NHWPCA TRADE FAIR  
April 8, 1999  
Wayfarer Inn Convention Center • Bedford, NH

The NHWPCA is sponsoring its 20th Annual Wastewater Treatment Trade Fair on Thursday, April 8, 1999 at the Bedford Wayfarer Inn, Bedford, New Hampshire.  
Exhibits will be on display at the Conference Center from 9:00 a.m. to about 3:00 p.m. this year. No formal luncheon will be held, however, lunch and snacks will be available throughout the day.  
The Associations Annual Meeting will be held at 11:00 a.m. in the nearby Nashua Room and will include election of officers and Poster Contest Winners.

Derry WWTF Lagoon Upgrade  
by Tom White

The history behind the gradual improvements that have been recently made at the Derry Lagoons by their experienced staff shown below, would take several hours to explain.  
This Lagoon facility has by far the most advanced computerized aeration control system of any lagoon in New Hampshire and probably most activated sludge systems as well.  
Biolac aeration in the two lagoons is driven by 3 massive 200 H.P. Spencer Centrifugal Blowers which are controlled by two Dissolved Oxygen field probes, one placed in each lagoon. The operator can program D.O. set points in each lagoon and the computer will control the blower speed as well as monitor bearing temperatures, vibrations, etc. on the blowers.  
A visit to this facility and a talk with the educated and experienced staff is well worth the effort.  

We hope to hold a lagoon roundtable at the Derry WWTF in late spring of 1999.

Derry WWTF Staff: Ron Robinson - Electrician, Chuck Buzzle - Utilities Supervisor, Al Costigan - Chief Operator, Ron Faverty - Operator, standing next to the 200 H.P. Centrifugal Blower.
**NHWPCA OFFICERS**

President Doug Steele  
Vice President Mary Dowse  
Secretary George Neill  
Treasurer Mike Hanscom  
State Director Victoria Abbey  
Past President Moe Gauthier  

Newsletter Committee: Dana Clement, Beverly Drouin, Harvey King, Kenneth Lowe, Dave Sircle, Editor – Tom White

Send articles to: State of New Hampshire  
Department of Environmental Services  
P.O. Box 95  
Concord, NH 03302-0095  
Attn: Tom White

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**NHWPCA Director’s Meeting**  
**February 9, 1999**

Attendees: Mike Hanscom, Charles Richard, Mary Dowse, Victoria Abbey, Kenneth Lowe, George Neill, Moe Gauthier and Doug Steele presiding.

1. **Contracting Secretarial Duties**: Much discussion ensued about what specific duties the proposed contractor would be liable for. These include maintaining mailing lists, oversight of printing, mailer development, mailing announcements and other duties. George Neill will draft a request for proposal and mail it to a handful of interested parties.

2. **Trade Fair**: Mary reported that thirteen vendors have already sent in registration for the Trade Fair. We plan to have the annual business meeting at 11:00 a.m. with the raffle in the mid-afternoon. We will invite Commissioner Varney of NHDES to present Poster Contest winner prizes and will treat the students to lunch at the Wayfarer. Awards will also be presented and election of officers will occur. Three-tenths of a C.E.U. will be offered to attending members.

3. **Operations Challenge**: Kenneth requested some time to speak at the Trade Fair to talk of the OPS Challenge. He stated that New Hampshire is hosting the regional OPS Challenge Training day at the Franklin Training Center, and he requested some funding to subsidize this gathering. This will include coffee, donuts and a barbecue. We will have teams from all over New England participating in attempts to hone their skills for the OPS Challenge competition which will be held in Newport, Rhode Island in early June. This training day will be May 1, 1999 and will start at 9:00 a.m.

4. **Director Vacancies**: Moe discussed the list of potential nominees for what has turned out to be three vacancies on the Board of Directors. He presented the names of very good people who we hope will find the time to participate in our association.

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5. **NEWA Update**: Victoria gave the board an update of the recent annual meeting of NEWA held in Boston in late January. Doug and Mary also had input regarding this meeting and the various activities they participated in.

6. **Calendar**: The board initiated drafting an annual calendar of important dates and deadlines. This should be finalized by the next directors meeting.

7. **Fall Meeting**: The board has targeted September 23, 1999 for the date of the Fall Meeting. George will look into the possibility of a tour of the new North Conway WWTF.

8. **Winter Meeting**: December 9, 1999 is the tentative date for the Winter Meeting. We will consider either Technical Sessions at a central location or a tour of the Turnkey installation in Rochester. Charles Richard will look into the possibility of arrangement for tours.

9. **Next Directors Meeting**: will be on March 19, 1999 at Hall Street.

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**Attention Operators & Technicians**  
— A Day of Fun & BBQ —

**Saturday, May 1st at Franklin Training Center**  
Franklin, NH

**NHWPCA Sponsors:**

The 1999 Operators Challenge Training Day

- Come One, Come All – Experience what the “Challenge” is all about.
- No Charge – CEU’s Awarded – Coffee & Donuts
- Come Alone or with Buddies
- Hands-on Demonstrations of Ops Challenge Events – Equipment on Site
- Learn a bit about this event and the excitement of it from our great “Synergetics Team”

Ken Lowe can be contacted at the Nashua WWTF 594-3365 if you have questions on this event.

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The New Hampshire Community Technical College in Berlin will be offering Water/Wastewater Treatment courses at night, starting in the fall of 1999, at the Laconia Campus. Further details will follow in the summer newsletter. For more information, contact Sheldon Towne at 752-1113 x2001.
Wastewater Engineering Goes World Wide

World Wide Web, that is. The Wastewater Engineering Bureau of DES, which is responsible for approving your collection system improvements and treatment plant upgrades, providing State Aid Grant and SRF funding, and operator training, certification and technical assistance, is ready to meet the challenges of the new millennium by entering the Internet zone. (Hopefully we are also Y2K compliant.)

We now have our own WEB page which can be accessed through the DES WEB site and will bring you up-to-date information on issues important to you, your town, and your treatment plant. You can access Administrative Rules relative to operator certification, standards of design and construction, state revolving loan fund, and selection of consulting engineering firms. The Grants and Loans section will provide you with application forms, a listing of eligible and ineligible projects, the most current loan charge rates, disbursement request forms, and standard state contracts. Under Operator Certification, Training and Technical Assistance you will find exam application and license renewal forms, the exam announcement and format, CEU record keeping paperwork, the Franklin Training Center Course Schedule and enrollment form, and a listing of municipal treatment plants. In addition to all this are phone numbers and e-mail addresses of all bureau staff members.

A special feature which we hope will be very useful is the Wastewater Facility Job Search. This page is intended to help New Hampshire municipalities and contract operations firms find qualified candidates to fill vacant positions and to assist operators wishing to further their careers or move on to greener pastures. It is here that we list any job openings around the state that we know about. If you have an opening at your plant or collection system and would like to have it advertised, contact Wes Ripple, Wastewater Operations, by e-mail at w_ripple@des.state.nh.us, or by hitting the hot button on the job search page. You can also reach him by calling 271-2940 or by fax at 271-4128. Please include the town/facility name, position title, brief job description, salary range, closing date for applications, contact person and phone number. THIS IS A FREE SERVICE! Please take advantage of it.

To access the DES home page type in www.state.nh.us/des. Click on Programs from the DES home page. Click on Wastewater Engineering. Happy WEB surfing!

Wastewater Superintendent
Plymouth Village Water & Sewer District

Plymouth Village Water & Sewer District is seeking a qualified and experienced Wastewater Superintendent for their Wastewater Division in Plymouth, NH. The Superintendent will have direct responsibility for the overall administration, operation, and maintenance of the treatment, compost, facility, and wastewater pumping stations. Candidates must have a thorough knowledge of District, State, Federal, and local laws and regulations as they apply to the District and of laboratory testing procedures, permit parameters, and equipment calibration and operation. Candidates must also be able to establish and maintain effective working relationships with officials, employees, and the general public. Individuals must possess a Grade III Wastewater Certification, a valid CDL-B with air endorsement, and have five years of increasingly responsible experience in wastewater treatment systems with supervisory responsibilities. Salary range: $30,000-$35,000, based on qualifications and experience, fully paid health and dental insurance for employee and family, paid life and short-term disability insurance, generous paid leave time, and merit bonus incentive. Reply by resume and cover letter to the Professional Recruitment Service (Plymouth), PO Box 617, Concord, NH 03302-0617. Plymouth Village Water & Sewer District is an Equal Opportunity and Affirmative Action Employer.

Congratulations!

How about a pat on the back for your fellow New Hampshire wastewater professionals who received an award this January at the Annual NEWEA Conference in Boston, Massachusetts. Way to go!

Alwynne Hellfach ............ Alfred E. Peloquin Award
Jim Cruthers ................. Excellence in Plant Operations
Nancy McAuley-Lessier . Laboratory Analyst Excellence Award
George Laney ................. Arthur Sidney Bedell Award
George Laney ................. Quarter Century Operator's Award
Art Hoffman ................. Quarter Century Operator's Award
Duane Walker ................. Quarter Century Operator's Award
Mark Bernier ................. Operator Safety Award
John Bush ..................... NEWEA Past President's Award

Sales and Service Position Available

The Maher Corporation is seeking an aggressive customer service oriented person to provide service and aftermarket sales throughout northern New England. Knowledge of rotating equipment, valves and/or process equipment in the water and wastewater field is required. Please fax resume in confidence to The MAHER Corporation at 781-396-0239 or call Fred Kibble at 781-393-0060.
Return Activated Sludge Rates
Some Food For Thought . . .

by Tom White

We all know the basic reason for returning settled activated sludge from the secondary clarifier back to aeration — to return the viable, hungry microbes back to the food source, the B.O.D., in the sewage. Let’s look beyond this simple statement, and consider just what happens to the microbes — bacteria and protozoa — at the discharge end of the return activated sludge (R.A.S.) pipe.

The RATE (gpm) at which you run your R.A.S. pumps can have a profound effect on the environment you will create for your microbes in aeration. Consider how R.A.S. rates affect these five parameters in the activated sludge environment: 1) B.O.D., 2) O.U.R., 3) Temperature, 4) alkalinity and pH, and 5) nutrient levels in aeration.

Certainly the type of microbe population and density of your R.A.S. will affect B.O.D., O.U.R., etc. Of concern is how the treated clean effluent water returning in the R.A.S. affects the environment and the five items mentioned above. Remember, 99% of your R.A.S. is clean plant effluent water very low in B.O.D., alkalinity, temperature, and nutrients. This clean water will have a tremendous dilution effect on the microbe environment and influent sewage — the higher the R.A.S. rate the greater the dilution effect will be. An R.A.S. rate of 100% of influent flow will dilute an influent B.O.D. from 250 mg/l to approximately 125 mg/l. Also, alkalinity, temperature and nutrient levels will likewise be tremendously diluted in aeration.

The temperature drop from influent to effluent during winter months varies from plant to plant. Typical influent temperature may be 7°-9°C depending mainly on the amount of aeration time. What effect does a 4°-5°C drop in aeration temperature have on microbe activity and in particular on nitrification during winter months? High R.A.S. rates (100% of inf. Q or more) in winter months at small extended aeration facilities or oxidation ditch facilities can lower the MLSS temperature 4°-5°C. Remember, 99% of R.A.S. is cold, clean effluent water pumped back through aeration.

Filamentous bacteria growth is very common in extended aeration and oxidation ditch facilities. Filament identification in many complete mix extended aeration facilities can reveal one or more of 8-10 types of Low F/M filaments or possibly several common Low Nutrient filament types. Low F/M Ratios and Low Nutrient levels in aeration basins can be caused by the dilution effect of high R.A.S. rates.

An environment in aeration more favorable to floc forming bacteria and protozoa than to filaments would be one with high soluble B.O.D., adequate nutrients and alkalinity, and the oxidation/reduction reactions and O.U.R.’s would proceed more rapidly at warmer MLSS temperatures. Every °C in your MLSS is critically important for your microbes during winter months when your system is only several degrees above freezing — once again high R.A.S. rates can lower the MLSS temperatures by several degrees.

Just possibly the high R.A.S. rates and dilution effect push the aeration microbe environmental parameters far enough from the environment desired by floc formers and toward environmental parameters favoring filamentous growth, especially in extended aeration facilities.

Nitrification and the two types of bacteria required to nitrify are highly temperature sensitive. Most research implies that below 5°-8°C nitrification drops off very rapidly. Consider the negative temperature impact high R.A.S. rates have on these microbes if MLSS temperatures are 6°-8°C before the high R.A.S. rate and 3°-5°C after.

The Sunapee Oxidation Ditch WWTF is required to nitrify year round to avoid ammonia toxicity in the quarterly Whole Effluent Toxicity (W.E.T.) Test. Since February of 1998 Tim Mulder — Chief Operator — has been operating two oxidation ditches in series with a large portion of the first ditch supporting an anoxic zone. Tim has successfully operated the anoxic zone to enable it to return enough alkalinity to maintain his effluent pH above 6.5 without alkaline chemical addition for most days during the spring, summer and fall months.

During the past winter months, Tim continued to occasionally test for D.O. Ammonia-N, Nitrate-N, and Alkalinity in the ditches and on his effluent. Nitrification continued at least partially throughout the cold weather resulting in effluent Ammonia-N around 6-9 mg/l. Low enough to pass the W.E.T. Test. Effluent Nitrate-N numbers generally ranged from 6-10 mg/l and alkalinity was low in the 45-55 range on the effluent. Due to low alkalinity the pH values were occasionally <6.5 on the plant effluent revealing that the anoxic zone was only sporadically working — definitely not working during low night time flows.

During one winter process control discussion Dave Brennan, Sunapee’s Superintendent, Tim Mulder and myself decided to try drastically reducing the R.A.S. flow rate to the anoxic zone and thereby reduce the “dilution effect” — as previously discussed in this article — on the Anoxic Zone. The R.A.S. pump rate was gradually worked back to 15 minutes on and 2 hours off. At this time the sludge was settling like a rock and thickening nicely in the Secondary Clarifiers.

Within one day’s time the plant effluent pH rose above the permit limit of 6.5 and rising gas bubbles in the zone revealed that the anoxic zone was functioning once again. The temperature rose in the zone by approximately 2°C as well as an increase in B.O.D. loading to the zone. This effect was no doubt due to the drastic reduction in the R.A.S. flow rate and the reduced dilution effect. We questioned whether the nitrate level in the zone may be too low due to the reduced R.A.S. rate but this did not appear to be the case as denitrification was still occurring in the Anoxic Zone.

To accomplish mixing and aerating in the #1 Oxidation ditch we sealed off the air intake port on the Tornado aerator
and located the mixer/aerator where you see it on the diagram (below). This allowed us to aerate for part of the ditch and create an anoxic zone in the other half of the ditch. This is not a precise control. However, it works well enough and the cost to the Town of Sunapee has been nothing. In fact, there appears to be less oxygen required now to get the same level of treatment as before the anoxic zone was put on line.

For whatever reason, excessive filamentous bacteria growth has not been a problem at the Sunapee WWTF since we have been running the Anoxic Zone series flow. As a matter of fact, sludge has been settling like a rock for several months and we are now praying for filaments — go figure!

This process control research project has been low key, no cost, and at times fun for all parties involved. We are still learning as we proceed.

If you have any process control experiments or tricks that have worked at your facility, why not share them with the rest of your fellow operators. Consider measuring the effect of various R.A.S. rates on the microbe environment in your aeration tank. I would be glad to hear from anyone on the ideas that have been presented in this article.

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Exercise is Good
By Dave Kaczynski

We are now well into a new year and most of our new year resolutions have been broken or forgotten. One promise that everyone should keep is to exercise. Exercise is good for us, it helps keep us alert and healthy. One good way to continue to exercise is to incorporate an exercise routine into your work schedule. Get paid to exercise!

Part of a good preventative maintenance program is to exercise all valves, gates, and slides at least twice a year. Of ten, this is a very strenuous and difficult task, since many valves have not been moved in years. This is why it is commonly neglected. If you think of that chore as exercising for your health it becomes a little more cheerful and a lot less monotonous. Valves need exercise to function properly. The valves, gates, or slides that don’t get used, often fail, just like the human body. Inactivity will result in failure.

A good reason to exercise those valves is that the operator will discover which ones need repair or replacement. Doing this in a preventative maintenance schedule sure beats finding out in an emergency situation and not being able to stop the flow of water or sludge.

Exercising valves is simple. First, stretch out your muscles, then open or close each valve fully. Don’t forget to return each valve to its original position. Some plants have dozens of valves, so you may not want to do all the valves in one day unless you really want a serious work out. If this is done on a regular schedule the valves, gates, and slides will function easier after each use and so will your body. Either way, you will benefit from this exercise and your valves, gates, and slides will too. So, keep that promise and exercise!!

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Certification Update
by Joe Ducharme, Jr., P.E.

The NH DES Certification Committee (Committee) would like to take this opportunity to remind licensed operators of a few important deadlines that are fast approaching. First is the grace period for those operators whose licenses were due to be renewed on December 31, 1998. There is a 90 day grace period to reinstate a license. However, if you renew during that period you are obligated to pay a $25.00 penalty, making the total cost of your renewal $75.00. By law, any license renewal that extends beyond the 90 day grace period would require that the license be expired. At this point, the only option to regain one’s license is by examination.

Another key requirement is for all permittees (Towns, Cities, etc.) to designate a certified backup operator. This should be done by submitting a letter to the Committee. The backup operator must have a current wastewater operator’s license. The license grade must be no more than one grade lower than that of the facility. Although the backup operator is not required to be a full time employee of the permittee this operator must be available to run the facility in the chief operator’s absence. The backup operator must be capable of all routine duties as well as be the responsible leader in the event of an emergency condition at the facility. Permittees – choose your backup operator wisely.

Finally, the next examination is scheduled on Wednesday, June 16, 1999. There is a $50.00 fee to take the exam. Applications are available from the NH DES Wastewater Operations Section by calling 603-271-2586. The math review will be held two weeks prior to the exam this year. Check the Spring 1999 course announcement for registration information.
Does Your Facility Have a Y2K Management Plan?

If a plant violates its permit due to a Y2K computer problem, the EPA Office of Enforcement and Compliance will take into consideration whether or not it made a "good faith" effort to correct the problem. Documentation of all efforts to bring computer-run equipment into compliance is essential.

All New Hampshire WWTF and pump stations should by now be aware of the Y2K problem and hopefully many are well into a documented management plan. The N.H. D.E.S. initially made a mailing to water and wastewater personnel. A second mailing included a questionnaire to determine where the facilities - WWTF's and pump stations – stand on the Y2K issue. It is most important to return your survey to the N.H. D.E.S.

(Our thanks to Eric Michnaes for permission to use these diagrams taken from the January issue of Operations Forum.)

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**Embedded Systems in a Wastewater Treatment Plant**

- **Control Room**
  - Uninterruptible power supplies
  - Network bridges and routers
  - Voice data telecommunication equipment
  - Distributed control systems
  - Message displays
  - Local controllers (programmable)
  - Operator interface software
  - Operator interface hardware

- **Lab**
  - Chemical analyzers
  - Lab and quality control instruments

- **Flow measurement**
  - Wireless transmitters and receivers

- **Solids processing**
  - Message displays
  - Local controllers (programmable)

- **Chemical feeders**
  - Automated calibration systems

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**Methodology for Plant Y2K Evaluation**

**Phase 1: Survey & Inventory**
- **Step 1:** Project kick-off
  - Review project
  - Establish goals, directives
  - Gather existing documentation

- **Step 2:** Review documentation
  - "Antique" analysis
  - Determine field work required

- **Step 3:** Site visits
  - Collect equipment data
  - Check for automated systems

- **Step 4:** Create Y2K inventory
  - Compile all information in a database
  - Versions, vintages, operating systems

- **Step 5:** Collect vendor data
  - Obtain vendor Y2K compliance statements
  - Available from Internet or directly from company

- **Step 6:** Criticality analysis
  - Determine most critical systems
  - Assess severity of Y2K problem

- **Step 7:** Establish testing protocol
  - Manufacturer certifications
  - Testing recommendations

- **Step 8:** Develop action plan
  - Develop schedule, cost estimate

- **Step 9:** Implement
  - Initiate action plan
  - Test & retest
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**Maintenance Procedures first.**

**Start the Engine** – Operate the engine and check all gauges, oil pressure, fuel pressure, rpm (frequency), generated voltage and engine jacket water temperature, for correct readings.

**Engine Crankcase** – Check the oil level. Maintain the oil level between the ADD and FULL marks on the “Engine Running” side of the dipstick. NOTE: This maintenance does not apply to 3208 Engines, 3114 and 3116 Engines.

**Generator Louvers** – Check for proper operation (able to open the close freely).

**Generator Air Inlet Filter (If Equipped)** – If differential pressure exceeds 0.6 inches of water, stop the engine and clean the elements by soaking in hot water with detergent. Rinse with clear water. Recharge the elements with a thin layer of light weight machine oil (WD-40 or equivalent).

**Engine Mounts** – Inspect for proper installation and loose fasteners. Check for proper torque.

**Leaks and Noises** – Check for leaks and unusual noises. NOTE: Engine must be stopped before making necessary repairs.

**Load Test** – Load the engine to minimum of 30% of rated load. Operate at this level for minimum of two hours. After approximately one hour, record the readings of all gauges: oil pressure, fuel pressure, oil level, rpm (frequency), generated voltage, service meter, engine jacket, water temperature, exhaust temperature (if equipped) and manifold vacuum (if equipped). Engine slobbering can occur if the load testing is not conducted.

**Main Stator Winding Temperature (If Equipped with Winding Defectors)** – Check and record main stator winding temperature with engine under load. NOTE: Nominal temperature values for stand by units are 180°C (356°F) for the alarm and 205°C (401°F) for the shutdown.

**Bearing Bracket Temperature (If Equipped)** – Check and record bearing bracket temperature with the engine under load. NOTE: Nominal temperature values for the bearing bracket are 85°C (185°F) for the alarm and 195°C (323°F) for the shutdown.
Membership Roster

The following list is the official NHWPCA membership roster. The list contains current 1998-99 member names dating back to April 1, 1998. If your name does not appear on this list we encourage you to rejoin NHWPCA for the upcoming 1999-2000 membership year.

Victoria Abbey
John Adie
Paula A. Anania
Larry B. Anderson
Mark Antonia
Philip Appert
A. Dana Arey
Jim Bailey
William B. Ball
Kevin Bartlett
Lee C. Bavis
Robert H. Bean
Patricia M. Beavers
Patrick Belanger
Marcel E. Belanger
Mark Bernier
Wendell Berry
Richard R. Bibeau
Philip H. Bilodeau
Robert Birchall
Peter Boettcher
Philip Boivin
Mark Bolduc
Lenny Bolduc
David Boucher
William L. Boulanger
Jerry Boulay
Donald Boynton
David R. Brennan
Barry Brescia
Glenford E. Briggs
Ronald Brown
Dawn Brule
Michael Bryan-Brown
Joseph J. Buccio
Kenneth Buckingham
Norman R. Bumford
Thomas W. Burt
John Bush
John A. Bushold
Malcolm Butler
Melvin Scott Butler
Charles Buttrick
Cameron Cadarette
Greg Campbell
Ricardo Cantu
Lee R. Caron
Andrew Carpenter
Thomas Carter
Michael Caso
Brian Cate
James Cavallaro
Mike Chase
Patty Chesebrough
Neil P. Cheseldine
Dana L. Clement
Steve Clifton
Carl Colburn
Lindsay M. Collins
Sandra Colucci
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Edward Craig
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Name: ____________________________

Address: (Where you would like newsletter and correspondence mailed.) ____________________________________________________________________

________________________________________________________________________

Amount due: $25.00     Please make checks payable to: NHWPCA

Membership dues are tax deductible — Membership extends from April 1, 1999 to March 31, 2000

Return to: NHWPCA

Exect. Sec. Dept. M
P.O. Box 95, Hazen Dr.
Concord, NH 03302-0095

Septage Problems?

We all look forward to Spring time. When we see an abundance of flowers, birds, sunbathers and septage. SEPTAGE! Yes, that's right. Those of us in the treatment business know that this is the time of year that gets people thinking about their septic system and having it pumped. I think we may be able to help you. During mid-April through mid-May, The Maher Corporation and Lakeside Equipment Corporation will be pilot testing the Septage Acceptance Plant at some local facilities. On the list now is the Franklin WWTP and the Portsmouth WWTP. If you have a facility that has a septage handling problem and would like to screen the septage thoroughly before it enters your plant, the Lakeside SAP pilot trailer may be available to you. Please call Paul Sussman at 781-393-0060 if you are interested.

Are you seeking help on your Y2K Plan?
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<tr>
<th>Date</th>
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<tr>
<td>MAR 31</td>
<td>Guidelines for Reviewing WET Test Reports (Limit 25)</td>
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<td>APR 7</td>
<td>Centrifugal Pump O&amp;M (Limit 25)</td>
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<td>APR 8</td>
<td>20th Annual NHWPCA Trade Fair</td>
<td>Separate Registration Req’d.</td>
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<td>APR 15</td>
<td>Biological Nutrient Removal Seminar (Limit 60)</td>
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<td>APR 21</td>
<td>Recruiting, Selecting, Training &amp; Retaining Good Employees</td>
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<td>APR 27</td>
<td>How to Develop a Risk Mgmt. Plan for your POTW</td>
<td>Register w/NEIWPCCC</td>
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<td>APR 28</td>
<td>Standard First Aid (Nat’l. Safety Council) (Limit 25)</td>
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<td>MAY 5</td>
<td>Basic Laboratory Procedures Review</td>
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<td>MAY 12</td>
<td>Odor Control Solutions for NH POTW’s</td>
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<td>MAY 19</td>
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<td>MAY 27 (pm)</td>
<td>NEWEA Voluntary Collection Systems Certification Exam</td>
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<td>JUN 3 &amp; 4</td>
<td>Activated Sludge Microbiology &amp; OUR Process Control</td>
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</tr>
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<td>JUN 8</td>
<td>Lockout/Tagout &amp; Confined Space Plan Review</td>
<td></td>
</tr>
<tr>
<td>JUN 16</td>
<td>Certification Exam - All Grades</td>
<td>Separate Registration Required</td>
</tr>
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**NOTE:** See course description sheet for cost of each class. NO CASH ACCEPTED!

**Make checks payable to:** TREASURER-STATE OF NEW HAMPSHIRE
State of New Hampshire DES, Water Division
ATTN: Wastewater Operations Section
6 Hazen Drive, Concord, NH 03301

Facility Name: ____________________________  Facility Supt: ____________________________
Facility Phone: __________________________  Date: ____________________________
Facility Fax: ____________________________  Type of Payment: ____________________________
Biological Nutrient Removal Seminar
Sponsored by the NHWPCA Education Committee

When: April 15, 1999 (Thursday)  Where: NH DES Auditorium
8:30 am - 4:00 pm  6 Hazen Drive
(Registration begins at 8:00am)  Concord, NH

Taught by: Mr. Scott V. Sellars, P.E., DEE, Stearns & Wheler Engineering

About the Instructor: With over 18 years of experience in WWTP design Mr. Sellars has done extensive research & implementation of biological nutrient removal systems. He is the principal author of this nitrogen removal training program developed jointly with the New York State DEC, State University of New York and Stearns & Wheler.

About the Seminar: Increased emphasis on nutrient removal is resulting in the need for evaluation of many existing treatment facilities to determine the potential for achieving biological nitrification and denitrification. This seminar describes process fundamentals, operating principles and process troubleshooting. Class discussion and case histories will be used to reinforce Biological Nutrient Removal concepts.

Directions to the NH DES Offices in Concord, NH: From Interstate 93 take Exit 14 - Loudon Road/State Offices. Head east on Loudon Road (Route 9), over the Merrimack River and up the hill to the set of lights at Hazen Drive. Turn left onto Hazen Drive and follow signs to the Department of Environmental Services. Park on either side of the building, check in at lobby starts at 8:00am.

Registration: This seminar is sponsored by the NHWPCA. Pre-registration and pre-payment by check or P.O. are required due to the attendance limit. Registration fees must be made payable to NHWPCA. Enrollment is first come, first served. Cost of registration includes a comprehensive seminar workbook and refreshments. Lunch is on your own. Registration begins at 8:00 am, the seminar begins at 8:30am.

Biological Nutrient Removal Seminar
Registration Form
Registration Deadline is April 12, 1999

Cost: $50.00 per registrant for NHWPCA Members; $60.00 per registrant for non-members

Name(s): ____________________________________________

Facility: ____________________________________________ NHWPCA Member: Yes  No
Address: ____________________________________________ State: ________  Zip: ________
City: ___________________________________  ________

Payment Enclosed  or P.O.# ____________
Make check payable to: NHWPCA
Mail completed registration form with payment or PO # to: Joe Ducharme, NHWPCA
PO Box 95, Concord, NH 03302-0095
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