

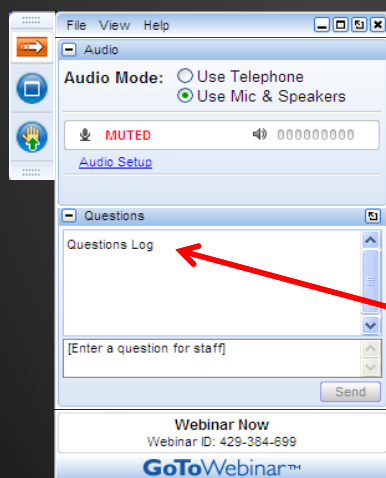
Options for Successfully Managing Distributed/Decentralized Systems

August 16th, 2017
1:00 PM - 2:30 PM ET

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How to Participate Today



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- Submit your questions using the Questions pane.
- A recording will be available for replay shortly after this webcast.



Joyce Hudson



- Environmental Consultant with Hudson and Hudson
- Retired EPA, Office of Wastewater Management
- Managed EPA's Decentralized Program
- Led development of EPA Management Guidelines



Today's Speakers



Mike Hines, M.S. P.E.
Founding Principal
Southeast Environmental Engineering



Jim Pyne
Adjunct Assistant Professor & Research Associate
Old Dominion University



K.R. "Trapper" Davis
Coastal Plains Environmental Group



Bob Pickney
Chief Technical Officer
Adenus Wastewater Solutions





Michael Hines, M.S., P.E.
Founding Principal
Southeast Environmental
Engineering, LLC

50+ years as regulator,
designer, builder, and manager
of wastewater systems



Presentation Objectives

- Explore small system management issues
- Understand EPA Management Guidelines
- Study management case studies



1997 EPA Report to Congress

- "Adequately managed decentralized wastewater systems are a cost effective and long term option for meeting public health and water quality goals".
- Lack of management structures for onsite, cluster, and other decentralized systems an impediment to their viability.



Small system management issues

- No management - property owner responsible
- Regulatory authority at local/state level
- Inconsistent laws and regulations
- No operational permitting or inspections



EPA Management Guidelines

- 2003 voluntary national guidelines
- Defined five levels of suggested structures from with increasing liability for management
- Property owner to public utility
- Some incentive to regulators but most to consultants, developers, service providers



Five Management Models

- Model 1 - Homeowner Awareness: Wastewater systems owned and operated by property owners.
- Model 2 - Maintenance Contracts: Wastewater systems owned by property owners with contractor maintenance.
- Model 3 - Operating Permits: Wastewater systems owned by property owners with time limited operating permits.
- Model 4 - RME operation and maintenance: Wastewater systems owned by property owners with operating permits issued to RME.
- Model 5 - RME Owned and Operated: Wastewater systems owned and operated by Responsible Management Entity (public utility).



Model Comparisons

- Models 1 thru 3 generally regulated by local health departments and result in little to no system management.
- Model 4 entities accountable to both property owner by contract and regulator by law or ordinance.
- Model 5 entities generally regulated by state environmental agency and subject to full force of law and regulations.
- Model 4 and 5 entities generally private (not governmental) and profit driven; therefore performance motivated.



Case Studies

- Model 4 - Coastal Planes Environmental Group, operating multiple individually owned systems.
- Model 5 - Tennessee Wastewater Systems, Inc., a privately owned public utility with multiple cluster systems.
- Model 5 - Hampton Roads Sanitation District, a governmental public utility.





K. R. "Trapper" Davis
Krdavis@cpegllc.com

President, VOWRA
 NOWRA Board Member

Providing Management, Operation & Maintenance for small flow Alternative Onsite Wastewater Treatment Systems

Brief History: - Established 2000 - Serves 1500 clients in 33 counties in Virginia. Most clients are single family residential with an Alternative Onsite Sewage System. Smallest system = 300 gpd, Largest system = 9,000 gpd. All systems are owned by individual homeowners, corporations or HOA's and are on individual contracts for service.

Provide warranty service for 16 manufacturers.

Coastal Plains Environmental Group, P.O. Box 236, New Kent, VA 23124
 Office: 804-966-9190 Fax: 804-966-2739 www.cpegllc.com



Operating an RME under EPA



Virginia Regulations Governing Onsite Sewage Systems



Virginia is a “Dillon” Rule state, meaning that the regulations apply to every County, and Municipality. Should a County or Municipality wish to amend the regulations, it requires Legislative Approval.

12VAC5-610 sets the “proscriptive” standards for design.
12VAC5-613 sets the “performance” standards for Alternative Onsite Sewage Systems.

These can be found at: <http://www.vdh.virginia.gov/environmental-health/onsite-sewage-water-services/regulations-and-current-regulatory-activity/>



Licensure Required



Licensure for anyone working in the Onsite Sewage System field has been required since 2009. There are several classes dealing with both Conventional and Alternative Onsite Sewage Systems.

Operators may also be required to hold dual licensure. If the onsite sewage system you are operating is 10,000 gallons or more, then an operator would also have to hold a license as a Waste Water Operator Class IV at a minimum.



Operating as a Level II RME

Maintenance is mandatory in Virginia for any residence having an Alternative Onsite Sewage System installed on the property.

12VAC5-613 sets maintenance and reporting frequencies depending on peak flow of the design. Most residential systems of less than 1,000 gallons per day require that the manufacturers maintenance frequencies be adhered to, and currently requires sampling for BOD5, TSS, Total Nitrogen and if disinfection is utilized, Escheria Coli within 180 days of system commissioning and then once every five (5) years.

CPEG requires a service agreement be in place with the property owner so that it grants us access to the property in case of emergency and the occupants are not home, as well as sets our responsibility to the property owner and their responsibility to us.



Operating as a Level III RME

Each onsite sewage treatment system (Conventional and/or Alternative) is issued an Operations Permit from the local health department.

On the larger flow systems (greater than 1,000 gpd) the Operations Permit may dictate maintenance and sampling frequency as well as the requirement to maintain a contract with a licensed operator.

Under the current regulation re-write that is in progress, Operations Permits may be going to a five year renewable permit. Which then allows the local health department to amend maintenance frequencies, sampling requirements, etc. based on the operator's report submissions.



Operating as a Level IV RME

We operate in this category mostly for Home Owner Associations. The HOA owns the treatment system, and maintains right of way access to all properties.

We then become the contracted Responsible Management Entity to the HOA. In several instances, we (CPEG) are listed with the State Corporation Commission as part of the HOA's documentation.

Most of these are "mass" absorption fields with a mix of individual pump stations, individual treatment systems or one large community system. Our responsibilities tend to mimic the Level V RME's when working for or contracted with the HOA's.



How Do We Do It?

First, work smarter, not harder!

Then, **FIX IT RIGHT THE FIRST TIME!**

Don't Take **SHORT CUTS!** & Don't **DO IT ON THE CHEAP!**

I have three (3) full time technicians, one (1) part time technician, myself and one office staff person to answer the phones, handle billing, etc.

We make use of telemetry based controls on most any treatment system with a flow greater than 2,000 gallons per day, so we can monitor, adjust, keep an eye on the system without having to make daily or weekly site visits.



We don't retail equipment or act as the agent for any one particular manufacturer. As such, we act as the regional trouble shooting gurus for several manufacturers and as the regional trainer for most.

Yes, we train our competition.

But this also gives us resources that many companies don't have. We can literally call on one of our competitors to stop by and check on a critical problem for us while we get a technician on the way.

Serving 33 Counties, we also have an excellent relationship with the pumping companies who can backstop us with an emergency pumpout till we can get a technician to the site.



Trials and Tribulations

When we first opened Coastal Plains Environmental Group, we had to operate in a larger coverage area, which included North Carolina and Maryland since all of our clients voluntarily accepted service agreements ... this of course stretched resources thin and time management was a problem.

Since mandatory maintenance became a reality, we have pulled back the area coverage and released a significant number of clients to other providers.



Trials & Tribulations - Cont'd

Hiring, training and keeping good technicians has been a primary difficulty. All training is conducted "in house" and it takes 8 to 12 weeks to train a new technician just to be able to do the "grunt" routine maintenance on the variety of treatment systems we have under contract. Takes another 6 to 9 months for the "lightbulb" to go off and he/she realizes that they actually do know what they are doing.

We maintain several schools and daycares, as well as two battered women's shelters ... so an applicant for a tech position must have:

Clean police record - No assaults, No sexual / predator charges!

Clean drug screen! - NO DUI's / DWI's

VALID drivers license - Clean driving record -NO Restrictions

Nothing against Tattoos as they are all the rage, but NO TATS on the face or neck!



Trials & Tribulations - Cont'd

I think we have corrected our hiring problems as now when we hire a new technician, their interview process is a full 8 hours and they get paid \$10.00 per hour.

They get to spend the day with the Boss, get to know the company, the Boss gets a feel for them as to whether they will fit in with the rest of the crew, and the applicant gets to see what they would be doing ... Have had several applicants that you think would be a good fit turn around and say ... thank you, but no thank you, this job is not for me.

Saves time and paperwork in the long run and you don't spend weeks training to have them leave before they begin to make the company a profit.



Am sure that there is much more I can talk about as to how we operate, but time is / was limited.

To further your success though, you and your company need to be active in your local Environmental or Onsite Associations, Better Business Bureau and local Chamber of Commerce.

Networking is a critical part of success.



James C. Pyne, Ph.D., P.E.

- Retired From HRSD after 36+ years of service in various positions.
- Implemented and served as the Chief of HRSD's Small Communities Division from 1995 to retirement in 2015.



Distributed Wastewater Service within a Large Utility Structure

Considerations Regarding
Implementation and Management



History

- 1994 Discussions with Small Localities
- 1995 Feasibility Study
- 1996 - 1999 Politics and Agreements
- July 1, 1999 Assumed operations of 4 systems (On the same day)



HRSD's Considerations

How to serve rural areas?

Connect to HRSD interceptors

Operate the existing systems

What was HRSD willing to take on?

Treatment Plants

Collection Systems

Financial Implications

Cost of upgrades and improvements

Existing system debt

Billing & Rates!!!!



Locality Considerations

Loss of control & sovereignty

Rates!!!

Customer service level (response)

Giving up (perceived) assets

Support for economic development

Control of residential development

On the other hand:

Release from a big regulatory liability



Customer Considerations

Rates!!! (perceived affordability)

Reduced influence

Service level

Response

Dealing with a large bureaucracy



Regulatory Considerations

Reporting procedures

Which regional office will handle the permits?

Bringing existing systems into compliance

Nutrients

Metals



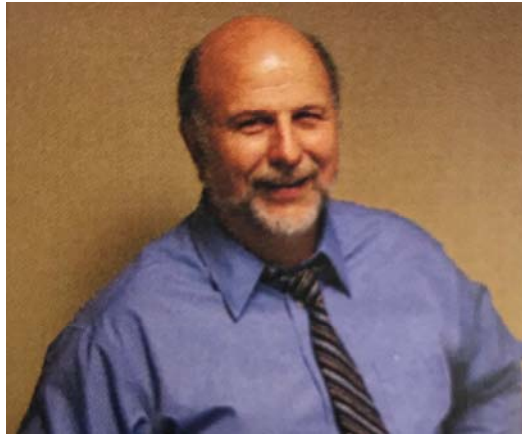
Learning (The Hard Way)

Collection Systems

Customer Service

Dealing with new geography & topography

Operating on a smaller scale



Bob Pickney, P.E.
Founding Principal
Adenus Group
Phone: 615-604-4712
EMAIL: bob.pickney@adenus.com



- Adenus Utility Companies

- Alabama Wastewater Systems, Inc.
- Tennessee Wastewater Systems, Inc.
- Commonwealth Wastewater Systems, Inc.
- Ohio Wastewater Systems, Inc.

Key Information:

- First Utility Company formed in 1993
- Total Customers: >6300
- Avg. Residential Monthly Bill \$50-60/month
- Certified/Licensed operators: >10
- Service Technicians (including licensed operators): >20



EPA – Level 5 – Non-Governmental Entity

Ownership:

Privately Held Public Utility Company

Financial Regulator:

Public Utility Commission

Environmental Regulation:

Point Discharge/NPDES Permitting Group



Preferred Technologies

Collection

Water Tight Septic Tank Effluent

Treatment

Fixed Film or other low maintenance technology

Use of Treated Water

Drip Irrigation or other beneficial reuse



Service Model:

- A critical mass of customers is achieved by serving a multitude of areas
- Areas need not be contiguous
- Management and control structure must be in place
- All required preventative operations and maintenance must be accessible
- All costs are paid by customers in monthly bill



System Operation

- Sludge is handled in the septic tanks
- All systems designed with significant flow equalization (storage)
- PLC's are programmed to operate treatment and drip irrigation system and to "report out of bounds conditions"
- Maintenance personnel generally make no "operational decisions"
- All systems are built with similar technology (i.e. - all sand filters are the same process and design)
- All Systems continually monitored remotely (QA/QC)



Toughest Challenge

- Adding effective oversight over maintenance and operation technicians
- Technicians are responsible for several systems (as many as 20 sometimes)
- Adding a "second pair" of boots on the ground for QA/QC not cost effective



Automatic Generation of Reports

- PLC & Telemetry System automatically send notifications and reports to operators and supervisors
- Service calls are dispatched by email, after resolution technician closes ticket electronically

DeadHead KPI Report for 8/9/2017

Tony Smith	Expected	Actual	% of Expected	Press Drop
Cottages at Brigadoon RSF	64.50	-----	1.02	-----
Jackson Bend RSF	52.77	52.47	0.99	11.38
Lowes Ferry RSF	76.50	72.41	0.95	0.00
Piney Bay RSF	55.00	-----	0.00	-----
Reserve on the TN River BC	55.00	-----	0.00	-----
Swan Harbour RSF	51.55	52.14	1.01	0.25
Tall Oaks RSF	51.00	48.82	0.96	6.21
Windsor Pointe RSF	50.66	51.34	1.01	2.55
Wyndsong RSF	55.00	-----	0.94	-----

Brandon Dotson	Expected	Actual	% of Expected	Press Drop
Elk Springs BC	55.00	49.75	0.90	11.49
Fairway Vistas BC	55.00	-----	1.46	-----
Falling Waters AVX	55.00	49.3	0.90	4.88
King Branch Road BC	55.00	61.46	1.12	14.14
Settlers Ridge RSF	55.00	-----	0.00	-----
Smoky Village RSF	55.00	-----	0.67	-----
Townsend Town Square RSF	50.00	-----	0.85	-----
Trillium Cove RSF	50.00	-----	0.00	-----

Johnny Gautreaux	Expected	Actual	% of Expected	Press Drop
Black Bear BC1	55.00	47.83	0.87	8.87
Black Bear BC2	55.00	47.68	0.87	0.22
German Creek BC	55.00	48.95	0.89	12.94
Legacy Preserve BC	50.00	41.29	0.83	38.07
Smoky Cove BC	55.00	51.49	0.94	0.66
Sugar Loaf Ridge BC	55.00	-----	0.00	-----
Turner's Landing BC	55.00	59.03	1.07	1.36

Flow KPI Report for 8/9/2017

Tony Smith

Plant	Expected	Actual	% of Expected	AvgFlow
Cottages at Brigadoon RSF	3150	0.0	0.00	180.00
Jackson Bend RSF	6125	11663.0	1.90	10294.70
Lowes Ferry RSF	6825	7730.0	1.13	6139.33
Piney Bay RSF	875	0.0	0.00	0.00
Reserve on the TN River BC	175	0.0	0.00	60.00
Swan Harbour RSF	1575	2074.0	1.32	2067.30
Tall Oaks RSF	12425	10900.0	0.88	11486.67
Windsor Pointe RSF	4550	2579.0	0.57	3926.13
Wyndsong RSF	2625	0.0	0.00	851.27

Brandon Dotson

Plant	Expected	SP Gal	Actual	% of Expected	Avg
Elk Springs BC	7350	0	8650.0	1.18	
Fairway Vistas BC	350	0	0.0	0.00	
Falling Waters AVX	5518	0	8828.0	1.60	
King Branch Road BC	4200	0	1291.0	0.31	
Settlers Ridge RSF	3150	400	3753.0	1.19	
Smoky Village RSF	5075	0	1283.0	0.25	
Trillium Cove RSF	1050	0	0.0	0.00	

Johnny Gautreaux

Plant	Expected	Actual	% of Expected	AvgFlow
Black Bear BC1	9975	10427.0	1.05	12136.03
Black Bear BC2	7000	6871.0	0.98	9330.50
German Creek BC	11674	2574.2	0.22	3486.05
Legacy Preserve BC	16800	1313.9	0.08	1529.00
Smoky Cove BC	8925	11161.0	1.25	9023.63



HAWKMS Alarms Summary Report: 8/10/2017 5:55:31 AM - 8/11/2017 5:55:31 AM

Company	On-Call
Tennessee Wastewater (East)	Brandon Dotson

* Alarm not yet Acknowledged

Brandon Dotson	Alarm	Count	L
Falling Waters AVX	Discharge Low Level Alarm	1	8
King Branch Road BC	BioClere 1 Pump 1 Starter Tripped	1	8
Settlers Ridge RSF	Recirc Low Level Alarm	2	8
Smoky Village RSF	Zone 01 Dripfield Low Pressure	1	8
Townsend Town Square RSF	Zone 01 No Flow	3	8

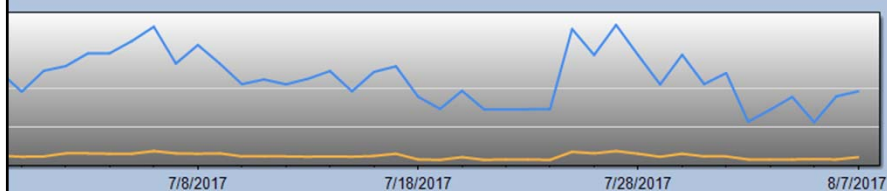


Dripfield Pressure KPI Report for 8/9/2017

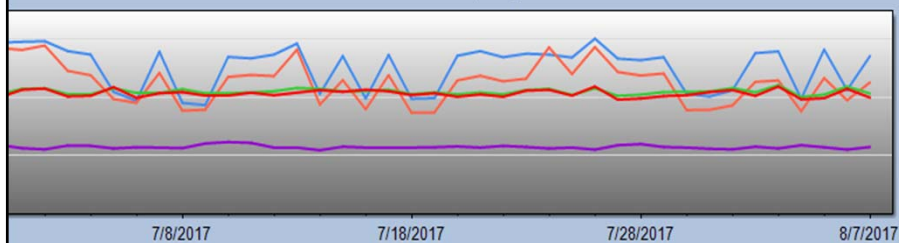
Tony Smith	DZ1	DZ2	DZ3
Cottages at Brigadoon RSF	----- PSI	----- PSI	51.44 PSI
Jackson Bend RSF	26.23 PSI	23.56 PSI	27.55 PSI
Lowes Ferry RSF	45.06 PSI	44.64 PSI	55.35 PSI
Piney Bay RSF	----- PSI		
Reserve on the TN River BC	----- PSI	----- PSI	
Swan Harbour RSF	48.82 PSI	47.62 PSI	46.14 PSI
Tall Oaks RSF	30.94 PSI	33.97 PSI	36.92 PSI
Windsor Pointe RSF	32.71 PSI	32.31 PSI	45.55 PSI
Wyndsong RSF	----- PSI	----- PSI	
Wyndsong RSF	----- PSI	----- PSI	

TRENDING CHARTS

Plant Flow



Pump Amps





- In the event of a system alarm, an email or page will be sent to the responsible operator and his supervisor.

From: matt.pickney@adenus.com
Sent: Tuesday, September 12, 2006 6:55 AM
To: efflue@comcast.net
Subject: Adenus Station Error

Alarm on stations: Bolton Estates PS



Ticket #132930 *FOLLOWUP*****
(Initially sent July 31, 2017, 10:24 AM CDT)

Brigadoon Resort
3008 White Oak Way

Robert Noyes
(865)405-3873

Sewage leaking from the lid/popper into the yard
Emailed there is a sewer leak to the right of 3008 White Oak Way.

[CLOSE TICKET](#)

[VIEW MY DASHBOARD](#)

Dispatched by: Susan Chaffin



Program Requirements

- To Create Sustainable Decentralized Program:
 - Program must be based on solid, robust proven technologies
 - Must have professional management, operation and maintenance and appropriate QA/QC
 - Regulatory oversight must allow a rate structure adequate to provide needed capital for the monitoring, operation, maintenance, and incremental replacement of initial system



Level 5 Public Utilities (Non-Governmental)

- Advantages
 - Can create systems to serve customers quickly
 - Can plan for long term growth
 - Not dependent on the political world for guidance
 - Develop multi-jurisdictional service plan to take advantage of economy of scale, experience, expertise (create customer base over a much larger area - usually statewide)



Level 5 Public Utility Company

- **Disadvantages:**

- Program is non-governmental and less influence by political influence (could also be advantage)
- Not eligible for subsidy programs normally available to governmental programs - long term debt with low interest, bonds, grants and other give away programs
- Must compete with governmental entities that do not pay land taxes, ad valorem tax, franchise/excise tax and on and on.....



newterra®
clean water. modular solutions. *simple.™*

Packaged MBRs for the Decentralized Market

Kevin Dufresne

Product Manager – Decentralized Systems

kdufresne@newterra.com

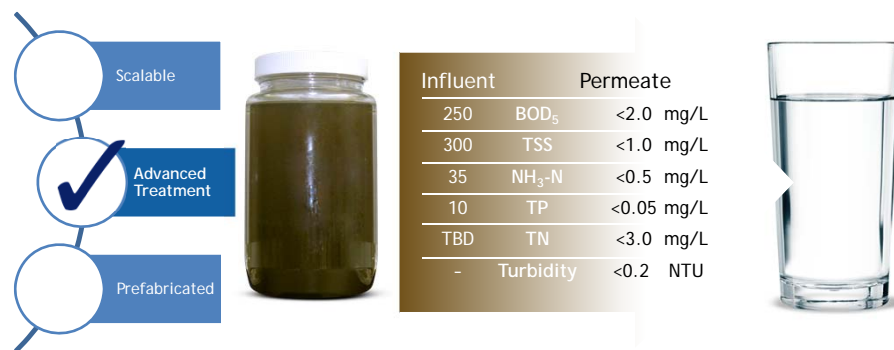
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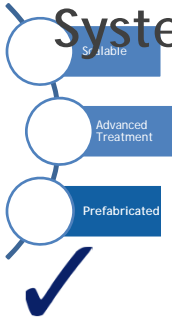
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newterra's Decentralized MBR Systems



newterra's Decentralized MBR Systems



WEFTEC Technical Session- Chicago, IL

Decentralized: Scaling it Down for Small Communities

Tuesday, October 3: 10:30 AM - 1:30 PM
IKE Sessions McCormick Place, Room S402a

Kevin Dufresne - Product Manager - Decentralized Systems - kdufresne@newterra.com







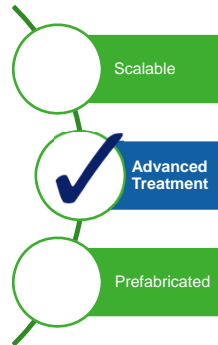

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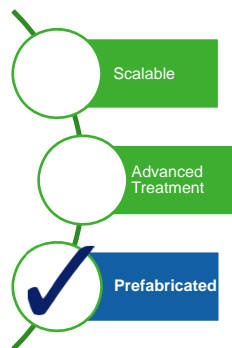
newterra's Decentralized MBR Systems



Influent		Permeate
250	BOD ₅	<2.0 mg/L
300	TSS	<1.0 mg/L
35	NH ₃ -N	<0.5 mg/L
10	TP	<0.05 mg/L
TBD	TN	<3.0 mg/L
–	Turbidity	<0.2 NTU



newterra's Decentralized MBR Systems



WEFTEC Technical Session- Chicago, IL

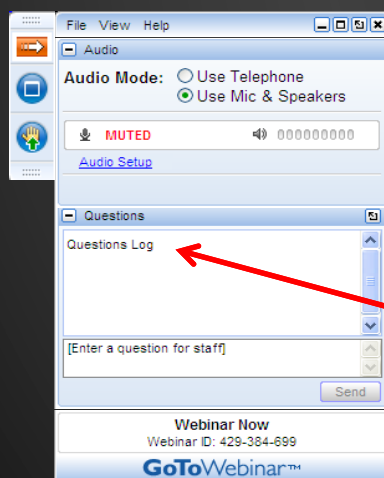
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