



Department of  
Environmental Protection  
Bureau of Land & Water Quality Jan.2000

O&M Newsletter

A monthly newsletter for wastewater discharge licensees, treatment facility operators and associated persons

## 1999 Wastewater Treatment Operations and Maintenance Award

On December 22<sup>nd</sup> EPA Region 1 notified Danforth Wastewater Treatment Facility staff that they were awarded this year's Wastewater Treatment Operations and Maintenance Excellence Award.

This award recognizes their effort and commitment to protect water quality through a combination of consistent, outstanding, often times, innovative operations and maintenance practices. In Danforth, which has sand filter beds, this translates to consistently producing a fine effluent by keeping close tabs on the loading and rotation of the beds, and septage removal.

Danforth, in an effort to extend the life of the beds and address water use, obtained a grant to install water meters. Now that the town's metered water use has dropped, fewer people are leaving their water running all night to prevent freezing, thus there is less water entering the pump stations (less wear and tear on the pumps) and less water through the sand-filter beds (longer life).

Toby Mailman and Greg Mailman, the operators of the facility, are also vigilant when looking for ways to save money when obtaining equipment, used parts and purchase chemicals. They buy their chlorine with Houlton Water Company so

they can save on a volume discount. They pick up surplus equipment from the old Loring Air Force Base (now the Loring Development Authority), and used computers from other water & sewer districts. They run on a shoestring, and yet still put out one of the best effluents in the state.

The WWTF is owned by the town and together they are working to improve their septage utilization site. The site is a small wooded parcel just out side of town. It is used for both the municipal wastewater treatment septage disposal and for individual system disposal. To improve the utilization at the site the town is working with a state forester (free consulting and again saving money) to develop a harvest plan (bring in money) and manage the woodlot for high-grade hardwoods. Since the site is small and used intensively, it will no longer be able to handle septage from individual systems. Danforth, unlike other communities, has not slammed the door on the owners of the private systems, but is taking a leadership role in the development of a regional septage disposal site.

The award will be presented to Danforth at the New England Water Environment Association annual awards luncheon to be held in Boston on January 26<sup>th</sup>, 2000.

Congratulations Danforth on a job well done!  
*Kathy Hoppe*

## CSO Annual Progress Reports

All CSO contacts for Combined Sewer Overflow communities should have received DEP's standard forms for submitting the annual CSO progress report and CSO flows and events for 1999. Those that do not have e-mail were mailed a disc and blank paper forms. The reports are due March 1, 2000. If you have not received them, call Steve Mclaughlin at 287-7768

### *For Practice*

1. The term "Chlorine Demand" means
  - a. The chlorine dosage minus the chlorine residual in the effluent
  - b. The amount of chlorine added to achieve a certain concentration in the effluent before it goes to the contact tank.
  - c. The chlorine dosage added to the residual divided by two
  - d. The chlorine dosage required to kill all the coliform bacteria present.
  
2. Given the following data, how much sludge should be wasted?

Plant flow	250,000 gallons/day
Current MLSS	2856 mg/L
Target MCRT	18 days
Aeration Tank Volume	130,000 gallons
Return Sludge Concentration	8200 mg/L
Effluent TSS	15 mg/L

  - a. none
  - b. 2,196 gallons
  - c. 3,215 gallons
  - d. 1,157 gallons
  
3. When figuring the amount of flow that can go through a pipe, the "C" factor in the equation is a measure of:
  - a. the cross-sectional area of the pipe
  - b. the circumference of the pipe
  - c. the interior roughness of the pipe
  - d. the cost-diameter ratio

4. A sand having perfect uniformity would have a uniformity coefficient to
  - a. Infinity
  - b. 0.0
  - c. 1.8
  - d. 1.0

## Spring 2000 Exam

The Spring Wastewater Exam will be given in the usual locations on Wednesday, May 10, 2000. Applications must be mailed to the DEP on or before March 24, 2000.

## UPCOMING TRAINING COURSES

January 12, 2000 in East Vassalboro, ME, Low Voltage Electrical Safety - approved for 3.0 hours, sponsored by Maine Rural Water (207) 729-6569.

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January 19, 2000 in Norway, ME, Biosolids Utilization - approved for 5.5 hours, sponsored by Maine Rural Water (207) 729-6569.

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January 26, 2000 in Bangor, ME, Respiratory Protection- approved for 3.5 hours, sponsored by Maine Rural Water (207) 729-6569.

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January 27, 2000 in Augusta, ME, Pump System Hydraulics – approved for 6 hours, sponsored by JETCC (207) 767-2649

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February 2, 2000 in Orono, ME, Biosolids Utilization - approved for 5.5 hours, sponsored by Maine Rural Water (207) 729-6569.

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February 7-9, 2000 in Thomaston, ME, Wastewater Collections Systems & Voluntary Certification Exam – approved for 15 hours, sponsored by JETCC (207) 767-2649

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February 8, 2000 in Waterville, ME,  
Troubleshooting Activated Sludge - approved for  
6.0 hours, sponsored by Maine Rural Water  
(207) 729-6569.

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February 15, 2000 in Old Orchard Beach, ME,  
Biosolids Utilization - approved for 5.5 hours,  
sponsored by Maine Rural Water (207) 729-  
6569.

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February 23, 2000 in Bangor, ME, Energy  
Deregulation Options & Opportunities –  
approved for 6 hours, sponsored by JETCC (207)  
767-2649

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March 1, 2000 in Presque Isle, ME, Low Voltage  
Electrical Safety - approved for 3.0 hours,  
sponsored by Maine Rural Water (207) 729-  
6569.

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March 2, 2000 in Calais, ME, Respiratory  
Protection- approved for 3.5 hours, sponsored by  
Maine Rural Water (207) 729-6569.

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March 7, 2000 in Augusta, ME, Water Bureau  
Issues Briefing – approved for 6 hours,  
sponsored by JETCC (207) 767-2649

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March 16, 2000 in Augusta, ME, Preliminary  
Treatment Options – approved for 6 hours,  
sponsored by JETCC (207) 767-2649

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March 22, 2000 in Presque Isle, ME,  
Troubleshooting Activated Sludge – approved  
for 6 hours, sponsored by JETCC (207) 767-  
2649

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April 4, 2000 in Waterville, ME, Polymer  
Sealant Repair & P.M. Systems – approved for 6  
hours, sponsored by JETCC (207) 767-2649

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April 10 & 11, 2000 in Skowhegan, ME, Basic  
Identification of Filamentous Organisms in

Activated Sludge – approved for 12 hours,  
sponsored by JETCC (207) 767-2649

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April 12, 2000 in Bangor, ME, Living with the  
New Biosolids Regulations – approved for 6  
hours, sponsored by JETCC (207) 767-2649

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April 28, 2000 in South Portland, ME, Basic  
Chemistry for Plant Personnel – approved for 6  
hours, sponsored by JETCC (207) 767-2649

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May 17, 2000 in Skowhegan, ME,  
Troubleshooting Activated Sludge – approved  
for 6 hours, sponsored by JETCC (207) 767-  
2649

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May 23, 2000 in Portland, ME, Using  
Computerized Databases in the WWTP –  
approved for 6 hours, sponsored by JETCC (207)  
767-2649

### **Answers to For Practice:**

1. a. the term “Chlorine Demand” means the  
difference between the amount of  
chlorine added (the dosage) and the  
amount of chlorine remaining in the  
effluent (the residual).
  
2. b.  $MCRT = \frac{\text{Pounds of Sludge in the Aeration Basin}}{\text{pounds of sludge wasted/day} + \text{pounds of effluent TSS/day}}$   
rearranging the equation:  $\text{Pounds/day wasted} = \frac{\text{Pounds in Aeration Basins}}{\text{pounds in effluent}} MCRT$   
Solve using the data given:  $\text{Pounds in Aeration Basin} = 0.13 \text{ MG} * 2856 * 8.34 = 3096 \text{ pounds}$ .  $\text{Pounds in Effluent} = 0.25 * 15 * 8.34 = 31 \text{ pounds/day}$   
Determine the pounds to be wasted:  
 $\text{Pounds wasted} = 3096/18 - 31 = 141 \text{ lb/day}$   
Determine the gallons to be wasted:  
 $\text{Gallons wasted} = \frac{\text{pounds wasted}}{8.34}$

\* 1,000,000 (waste sludge concentration  
\* 8.34)

Gallons Wasted =  $(141 * 1,000,000) / (8200 * 8.34) = 2,196$  gallons

3. c. In the formula for calculating the flow through a pipe, the factor “C” is the roughness coefficient.
4. d. A perfectly uniform sand would mean that every sand particle would have the same size. The uniformity coefficient would be 1.0