM	Pre Conference Workshop
1:00 PM – 8:15 PM	Golf Tournament
2:00 PM – 5:00 PM	Mountain Bike Ride
1:00 PM – 3:00 PM	Setups at ops challenge
3:00 PM – 4:00 PM	Ops Challenge Process Test
4:00 PM – 8:00 PM	Sporting Clays

WEDNESDAY MAY 1, 2013

8:00 AM	Registration
8:00 AM – 9:30 AM	Continental Breakfast
8:00 AM – 5:00 PM	Exhibit Hall Open
8:00 AM – 12:00 PM	Operator Challenge
	State of Utah Water Quality Board Meeting
	State of Utah/Nevada Certification Council Meeting
11:45 AM – 1:20 PM	Combined Opening Luncheon (Exhibit Hall)
	WEAU Individual Awards
	Bedell and Hatfield Awards for both NWEA and WEAU
1:30 PM - 5:00 PM	Technical Session A
1:30 PM – 2:00 PM	Technical Sessions A-1
2:10 PM – 2:40 PM	Technical Sessions A-2
2:40 PM – 3:30 PM	Break in Exhibit Hall (Booth with Chalk/White Board for Raffle)
3:30 PM – 4:00 PM	Technical Sessions A-3
4:10 PM – 4:40 PM	Technical Sessions A-4
5:30 PM – 7:30 PM	Combined Operator's BBQ
6:30 PM – 8:00 PM	NWEA/WEAU Board Directors Dinner
8:00 PM –	Bowling Tournament (Sunset Bowling)

THURSDAY MAY 2, 2013

7:00 AM - 8:30 AM	PWO Manager's Meetings/Nevada Board Meeting
7:30 AM – 8:30 AM	YP Breakfast
8:30 AM – 3:30 PM	Exhibitors Open
8:40 AM – 12:00 AM	Technical Session B
8:40 AM – 9:10 AM	Technical Sessions B-1
9:20 AM – 9:50 AM	Technical Sessions B-2
9:50 AM - 10:40 AM	Break in Exhibit Hall (Booth with Chalk/White Board for Raffle)
10:40 AM – 11:10 AM	Technical Sessions B-3
11:20 AM – 11:50 AM	Technical Sessions B-4
12:00 PM – 1:20 PM	Business Lunch by State; NWEA 5S Awards
10 AM – 3:00 PM	YP Blood Drive
1:30 PM – 5:00 PM	Technical Session C
1:30 PM – 2:00 PM	Technical Sessions C-1
2:10 PM – 2:40 PM	Technical Sessions C-2
2:40 PM – 3:30 PM	Break in Exhibit Hall (Booth with Chalk/White Board for Raffle)
3:30 PM – 4:00 PM	Technical Sessions C-3
4:10 PM – 4:40 PM	Technical Sessions C-4
6:00 PM – 8:00 PM	Banquet
	Plant Awards
	WEAU 5-S awards
	Federation Awards

FRIDAY MAY 2, 2013

7:00 AM – 8:20 AM	WEAU Board Meeting
8:30 AM – 12:00 AM	Technical Session D
8:30 AM – 9:00 AM	Technical Sessions D-1
9:05 AM – 9:35 AM	Technical Sessions D-2
9:40 AM – 10:10 AM	Technical Sessions D-3
10:15 AM – 10:45 AM	Technical Sessions D-4
10:45 AM – 11:15AM	Closing Ice Cream Social

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Conference site online

Greetings,

The '2013 WEAU Annual Meeting' will be April 30-May 3 and will be a joint conference with the Nevada Water Environment Association: 'NWEA – WEAU 2013 Joint Annual Conference.' Conference Registration, Call for Abstracts, Vendor Registration is available now on the website (*www.weau.org*) as is information about hotels, sporting clays, and golf tournament. You can access the conference site by going to the link on the left side of the WEAU homepage: NWEA – WEAU 2013 Joint Conference.

We hope to see you there.

Giles Demke

Operator Sessions
for the WEAU Annual Conference

This year's 2013 annual conference will have some incredible classes. We are fortunate to have the mad scientist, Phil Heck who will be discussing digestion and the many options one has available to maximize their process. We have Sharon Burton and she will be teaching wastewater math so anyone needing help gearing up for certification or just a refresher, don't miss it she is brilliant. Next we have Gordon Evans; he will be discussing what it takes to start up a new plant. Next we have Allen Grant; he will be explaining the new PACP standards in televising. Corollo will be teaching the latest and greatest in digital O & M gadgets. Marlo Davis will be discussing local limits and the importance of pre-treatment and protecting the treatment plant. And last but not least, Scott Hess from Central Weber will be discussing how to organize the O & Ms, and how to make them most useful for your application.

Ron Clements, PWO Rep

2013 Pre-Conference Workshop

Take the Heat Off Your Power Bill: Innovations in Energy Management for Wastewater Utilities Tuesday, April 30, 2013 • The Dixie Center, St. George, Utah

The 2013 WEAU Pre-Conference will examine opportunities to reduce power costs in the wastewater industry while continuing to meet the demands of Nevada and Utah rapidly growing populations and strict water quality requirements. With population's expected to at least double by 2060 and with regulatory agencies pressing for more and more stringent air and water quality standards, what can our industry to do differently or better to economize power while enhancing performance? The 2013 Pre-Conference Workshop will examine state-of-the-art tools and methods for analyzing plant power systems and will include real-world examples of how management and engineered systems are being implemented for improved energy efficiency and conservation, enhanced energy recovery, alternative power ideas, and best practices for maintenance, monitoring, and control of these critical systems. Register online at *https://sites.google.com/a/weau.org/weau-nwea-joint-conference-2013/products*. The cost is $65.00 including break snacks and a box lunch to go! Don't miss this program:

8:00 – 9:00 AM

Session 1: "Partnering with Power – Incentives and Financing that Relieve the Grid and Monthly Bill," CHRIS HELMERS, ROCKY MOUNTAIN POWER

9:10 – 10:10 AM

Session 2: "Whole Plant Process Modeling to Assess Energy Balances. Key Outcomes from the WERF Energy Neutral Plant Challenge," ANDREW SHAW, BLACK & VEATCH

10:10 – 10:25 AM

BREAK

10:30 – 11:30 AM

Session 3: "Case Study: An Organic Tale of Using FOG and Food Waste to Increase Biogas Production," MICHELLE PETERS, MWH & MARK DUNBAR, CITY OF LAS VEGAS

"Case Study: Aeration Blowers – They are Not All Equal," KENNETH BRISCHKE, MWH

11:40 – 12:40 AM

Session 4: "Maintaining the Hearts of our Plants – Monitoring, PM, and Management Tools for Electrical System Optimization" MYRON BACHMAN, NORTH DAVIS SEWER DISTRICT

Lunch: 12:45

Pick up your box lunch and go enjoy the NWEA/WEAU sponsored golf tournament, skeet shoot, or mountain bike ride!

Technical Program

Wednesday, May 1								
		Auditorium	Sunbrook A	Sunbrook B	Sunbrook C	Entrada A	Entrada B	Entrada C
8:00-12:00	Operators Challenge (in Exhibit Hall)						Water Quality Board Meeting (8 a.m. to 1 p.m.)	
	Tech Session A	Auditorium	Sunbrook A	Sunbrook C	Sunbrook B	Entrada A	Entrada B	Entrada C
		Topic: Utah DWQ Status of Nutrient Regs	Topic: Energy	Topic: Nutrient Removal	Topic: Facility Compliance/Security Strategies	Topic: Collection System	Topic: Innovative Technologies/ Equipment	
		Moderator - TBD	Moderator - TBD	Moderator - TBD	Moderator - TBD	Moderator - TBD	Moderator - TBD	
1:30-2:00	A1	*Walt Baker, DWQ/Leland Myers, CDSD*	Can Solar Power Be Your Energy Solution? *John Bettancourt*	Converting Oxidation Ditches to a BNR System - A Modeling Approach *Darren Lowe*	Implementing Stringent Process Safety Standards In The Anaerobic Digester Gas System At Las Vegas Nevada *Steven Emerson*	Solving Customer Service Puzzle *Ryan Hatch/ULGT*		
Break		10 min. break	10 min. break	10 min. break	10 min. break	10 min. break	10 min. break	10 min. break
2:10-2:40	A2	*Walt Baker, DWQ/Leland Myers, CDSD*		Why some plants do excellent EBPR and others don't-results from full scale treatment plants *Amir Motlagh*	Security Issues and Best Practices for Water/ Wastewater Facilities *Jeff Hayes*	The Evolution of the Polymer Manhole System *Michael Bussio*	My Diffuser Goes Up to Eleven *Steve Myers*	
2:40-3:30		Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall
3:30-4:00	A3		Achieving Positive Net Energy While Maximizing Use of Existing Assets: The Ejby Molle WWTP, Odense, Denmark *Dru Whitlock*	Use of Moving Bed Biofilm Reactors (MBBR) and Integrated Fixed-film Activated Sludge (IFAS) Processes for Nutrient Removal *William Leaf*	NFPA 820 - Comparison of Compliance Strategies *James Goodley*	What you don't know could hurt you *Ryan Hatch/ULGT*	Vortex Grit Removal Notes on Design *William Flores*	
Break			10 min. break	10 min. break	10 min. break	10 min. break	10 min. break	10 min. break
4:10-4:40	A4		Energy Impacts from Implementing Nutrient Treatment in Utah's POTWs *John Mackey*	The Brave New World of Nutrient Control *Henryk Melcer*		"If You Are Using CCTV to Find Infiltration, You Might Be Fixing The Wrong Pipe" *Chuck Hansen*	Pre-Rotation Pump technology for Flow-matching, and self-cleaning of Waste Water Influent Wet Wells *Ken Goard*	

Technical Program

Thursday, May 2								
	Tech Session B	Auditorium	Sunbrook A	Sunbrook B	Sunbrook C	Entrada A	Entrada B	Entrada C
		Topic: Nutrients	Topic: Operator Track	Topic: Biosolids	Topic: Facility Design/Operation	Topic: Collection System - Rehab	Topic: Innovative Technologies/ Equipment	
		Moderator - *Paul Krauth*	Moderator - TBD	Moderator - TBD	Moderator - TBD	Moderator - TBD	Moderator - TBD	
7:00-8:30		Open	Open	Open	Open	PWO Meeting	NV Board Meeting	NV Board Meeting
8:40-9:10	B1	*Stensel/Barnard*	There is an App for that (Using technology to increase your operational effectiveness) *Max Hildebrand*	Waste to Energy: Turning Headaches Into Cost Savings *Toshio Shimada*	Trickling Filter Solids Contact Processes - Should they be Upgraded or Abandoned? *John Harrison*	"Overview of all Rehabilitation Options for Lateral and Main/Lateral Connection Technologies *Jacob Trapani*	Estimation of Biochemical Oxygen Demand Using Fluorescence Spectroscopy *Daniel Blake*	
Break			10 min. break	10 min. break	10 min. break	10 min. break	10 min. break	10 min. break
9:20-9:50	B2	*Stensel/Barnard*	Understanding Anaerobic Digestion *Phil Heck*	Managing Biosolids: Design Variable Impacts to the Economic Analysis *Brett Converse*	Expanding/ Upgrading Your Plant? Know Your Real Plant Capacity Before You Spend Your Money – Plant Wide Testing Can Reveal Hidden Capacity *Henryk Melcer*	Pipeline Rehabilitation *Joe Lane*	On-site Generation of SO2-Bisulfite for De-chlorination *Terry Gong*	
9:50 - 10:40			Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall
10:40-11:10	B3	*Stensel/ Barnard*	Active O&M Manuals *Scott Hess*	Biosolids Improvements at North Davis Sewer District *David Hatch*	Activated Sludge Simplified – Solids Handling is Key *Steven Winfree*	Pipe Bursting *Chris Rhoades*	Cost Effective Lagoon Upgrades to Meet Increasingly Stringent New Limits *Merle Kroeker*	
Break			10 min. break	10 min. break	10 min. break	10 min. break	10 min. break	10 min. break
11:20-12:00	B4	*Stensel/ Barnard*	Jordan Basin Water Reclamation Facility - The Ups and Downs of Start Up *Gordan Evans*	Doing More with Less: A Biosolids Management Case Study *Doug Barber*	Tractive Force Self-Cleansing Analysis and Design of Gravity Sewers – You need to Know! *LaVere Merritt*	Trenchless Sewer Line Rehabilitation Comes to a Street Near You! *Brandon Heidelberger*	Algae Control in Wastewater Lagoon Systems for Improved BOD/ TSS Effluent *Kraig Johnson*	

Technical Program

Thursday, May 2								
	Tech Session C	Auditorium	Sunbrook A	Sunbrook B	Sunbrook C	Entrada A	Entrada B	Entrada C
		Topic: Nutrients	Topic: Operator Track	Topic: Biosolids	Topic: Facility Design/Operation	Topic: Collection System - Pump Station	Topic: Innovative Technologies/ Equipment	
		Moderator - *Paul Krauth*	Moderator - TBD	Moderator - TBD	Moderator - TBD	Moderator - TBD	Moderator - TBD	
1:30-2:00	C1	*Stensel/ Barnard*	Sharon Burton/ CVWRF	The Predator(TM) Aerobic Digestion Process - Improved VSS Destruction and Better Dewatering Using Less Energy *Russ Wright*	Lessons Learned from Owners/ Operators of New Wastewater Treatment Technologies *John Harrison*	"Pump Station Planning *Craig Bagley*"	Evaluation of an Off-the-Shelf Automated Chemical Phosphorus Removal System *Ted Holt*	
Break			10 min. break	10 min. break	10 min. break	10 min. break	10 min. break	10 min. break
2:10-2:40	C2	*Stensel/ Barnard*	Sharon Burton/ CVWRF	Chemical Treatment of Biosolids to Reduce Disposal Costs *Marcus Theodore*	Desert Breeze Water Resource Center Rehabilitation *Samantha Hanzel*	"South Jordan Pump Station and Force Main - From Design to Start-Up *Brent Packer*	Holistic Approach to Odour Control – Use of Sustainable Biotrickling Filter Technology *Matthew Johnson*	
2:40-3:30			Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall	Break - Exhibit Hall
3:30-4:00	C3	*Stensel/ Barnard*	*Alan Grant* - TBD	High Solids Cake Produced By Advanced High Performance Screw Press *Joshua DeValentino*	Changes to the Anti-Degradation rules and how they will affect wastewater treatment facilities *Brad Rasmussen*	Relays and contactors. Why do I have so many? *Blaine Bowden*	Spring Creek Utilities NV – 2.8 MGD Arsenic Treatment Case Study using an Innovative WaterPOD Coagulation & Filtration Approach and Backwash Recycling *Greg Gilles*	
Break			10 min. break	10 min. break	10 min. break	10 min. break	10 min. break	10 min. break
4:10-4:40	C4	*Stensel/ Barnard*	*Marlow Davis* - TBD	Sludge Minimization Coupled with Biological Nutrient Removal - A Step towards Sustainable AS Process Operation *Huang Pei*	Maximizing your Odor Control Resources: Optimizing Granular Activated Carbon for Odor Control to be a Good Neighbor *Samantha Hanzel*	Sewage Lift Station Planning, Design, and Operation *Gary Vance*	Pipe Bursting - Rehabilitation of collection system sewer mainlines and laterals using the trenchless technology of pipe bursting. *George Mallakis*	

Technical Program

Friday, May 3							
	Tech Session D	Auditorium	Sunbrook A	Entrada B	Sunbrook C	Entrada A	Entrada B
			Topic: Utility Management	Public Involvement/ Finance	Topic: Resource Recovery	Topic: Collection System	Topic: Water Quality
			Moderator - TBD	Moderator - TBD	Moderator - TBD	Moderator - TBD	Moderator - TBD
8:30-9:00	D1		Marijuana Grows in our communities *Clifford Lark*	Private Utility Service Lateral Insurance Programs - Solutions for Customers dealing with costs of lateral repair *Steve Jackson*	Side Stream Management: Why? Because it is good for you!" *Chris Machado*	Alta Sewer Jump Phenomenon *Bryan Mansell*	Using Over Ten Years of Trace Organic Research to Develop A 30mgd Tertiary Filtration/ Disinfection Project in Las Vegas, Nevada *Doug Drury*
9:05-9:35	D2		Clark County Storm Water Program *Ebrahim Juma*	Understanding Financial Uncertainty: Better Financial Analysis to Counter Risk and Uncertainty *Matt Millis*	WWTPs: The Core Processor for Generating Bio-fuels & Energy *Terry Gong*	Collection System Quality Assurance Testing *Brandon Wyatt*	QUAL2Kw as a decision support tool: considerations for data collection, calibration, and numeric nutrient criteria *Andrew Hobson*
9:40-10:10	D3		Design and Construction Considerations for WW Collection and Treatment Systems in Cold Regions *Chavan Prithviraj*	The Cost Benefit of Insuring Major Infrastructure and Transmission Facilities Against Natural Disasters *Darrell Child*	Nutrient Recovery from Full scale Municipal Wastewater plants- process feasibility and optimization *Ksheeraja Yakkala*	Pipe Selection TBD"	40 Years of Regulatory Action for Total P Removal and The Impact on Lake Mead *Doug Drury*
10:15-10:45	D4		The Effects of Various Chemical Stress Factors on the Performance of Nutrient Removal *Amir Motlagh*	What Your Customers Don't Know Will Hurt You *Susan Tanner Holmes*	Creating a New Class of Recycled Water: Our Path to a Sustainable Future *Terry Gong*	Collection System Jeopardy *Michael Foerster*	Tracking Nutrients and Their Possible Effects from the Jordan River to the Farmington Bay Impounded Wetlands *Theron Miller*

Exhibition Information for the Joint WEAU and NWEA Annual Conference

The Dixie Center • 1835 Convention Center Drive,St. George, Utah 84790

HELLO VENDORS!!

We are excited to provide information for the 1st combined Nevada Water Environment Association and Water Environment Association of Utah Annual Conference. We are expecting a large turnout this year for the conference and hope to see you there. If you are looking for the decision-makers from both Nevada's and Utah's water quality professionals – this is your conference. Thank you for your past support!! We look forward to visiting with you again!!!!

We've planned the exhibit hall to provide you with many opportunities for contacts with these professionals, including breakfast in the exhibit hall, having exhibitors to pass out raffle tickets for the prize drawing, having the exhibit hall available for early setup so you can participate in the Tuesday afternoon golf tournament and providing frequent reminders to conference attendees to visit the exhibitors throughout the day.

Exhibit Hall Open May 1 & 2, 2013

Exhibition Hours
Wednesday, May 1 8:00 a.m. - 11:30 a.m. & 1:30 p.m. - 4:30 p.m.
Thursday, May 2 8:00 a.m.- 11:45 a.m. & 1:00 p.m. - 3:45 p.m.

Set-up/dismantling of exhibits

Exhibitors may begin set up on Tuesday, April 30th at 8:00 am. Set-Up must be completed no later than 5:00 p.m. on Tuesday, April 30th.

All materials must be removed no later than 6:00 p.m. on Thursday, April 2nd. **No packing of exhibits or materials may begin prior to 3:45 p.m.**

The booths are 10' x 10' long with (3) truck/large vehicle booths 40' L x 20' W available this year.

Included in the booth rate

6' draped table, one chair, three name badges - additional Badges - $5.00 ea.

One Wednesday lunch, One Thursday lunch, Coffee/Juice/ Donuts both Mornings. Additional meals for your 2nd, 3rd, etc. representatives are $20.00 per day.

We will be located in Exhibit Hall "C" in the Dixie Center. Due to the new layout, booths are available on a first come first served basis. Please pick your #1, #2, #3 choices.

Registration

Due to the large number of participants, registration will only be available via the NWEA/WEAU website ***www.nwea-weau.org.*** Registration is anticipated to be available on February 11, 2013.

Cancellations and refunds

Cancellations must be received in writing at:

WEAU
PO Box 651028
Salt Lake City, UT 84165-1028

Cancellations received on or before March 30, 2012, will receive a 75% refund. Those received after March 30, 2012 will not receive a refund.

Questions

Please contact Tavis Timothy at ***ttimothy@hansenallenluce.com*** with any questions.

Exhibitor Listings

Advanced Drainage Systems Inc.
Booth 327
Ryan Loader
Ryan.Loader@ads-pipe.com
801-918-8905

Ambiente H20
Booth 312, 314
Art Oakes
aoakes@ambienteh2o.com
801-815-8426

Aqua Environmental Services
Booth 319
Allen Rogers
arogers@skm-inc.com

BioLynceus
Booth 202
Karina Zedalis
karina@biolynceus.com

Blue Stakes of Utah
Booth 328
W. Gary Hansen
GaryH@bluestakes.org
801-208-2115

Carman Sealing Technology
Booth 411
Matt Carman
mcarman@carmansealing.com
801-955-7595

CH Spencer
Booth 117
Carl Haehl
chaehl@chspencer.com

Chemtech- Ford
Booth 401
Dan Henderson
dhenderson@chemtechford.com
801-262-7299

Cobra Technologies
Booth 419
Clair Hanson
clairehanson@cobratec.com
770-435-8991

Coombs-Hopkins
Booth F
Jason Morgan
jmorgan@coombshopkins.com
801-990-3174

CST Stabilization
Booth 125
Kent Nichols
lshiner@cststabilization.com
801-540-1244

D&L Foundry & Supply Co
Booth 119
Lloyd Pherson
agpehrson@comcast.net
801-361-6380

Davidson Sales & Engineering
Booth 213
Paul Mora
paul_mora@dseslc.com
8019779200

Delco Western
Booth 228
Ken Wynder
ken@delcowestern.com
801-972-0900

Dorsett Technologies
Booth 302
Todd M. Smith
tsmith@dorsett-tech.com
801-430-3443

Earth Renaissance Technologies
Booth 103
Ron Bird
ronbird13@gmail.com

EJ
Booth
301,303
Craig Anderson
craig@syrcast.com
801-554-5728

Electrical Reliability Services
Booth 124
David Hannemann
david.hannemann@emerson.com
801-975-6461

Electronic Data Solutions
Booth 217
Janet Phelps
janet@elecdata.com
208-324-8006

Engineering America
Booth 201
Chuck Graber
cchilds@engamerica.com

Geneva Polymer Products
Booth 126,128
Mike Riddle
pgale@genevapipe.com
801-225-2416

Goble Sampson Associates
Booth 105-113
& 106-114
Dave Ritter
dritter@goblesampson.com
801-268-8790

Hach
Booth 115
Ty Hendrickson
thendric@hach.com
801-746-9462

Holland Equipment Co.
Booth 227
Andy Wilde
awilde@hecplows.com
801-808-1476

isi West
Booth 208-212 & 207-211
Eric Duden
eduden@isiwest.com
970-535-0571

Legacy Equipment
First Truck Booth
Gavin Erickson
gavin@agtruck.com
801-971-7920

Maric Sales, LLC
2nd Truck Booth
Evan & John Housley
elhousley@yahoo.com
801-571-2330

Monsen Engineering
Booth E
Tom Wussow
tomw@monsenengineering.com

Nickerson Company, Inc.
Booth 102
Jeff Stucki
Jeff@nicopumps.com
801-973-8888 ext 233

Olympus Insurance Agency
Booth 101
Brian Child
brianc@olyins.com
801-486-1146

Ovivo USA, LLC
Booth H
Ann Perry
ann.perry@ovivowater.com

Rain for Rent
Booth 403
Anna Porter
aporter@rainforrent.com
661-399-9128

Rockwell Engineering & Equipment
Booth 417
Kent Rockwell
trish@rockwellengineering.com

Rush Truck Centers of Utah
Booth 423
Ken Barton
bartonk@rushenterprises.com
801-633-7798

Silver State Labs
Booth 425
David Frohnen
dfrohnen@ssalabs.com

SKM Inc.
Booth 317
Allen Rogers
arogers@skm-inc.com

Sunrise Engineering Inc.
Booth 326
Doug Neilsen
bashton@sunrise-eng.com
435-743-6151

Ted D Miller Associates
Booth 104
Tony Searle
tony@tdma-inc.com

Tri-Combined Resources, Inc.
Booth 127
Kurtis Mooney
tmooney.tcr@gmail.com
801-975-7650

Trojan Technologies
Booth G
Melodie Cloutier
mcloutier@trojanuv.com
519-457-3400 ext 2552

TT Technologies, Inc.
Booth 413
George Mallakis
psmith@tttechnologies.com

Twin D Environmental Services
Booth 427
Mark Denny
medenny1@twind.net
801-771-3038

Utah Local Governments
Booth 318
Travis Garton
travis@utahtrust.gov

Utility Management Systems
Booth 218
Dave Hutchinson
sales@umscentral.com
801-486-7700

Val Kotter & Son's Inc.
Booth 203-205
Val / Pearl
pearl@valkotterandsons.com
435-734-9598

W-cubed
Booth 313
Brad Gwinnup
bradg@wcubedinc.com
801-466-3819

Water Control Corp
Booth 220,222
Scott Forsling
s.forsling@watercontrolcorp.com
303-477-1970

Water Movers, Inc.
Booth 118
Nathan Longhurst
nlonghurst@watermovers.com
801-954-8822

Waterford Systems
Booth A-D
D. Jeffrey Weist
jeff.waterford@gmail.com
801-463-9900

Wm. H. Reilly & Co.
Booth 121
Cory Firzlaff
cory@whreilly.com
801-201-3121

Zions Bank
Booth 120,122
Megan Weber
megan.weber@zionsbank.com
801-844-8369

Annual Mountain Bike Tour

Bearclaw Poppy Trail

Tuesday, April 30 at 2:00PM

Come join us for a group ride of the Bearclaw Poppy Trail (a.k.a. Green Valley Trail)! Located just 6 miles west of St. George, the Bear Claw Poppy Trail covers terrain for mountain biking enthusiasts. The ride itself is about 2-3 hours and is an intermediate terrain and moderate to high aerobic activity. Please note, the ride is an intermediate to advanced ride and is not recommended for absolute beginners. It can be ridden as an out and back, or as a loop. Either way, you'll get to experience the Three Fingers of Death, the Three Sisters (a.k.a. Acid Drops) and Clavicle Hill! Don't let the names scare you off, there are easier routes around each one. Enjoy the beautiful desert landscape as you wind down over the rolling hills.

Further details regarding meeting location and trail provided to registrants. Riders are responsible for own/rental equipment. Helmets are required. Rain cancels the ride in order to prevent damage to the trail.

For more information or to register, please contact Nicholas von Stackelberg at *nvonstackelberg@utah.gov*.

Assumption of inherent risk in outdoor activities:
Participants in this activity recognize there are risks integral to the activity. Although it is possible to minimize these risks, they cannot be eliminated without destroying the unique nature of the activity. Participants recognize that this activity occurs in the wilderness in environments that include canyons, mountain and desert terrain, remote from medical facilities, roads and communication sites. These and other risks and hazards can result in injury, damage, permanent disability, death or loss.

By voluntarily signing up to participate in this event, participant agrees that they are responsible and liable for their own wrongful or negligent acts which are committed. Event participants shall defend, indemnify, save and hold harmless WEAU, including its officers and employees, from and against any and all demands, liabilities, claims, damages, actions, and/or proceedings, in law or equity, including reasonable attorney's fees and costs of suit, relating to or arising from the actions or omissions of event participants or their respective employees.

Friends of NWEA and WEAU Pre-Conference ATV Ride

MONDAY April 29th, 2013
10:00 AM
4-6 hour ride in scenic Southern Utah

If interested please contact:
Dave Hutchinson
801-541-4949 or
Blair Gubler
435-680-2348

Leaving from Toquerville Utah LDS Ward House parking lot

Sporting Clays

Cost: $20
Date: Tuesday April 30th 2013
Time: 4:00pm
Location: Purgatory Clay Sports

Door Prizes

YOU WILL NEED:

A shotgun: Bring your own or rent one at the club for $10. The most common is a 12 gauge shotgun but many people shoot with 20 gauge, 28 gauge and even .410's
Ammunition: A target or light game load between 71/2 - 9 shot. You will need 50 rounds.

Ear and Eye Protection: All people at the range are required to wear ear and eye protection at all times.

Hat: We can't predict where broken clays will land after they are shot so we recommend a hat to protect your face.

Clothes: Wear good shoes or boots that will allow you to walk the course in comfort. We discourage the use of sandals. Comfortable clothes that allow you free movement will work the best.

Directions: From St. George,take I-15 North to Exit #16. Go South on SR-9 to the 2nd set of stoplights. Turn right (South) and follow the Southern Utah Shooting Sports Park signs.

Registration fees and forms are due by April 15th.
For info contact Dan Olson 435-241-0204 or Email *DanO@TooeleCity.org*.

Register one person or a team of 5. Please make checks payable to WEAU or register online at: *www.weau.org*.

If Paying by Check send money to:
WEAU, C/O Clint Rogers, 1265 East Fort Union Blvd
Salt Lake City, UT 84047-1815

Name _____
Contact Phone _____
Contact Email _____

Name _____
Contact Phone _____
Contact Email _____

Name _____
Contact Phone _____
Contact Email _____

2013 WEAU and NWEA Annual Golf Tournament

Now on Tuesday with shotgun start!

Format: Four-person scramble

When: Tuesday, April 30, 2013, Shotgun start at 2:00 pm

Where: Sunbrook Golf Course, St. George, Utah

Green Fees: $45.00 per person (includes cart and lunch)

Lunch: Box lunches and drink provided (available at noon)

Contact:
Jeff Beckman,
Bowen, Collins & Associates
154 East 14000 South
Draper, UT 84020
801.495.2224
jbeckman@bowencollins.com

Registration forms and fees are due by April 15th.
Register online at *www.weau.org* or by returning this registration form to Jeff Beckman (see above) along with a check payable to WEAU Golf Tournament.

Contact Jeff Beckman at (801) 495-2224 for team preference, or we will match single players to fill foursomes.

Name _____
Contact Phone _____
Contact Email _____

Name _____
Contact Phone _____
Contact Email _____

Name _____
Contact Phone _____
Contact Email _____

water for people
everyone | forever

Water For People Bowling Tournament

Wednesday May 1, 2013 8 - 10 PM
(Please arrive at approximately 7:30)

Sunset West Bowling Center
1476 West Sunset Boulevard
Please send registration forms by April 16th to
Greg Turner at (*gturner@cleanwaterteam.com*)

All proceeds go to support Water For People!

Vendors – Water For People is looking for your support!

Sponsorship/Donation Opportunities for the 2013 WEAU/NWEA Joint Conference Bowling Tournament

- Sponsorship of $250 per lane includes a 3' x 5' banner that the vendor can keep after the Event.
- Donations of raffle prizes would also be greatly appreciated!
- Please make payment to NWEA
  Contact Michelle Peters at
  Michelle.A.Peters@mwhglobal.com
- **Sponsorship or Raffle Prizes should be sent to Michelle prior to April 19th**

About Water For People

Water For People helps people in developing countries improve quality of life by supporting the development of locally sustainable drinking water resources, sanitation facilities, and hygiene education programs.

Around the world, 783 million people do not have access to safe drinking water and 2.5 billion are without adequate sanitation facilities. Every day, nearly 6,000 people who share our planet die from water-related illnesses, and the vast majority are children.

But the real failures are all the broken pumps, filled latrines, and solutions that aren't. Water For People wants to change all that by creating solutions that last, and not only do people benefit for a long period, but organizations don't have to expend time and energy going back again and again to the same location.

The Water For People vision is a world where all people have access to safe drinking water and sanitation, a world where no one suffers or dies from a water- or sanitation-related disease. That vision is within reach and we hope you'll join us.

Young Professional and Student Committee Activities

Are you a recent graduate? Are you currently a student? Have you recently joined NWEA or WEAU? Are you 35 years old or younger? If you have answered yes to ANY of the above questions, then you are a Young Professional!!

May 1

YP Scavenger Hunt

This is a great way to get to talk to some of the active, seasoned WEAU and NWEA members. See form in registration packet or pickup form at registration booth for more information. Of the forms completed with the correct answers, one will be randomly selected to win a prize.

Operators Challenge / Young Professionals Barbecue

4:30-7:30 pm, FREE. At Fiesta Fun Center (171 E 1160 S St George, UT 84770). Families are Welcome! RSVP by April 17th to Ron Clements (*ronclements@ndsd.org*).

May 2

Young Professionals / Students Breakfast

7:30-8:30am, at Dixie Convention Center Room Entrada. RSVP by April 18th at *yp@weau.org*.

Young Professionals / Students Plant Tour

3:30 – 5:00 pm, FREE ,to St George WWTP. RSVP to *yp@weau.org* by April 18th and/or sign-up on the sheet at the registration desk. Questions? E-mail Jason Morgan *(jmorgan@coombshopkins.com)*.

Young Professionals / Students Blood Drive

10:00 am to 3:00 pm, in the Vendor Exhibit Hall. Sign-up on Wednesday at sign-up sheets posted around the conference. Questions? E-mail Derek Anderson (*DerekA@jordanbasin.com*).

Sporting Activities

April 29

ATV Ride

10 am (4-6 hours), leaves from Toquerville LDS Meeting House Parking Lot – Contact Dave Hutchinson (*sales@4ums.met*) See the flyer on the conference website for more information.

April 30

Sporting Clays

4 pm, $20 (individual) $100 (team of 5) fee, Purgatory Clay Sports (5650 West 700 South Hurricane, UT) – See flyer conference website for more information. Register online by April 15th.

Mountain Biking

Contact Nick von Stackelberg (*nvonstackelberg@utah.gov*) for more information. – See flyer on conference website.

May 1

Bowling

All Proceeds Benefitting Water For People
8 pm – 10 pm, $20 per person, Sunset West Bowling Lanes (1476 W. Sunset Blvd., St. George)

If you have a team of 4 please see registration forms on the conference website and RSVP to Greg Turner (*gturner@cleanwaterteam.com*) by April 15th. If you are interested in being on a YP team please contact Jenn Davis (*jennifer.l.davis@mwhglobal.com*) by April 10th. See flyer on conference website for more information.

Please make sure to check https://sites.google.com/a/weau.org/weau-nwea-joint-conference-2013/ for information on all conference events!

If you are interested in being part of the WEAU or NWEA YP / Student Committee please email Christina Osborn (*cosborn@jub.com*) or Jenn Davis (*jennifer.l.davis@mwhglobal.com*) respectively. The Committee plans networking activities, service projects, and valuable training sessions to help you throughout your career. Please check out the association's website for future activities.

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JOINT ANNUAL CONFERENCE - 2013

May 1 to 3, 2013 • Dixie Center St. George, Utah
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Conference registration is available online at ***www.nwea-weau.org*** or register by filling out this form and sending in a check. To expedite processing, we encourage you to register online with a credit card.

Name: _____ Spouse/Guest Name: _____

Company: _____ Membership Number: _____

Address: _____ City: _____ State: _____ Zip: _____

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General Conference Registration Fees

	PRE-REGISTER Prior to April 15, 2013	REGISTRATION AFTER April 15, 2013	AMOUNT
Member	$250.00	$275.00	
Non-member	$295.00	$315.00	
Student	FREE		
Wednesday (one day only)	$150.00(member) $165.00 (non-member)	$160.00 (member) $175.00 (non-member)	
Thursday (one day only)	$150.00 (member) $165.00 (non-member)	$160.00 (member) $175.00 (non-member)	
Pre-Conference: April 30*	$65.00 (includes lunch)		
Extra Lunch**	$20		
Banquet Dinner**	$30		
		TOTAL ENCLOSED:	

* See *www.nwea-weau.org* for details ** For guests of conference attendees

Please do not submit your form without payment! Registrations received without payment will not be processed (No P.O.s, No Credit Cards).

TO REGISTER: Go online or complete form and make checks payable to WEAU and mail to:
WEAU, PO Box 651028, Salt Lake City, UT 84165-1028

PLEASE DO NOT SEND REGISTRATION AFTER April 15, 2013. AFTER THIS DATE YOU MUST REGISTER ON-SITE OR ONLINE.
View the draft Conference Program at: *www.nwea-weau.org* Conference Program will be updated regularly on the website; check back often.

When you register for the WEAU Annual Conference, the following is included in your fee:

	Wednesday Opening Luncheon	Thursday Luncheon	Thursday Awards Banquet	Break Refreshments
Full Conference	Yes	Yes	Yes	Yes
Student	Yes	Yes	Yes	Yes
Wednesday Only	Yes			Yes
Thursday Only		Yes	Yes	Yes

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Contact Paul Krauth
at 801-971-7507 or
at *pkrauth@utah.gov*

Tooele City makes top 10

From June to August 2012, *Water & Wastes* Digest magazine encouraged project leaders to submit entries showcasing industry-specific projects in design or construction during the past 18 months. The different projects ranged from $950,000 to $80 Million dollars. Of the many projects submitted, Tooele City's Facility Upgrade was chosen as one of the 'Top Ten' projects in the nation.

Tooele City's water reclamation plant is a reuse facility utilizing 100% of the effluent for Type I reuse. The goal of the project since conception has been to reuse all of the city's resources to extent possible. This included the biosolids as well as the effluent water. The project consisted of upgrades to the biosolids handling and the disinfection systems.

Disinfection was originally accomplished by addition of sodium hypochlorite generated on site. Ultraviolet disinfection was selected for the upgrade based on several factors The most driving factor was the difficulty in maintaining a chlorine residual just over 1ppm. The UV system provides a more consistent dosing method and therefore it is more efficient. Ozonia's 3X ultraviolet system was chosen for the upgrade.

When considering options for the biosolids project it was important to obtain the goal of 'Complete Reuse.' Only systems that would insure beneficial use of the biosolids were considered. The city eventually determined that solar drying of biosolids fit the goal best by providing beneficial use of the biosolids and reducing the operation cost and carbon footprint of the plant. The city selected the Huber system for solar drying, which provides both Class A and Class B biosolids at the same time reducing operating costs. This is the first installation for the Huber system in the nation.

To the read the complete article 'Google' 2012 Top Water & Wastewater Projects. Dn

Complete List of Top Water & Wastewater Projects of 2012

- Brucejack Mining Camp Wastewater Treatment System Project
- City of Oxnard Advanced Water Purification Facility Project
- Dodge City Water Reclamation Facility Beneficial Reuse Project
- Leo J. Vander Lans Advanced Water Treatment Facility Expansion Project
- Narragansett Bay Commission Field's Point WWTF Wind Farm Energy Project
- Pukalani Wastewater Reclamation Facility Upgrade Project
- Two Bridges Sewerage Authority UV Disinfection Facilities Project
- Tooele Water Reclamation Facility Upgrade 1B Project
- Washington County Service Authority South Fork Intake & Middle Fork WTP Expansion Project
- City of Weatherford Customer Service & Efficiency Improvement Project

Member spotlight: Jim Faulkner

By John Marteliz

First of all, I would like to thank Ron for the opportunity to write this article. Since this is on my General Manager, this might probably be my last one I will ever write. Hopefully, I am still employed after he reads this.

Jim has been in the sewer business longer than most of us have been alive. When he first started at District 1, the year was 1865 and the Civil War was just coming to and end. We could not find anyone old enough to find out what side he supported, however rumor has it he was against slavery. Although some of his employees might disagree with that.

All kidding aside, Jim has an incredible resume. He started his career with District 1 in 1865 or 1965, ok so we might be off a hundred years, however who is counting. In the beginning he became a treatment operator. He later became the assistant superintendent until 1974. He then decided to better himself and in 1975 started employment with Cottonwood Improvement. He has been a member of WEF since 1965. Jim served as the WEF Director from 1999 to 2005. Jim has been a member of several committees including Operations Certification Council twice, and was a member of the WEAU board on two separate occasions. Jim was elected WEAU President from 1995-1996. He also received an award in 1991 for outstanding Supervisor. While he had been General Manager of Cottonwood Improvement, the district has been honored with receiving Outstanding Collection System from 1981-84, 1990, 1992, 1994, 2000, 2003, 2006 and 2009. Honestly, I could go on and on about Jim's accomplishments.

Jim we thank you for being a good sport in letting us write this article about you. You are a wonderful General Manager and Cottonwood Improvement District is blessed to have you here. DN

CAPITAL FINANCING

when municipal bonds are not an option

By Kevin Lorentzen, Financial Analyst, HDR Engineering, Inc. and Shawn Koorn, Senior Financial Analyst, HDR Engineering, Inc.

Reprinted from NC Currents *magazine*

From a financial perspective, utilities have entered a difficult and challenging period. Traditional thinking and management approaches have been turned on their head as the cost for fuel, chemicals, and other essential needs have increased, sometimes significantly. At the same time, growth has slowed down and reduced revenue streams used to fund operating and capital needs. Our economy may be headed towards, or already in, a "depression." Finally, the banking and credit industry has experienced major upheaval.

What hasn't changed is the need for utilities to continue to maintain infrastructure and build major capital projects. A utility's ability to fund and finance those projects may mean the difference between maintaining or constructing a project and deferring or canceling the project. Regardless of the current economy and the credit markets, many utilities are not in a position to defer or delay their capital projects. This may be as a result of multiple reasons; federal mandates, public safety, or simply system needs. The current funding dilemma may seem like an impossible situation, but funding and financing options are still available to all utilities.

Traditionally, when a utility needed to fund and finance a capital project this typically implied the issuance of long-term debt such as a revenue bond. For utilities, revenue bonds have historically held numerous advantages. These bonds are relatively low-cost financing due to their tax exempt status. At the same time, by using long-term debt financing, the financial and rate impacts of the capital project are minimized in the short-term, while more equitably spreading the cost of the project over the long-term and to the customers that will benefit from the capital project over the long-term. Unfortunately, given the recent crisis in financial markets, revenue bond financing has become a less certain means of financing for utilities. While the bond market will ultimately rebound and return to a more normal state, the key question is how to finance capital projects in the short-term. Fortunately, there are a variety of external and internal funding mechanisms available.

External Funding Sources

External funding sources for utilities usually consist of bonds, loans, and grants. With bonds being harder to issue and sell in the current financial climate, the focus of this discussion will be other funding opportunities, specifically low-interest loans and grants. The table below provides a quick reference to a few programs with a brief description and web address.

GRANTS – Grants are essentially "free" money from State or Federal agencies. However the availability of grants has diminished over the years and the competition for these grant dollars has greatly increased.

One source of grants available to utilities is Community Development Block Grants (CDBG). CDBG is a program established in 1974 and run by the Housing and Urban Development (HUD) agency. These grants seek to provide funding for a wide range of projects with the purpose of encouraging community development. CDBG funds are also restricted to communities with low to moderate household income.

For many years grants were available from the Environmental Protection Agency (EPA). The Construction Grants Program, which represents the majority of grants providing funds to utilities, was converted to the Clean Water State Revolving Fund, a low interest loan program managed by the EPA. Recently a bill was passed by the U.S. House, but stalled in the U.S. Senate, that would start shaping an economic stimulus package in the form of public works projects similar to those of the Great Depression era. If such a stimulus package is to come about, it is unlikely it would pass the U.S. House and Senate until after January when Congress reconvenes. To research possible grant opportunities visit *http://www.grants.gov/* for grants from a multitude of sources. Grants are often restricted to specific types of projects or project beneficiaries such as reducing non-point source pollution or benefiting low-income households.

LOW INTEREST LOANS – There are many federal low-interest loan programs intended to serve either rural or urban communities for the purpose of economic development. Two federal agencies offering loans are United States Department of Agriculture (USDA) Rural Development and the Economic Development Administration (EDA). The USDA Rural Development and EDA both offer grants to encourage economic development. Another source of low-interest loans is the Clean Water State Revolving Fund overseen by the EPA but managed through state-run programs commonly referred to as State

ALTERNATIVE FUNDING OPPORTUNITIES				
Organization	Program	Purpose	Target Recipient	Web address
Community Development Block Grant (CDBG)	Grant	Provide community development for low income communities	Low Income Urban Communities	http://www.hud.gov
USDA Rural Development	Low-Interest Loan/ Grants	Economic Development for Rural Communities	Rural Communities with pop. of less than 10,000	http://www.rurdev.usda.gov/
Economic Development Administration	Low-Interest Loan/ Grants	Economic Development	Economically Distressed Communities	http://www.eda.gov
Clean Water State Revolving Fund	Low-Interest Loan	Pollution Control/ Watershed Management	N/A	Federal: http://www.epa.gov See applicable State website
Rural Community Assistance Corporation (RCAC)	Low-Interest Loan	Provide Funding for low income rural communities	Low Income Rural Communities with pop. of less than 50,000,mainly western states	http://www.rcac.org

Revolving Funds. Each individual State has other state specific programs to provide low-interest loans to utilities.

A private source of low-interest loans is the Rural Community Assistance Corporation (RCAC). The RCAC is a non-profit corporation certified as a Community Development Financial Institution by the United States Treasury. The RCAC provides loans and technical assistance to low income rural communities with a population of less than 50,000.

Similar to grants, the availability of low-interest loans has been reduced while competition is increasing. Also like grants, there are often restrictions on the type of project these funds can be used for.

LOCAL IMPROVEMENT DISTRICTS – Utility Local Improvement Districts (ULIDs) are special districts formed as a means of assisting those properties benefiting from a capital improvement project to obtain the financing needed to fund the projects. The ULIDs permit the capital improvements to be financed and paid for over a period of time. Utility revenues are pledged to the repayment of the ULID debt. ULIDs also require that the defined benefit of the project must be received by the parcel at least equal to its assessment. The benefit, in this case, is usually interpreted to be a corresponding increase in property value, therefore, may require expert appraisal support services.

As ULIDs are financing tools, they ultimately lead to the sale of bonds with the retirement of those bonds coming from the payments made by property owners within the assessment district, and given current market conditions, this may be a challenging option at this time. In some instances, a utility can fund a local improvement district through a surcharge on those benefiting properties rates. In these cases, it is imperative that the utility review these options with its legal counsel.

LEASING – An optional source of financing may be leasing equipment rather then outright purchasing of equipment. An example of this could be for vehicles or other equipment, where instead of purchasing the vehicles, a utility could lease the vehicle or other equipment and save funds in the short term. This may depend on the specific utilities policies on vehicle or equipment leasing, but could prove to be a cost effective method of financing short term capital costs.

A final item to consider is that external funding may have hidden costs, such as the time and effort expended to file required grant applications or hiring an attorney to guide the utility though legal documents for low-interest loans. This is not to mention in many cases grants and low interest loans are not a guaranteed source of revenue in terms of planning for future projects. In addition, the impacts to rates of capital projects must be taken into consideration as the affordability of rates is a criterion for many external funding sources.

Internal Funding Sources

Internal funding sources are those generated internally within the utility. Individual internal funding sources usually do not generate vast amounts of funds for capital. However, when several internal funding strategies are employed, they may add up to a significant amount of revenue for the utility. These can range from updating service fees and charges, operational efficiencies or cost avoidance, to high strength surcharges. Two specific internal sources of funds related to capital funding are impact or connection fees and rates.

IMPACT FEES – Impact fees (also called system development charges) are a one-time charge intended to reflect the value

of existing and future capacity-related system costs incurred to accommodate a new connection. Most states have specific legislation providing the legal authority to develop and establish impact fees. As an example in Nevada, NRS 278B addresses "Impact Fees for New Development." While growth and new connections may have slowed from previous years, the use of impact fees to fund capital projects is an equitable method to share the costs between existing and new customers. It should be noted that these fees must be used to pay for growth or capacity expansion-related projects, or debt service payments if the debt was incurred for funding the growth related projects. Impact fees are one of the most effective internal sources of capital financing for growth-related capital projects.

UTILITY RATES – An often under funded source of capital financing is through rate revenue. Historically, utilities have generally attempted to maintain their rates as low as possible and at the detriment of capital funding provided by rate revenues. Expenses inevitably increase at a greater pace than revenue. As a result, absent of routine rate adjustments, revenues available for capital projects diminish over time. As a result of this, diminished capital financing through rates means more external financing that is required. A simple financial rule to determine the adequacy of capital funding from rate revenue is when the utility targets an amount equal to or greater than the annual depreciation expense of the utility. The level of capital funding through rates has far reaching implications and is a direct measure of the financial strength and the potential bond rating of the utility. In these times of tight credit and few bond buyers, the utilities with the highest bond ratings and strong financials will be in the best position to have access to the credit markets at reasonable terms and interest rates.

Summary

Given the state of the current financial market, utilities may need to consider alternative methods of financing capital projects in the absence of bonds. This will inevitably mean both external and internal funding sources. It is unlikely municipal bonds will be out of reach for utilities forever, but this financial crisis has demonstrated how important having a well diversified financing plan can be. Implementing these financing alternatives will not inoculate a utility from a frozen municipal bond market, but it can assist in completing capital projects through other funding sources.

About the authors:

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MAKING AN *INDUCED VORTEX GRIT CHAMBER*

(EVEN) BETTER FOR SMALL SIZE GRIT PARTICLES USING COMPUTATIONAL FLUID DYNAMICS (CFD)

By Mike Bruneau, M.T.Sc., Headworks Product Manager for John Meunier Inc.,
Denis Aubin, P.Eng., Manager, Equipment Sales Support for John Meunier Inc.,
Marc Beliveau, P.Eng., Application Specialist, Pretreatment Equipment for John Meunier Inc.,
and Tony Moraska, Headworks Regional Sales Manager for Central USA for John Meunier Inc.

INTRODUCTION

The headwork of a wastewater treatment plant is not only the first step of the wastewater treatment, but also an essential treatment step, as it sets the tone for the overall pollution abatement performance of the whole WWTP. Generally speaking, the headworks is composed of a mechanical screen, grit chamber, and solids handling equipment. Modern grit chambers remove grit by inducing a vortex pattern in the circular chamber. A drive paddle in the induced vortex unit maintains circulation under all flow conditions. Grit slurry pumps periodically remove the accumulated grit from the hopper at the bottom of the grit chambers.

The efficiency of the grit chambers is of importance for the remainder of the wastewater treatment process: removal of solids improves treatment efficiency, improves downstream hydraulics and protects against excessive wear and tear in pumps. Traditionally, for design purposes, grit particle sizes have included particles larger than 65 mesh (0.008") with a specific gravity of 2.65. Removal of at least 95% of these particles always has been the target of grit removal design. Empirical studies in the literature validating these performances have been few and far between.

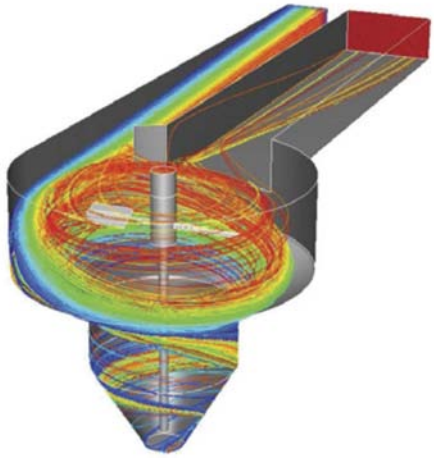

Figure 1: Original Fluent Model of conventional 270° IVGC based on Ridgecrest, CA installation

The need for enhanced performance at headworks stage remains critical while Advanced Treatment Technologies like Membranes, MBR's and MBBR's are introduced. These are all sensitive to the presence of gross solids and grit deposition. Grit Removal Performance is also critical to lagoon-type treatment rehabilitation.

The objective of this research program was not only to define a 360° **I**nduced **V**ortex **G**rit **C**hamber (**IVGC**) design, identified as the «MECTAN V®», but also:

- Create a tank configuration that can provide in-line possibility and, potentially, positioning the outlet channel in any desired direction to facilitate the plant design without affecting the unit performance.
- Establish a tank configuration that would provide enhanced grit removal efficiency compared to the conventional 270° results and general

market requirements.

- Establish by the use of computer modeling assistance, all the hydraulic parameters and capacity of each component used in the 360º Induced vortex Grit Chamber Design.

THEORETICAL BACKGROUND AND METHODOLOGY

The CFD (Computational Fluid Dynamics) models were implemented trough the Fluent® software (ANSYS), as shown in ***Figure 1***. The fluid-dynamics models were established using the modeling of the exact geometry of the conventional induced vortex grit removal package unit installed in Ridgecrest, CA. The CFD simulations were validated with regards to experimental data from onsite trials operated with the following methodology. The sand dosage method was used during these performance tests. During these tests, the quantity of injected sand was sufficient and the velocity in the channel was high enough to avoid the settling of sand before the grit removal system. While sand was injected, two samples with equal flow rates were taken simultaneously, upstream and downstream of the grit chamber using two submersible pumps installed at the inlet and outlet of the grit chamber. The samples were sent to an external laboratory where analyses of sand granularity and density were done. Grit samples where sieved through three different mesh sizes 50, 70 and 100 (corresponding to 300μm, 250μm and 150μm). Thus four ranges of grit were obtained corresponding to particle sizes <100, 100-70, 70-50 and >50 mesh (corresponding to <150, 150-200, 200-300 and >300 μm).

Four computed curves (***Figure 2***) clearly show the unique advantage of the **IVGC** design that efficiency increases with decreasing feed flow rate.

CFD DEVELOPMENT OF THE 360º FLOW PATH DESIGN

The project's central objective was to develop a new and more efficient **IVGC** configuration, while adapting the design to the current modern approaches. The conventional grit chamber design, like the one used for Ridgecrest, CA, is typically referred to as 270º, named after the rotation angle of the water from the inlet channel to the outlet channel in the design. This implies that the inlet and outlet of the unit are on the same side of the Induced Vortex Tank.

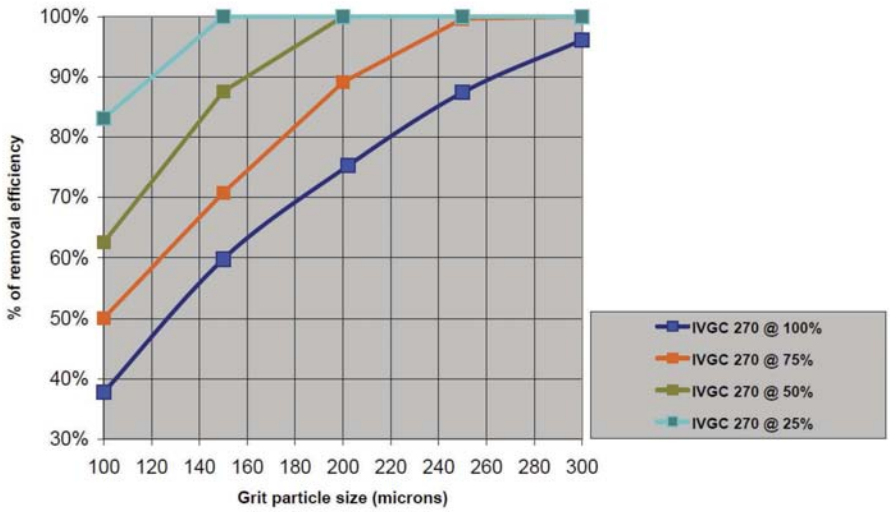

Figure 2: 270º IVGC configuration efficiency VS. through flow variations (Typically grit removal efficiency increases with through flow reduction)

While very practical for bypass installation, the conventional design required the outlet channel to pass around the vortex grit chamber's tank to be connected to downstream treatment systems. In the late 1980's, configurations using in-line inlet and outlet configurations appeared. This approach addressed the flow direction issue, while not addressing clearly grit removal performance increase.

Figure 2 shows the 100% flow base efficiency curve for a 270º design (dark

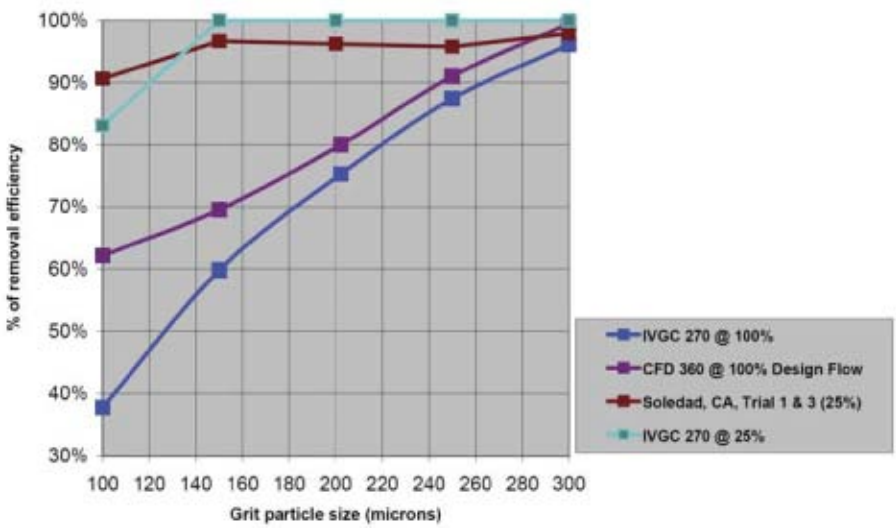

Figure 3: Soledad, CA test results at 25% design flow, 270° IVGC expected removal at 25% design flow, CFD 360° at 100% design flow and 270° IVGC removal at 100% design flow

blue line), as discussed above and proven from the Ridgecrest samples. ***Figures 3 and 4*** show the CFD model 100% design flow projected obtainable efficiencies (magenta line). The computation results of these two curves triggered additional interest for the 360 flow path configuration. The next study stage required actual site tests to validate the findings, which will be covered in the following paragraphs.

SITE TESTS FOR THE NEW 360° CONFIGURATION

Two sets of fullscale testing were completed at fully operational installations: Soledad, CA and Jackson, KY. The methodology described above for Ridgecrest, CA was used for the validation tests. At the time of testing, the Ridgecrest, CA WWTP remains an underused facility. Consequently, the tests were conducted at 25% of nominal flow. Even though considered somewhat far from the actual expected 100% design flow tests (but close to average daily flow for many WWTP), these tests have brought considerable data in the development of the new technology.

- ***Soledad, CA WWTP***
  The Soledad, CA units is one of the first installed. The municipal waste water feed to the 16 feet diameter unit is done by gravity. The feed rate only provided 25% of total design flow to perform the tests of the 360° concept.

  Figure 3 allows the evaluation of the effective position of the Soledad 360° results and provides a better understanding of the results.
  - The Soledad's results represents efficiencies at 25% design flow (brown line), the 270° conventional unit curves represents efficiencies for an operation at 25% design flow (light blue line) and at 100% design flow (dark blue line) and the CFD model curve (magenta line) represents efficiencies for a 360° unit at 100% design flow.
  - The difference in read out values of particles above 140 μm (105 mesh), between the 270° unit efficiency being at 100% and the 360° efficiency that oscillate between 95% and 100%, is explained by the precision of the method used for the site tests. It was determined that seed grit test method could typically exaggerate the grit distribution in the channel; so, on a practical point of view, these two curve sections are somewhat similar. However for the 100μm (150mesh) portion, the efficiency is substantially higher on the Soledad 360° curve. This particle size is typically considered as very fine grit and very difficult to capture in all operating conditions.

- ***Jackson, KY DWP***
  The Jackson, KY installation is a drinking water plant using water from the nearby river. The river only lends muddy and gritty water, thus explaining the presence of grit removal for the application. The 7.5 feet diameter grit tank was installed after the intake pumps. The intake feed pumps did not offer 100% design flow. However it did provided the opportunity to test the 360° concept at 60% of total design flow.

  Comparison of the computed results on ***Figure 4*** allows the evaluation of the effective position of the Jackson 360° results and provides a better understanding of the results.
  - Multiple tests were performed at Jackson to clearly identify the most efficient paddle location within the tank. This corresponded to series 4 test results (yellow line), the CFD model curve represents efficiencies for the 360° unit at 100% design flow (magenta line) and the two 270° conventional unit curves represent efficiencies at 50% design flow (green line) and at 75% design flow (orange line).
  - The Jackson, KY tests establish results in line with the performance of the 270° design for larger grit (300, 250 and 200 μm / 50, 60 & 70 mesh). On the other hand, the 360° configuration shows much higher efficiency than expected for 150 and 100 μm / 100 & 140 mesh particle sizes; a 270° unit operating at 60% of design flow is predicted to remove between 50 and 63% of 100 μm / 140 mesh grit compared to over 80% removal obtained with the Jackson unit.

360° CONFIGURATION AT 100% DESIGN FLOW

As of today, access to a facility operating at 100% design flow was not possible. Nevertheless, based on the progression of values observed for 270° configuration and the current progression of units tested with a 360° flow path design, computation was attempted to evaluate the performance of the 360° configuration at 100%. ***Figure 3 and 4*** (Magenta line). Even though this efficiency curve remains a projection of the tests at Soledad and at Jackson, it provides evidence that the 360° design not only performs better than the conventional 270°, but tends to establish that field performance may exceed the CFD expectations.

CONCLUSIONS

The importance of grit removal in modern wastewater treatment processes is of growing concern since as a primary treatment it impacts the down-stream operations in the wastewater treatment process. Computational Fluid Dynamics (CFD) is a powerful and flexible tool that allows the study of a very wide variety of applications in the water industry. During this study, CFD has proven to be a valuable tool that mimicked the behaviour of a full size grit removal unit (validation) tested at Ridgecrest, CA and also helped identify optimum geometrical configurations for IVGC units.

The CFD model efficiencies obtained for the 360º flow path design concur with field testing results in indicating that the design provides higher grit removal performance.

In fact, the 360º Induced Vortex Grit Chamber design provides 20% overall increased efficiency mainly in fine grit particles over the conventional 270º IVGC design.

Field tests are bringing additional credit to the use of CFD as a design tool. The evaluation of field results points to indicate that the CFD model, originally based on 270º configuration and modified from there, may benefit from a recalibration using the current site tests results. This will provide for more accurate prediction of the results and provide a mean to model applications with Fluent® CFD program should it be required. DN

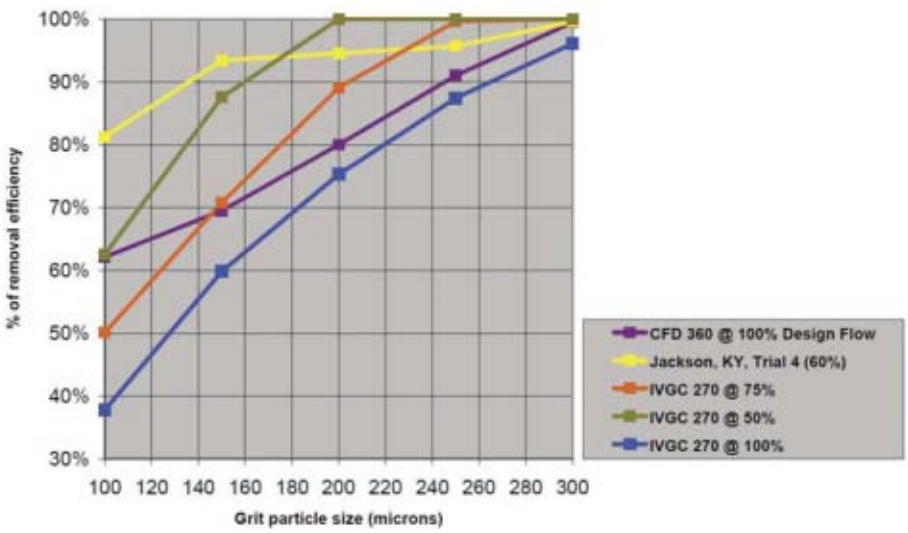

Figure 4: Jackson KY test results at 60% design flow, 270º IVGC expected removal at 50 and 75% design flow, CFD 360º at 100% design flow and 270 º IVGC removals at 100% design flow

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