

**Not Enforcement, Reinforcement
Caution! You're about to enter a
No-Swim Zone! 😊**



New Wastewater Operators Newsletter

Volume 2, Issue 6, August 2011

Dear Ladies and Gentlemen:

Numbers: My email victims' list is now at 225, an all-time high. New subscribers include 6 WA Dept. of Ecology employees from all over the state, several operators and other interested parties. In the July follow-up issue, it was at 214.

Why this newsletter?: The main purpose of this voluntary exercise is to showcase cool ideas (and the people responsible) I see or hear about in the wastewater treatment industry, mostly in Eastern Washington, but not always.

Share with us: Everyone reading this is part of the wastewater community in some way. If you have an idea or interesting project you'd like to share, email me about it, OK? If you've solved a problem at your facility, there are likely 10 others puzzling over it at theirs.

Issue Summary:

Equipment for sale or to give away: Nothing new here.

Job Openings: Moses Lake.

Cool Idea: We're visiting Soap Lake this month.

Money saver: From the Richland WWTP lab.

Sad story: From Omak.

Facebook group: Some progress to report.

Interesting links: Article on geosynthetics (e.g., lagoon liners);

 About how DO affects fish;

 An established lab vendor's new online catalog.

Training events and links: PNCWA and ERWOW conferences soon! Other training venues linked. Membrane technology presentation available.

Corrections: Wrong copyright notice

What if?... Personal thoughts made public 😊

Equipment for sale or to give away:

Nothing new in this department.

Job Openings:

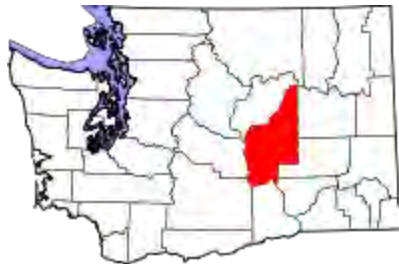
The **City of Moses Lake, WA** has a Wastewater Treatment Lead Operator position open until filled. Go to ci.moses-lake.wa.us and click on their job opportunities button for details on this. The Lead Operator position pays a salary of \$3,689 (Entry) to \$4,611 (A Step).

This job is still open according to their website, as of 8-4-2011

Cool Idea of the Month, August 2011:

This month we roll into Soap Lake, WA in beautiful Grant County. Soap Lake is located at the south end of the Grand Coulee (area map courtesy Google Maps®).

Lead Operator Chad Noah has an interesting idea for us.



Lead-in: Let's say you run a lagoon system with or without surface aerators. If the facility is subject to tumbleweed accumulation like other sites, for example, you eventually have to remove them somehow. Otherwise, they tend to form mounds and lead to short-circuiting, not to mention reduced lagoon capacity.

Other aquatic plants like rushes and cattails sometimes must be controlled too.

Surface aerators must be maintained or repaired on a regular basis.

Most times, the facility operator has access to a boat for performing the above-mentioned maintenance. Yes, you have to paddle around, trying not to splash yourself or your crew mates.

Don't forget eye protection! From personal experience, I can tell you that one drop of plant influent in one eye can result in a serious bacterial infection in both eyes over night! I had to be transported to the eye doctor's office to get treated. I only had to experience this once to learn my lesson. 😞

Cool Idea of the Month, August 2011, cont:

Solution: Well, Chad got to thinking that there must be a better way.



Soap Lake's wastewater facility has an aerobic digester designed like a mini-lagoon with surface aerators. Here's a shot one corner of it (above left). The power and anchor cables go across in this photo. One of two surface aerators is shown at idle for decanting.

At right above, the flat-bottomed boat. No, Herkimer, that's not a beach ball—it's a buoy for marking "diver below". 😊

The sludge contained herein goes through a cycle of aeration, settling, decanting and finally pumping to drying beds. Due to the thicker nature of the sludge compared to regular aerated lagoons, the aerators need a lot of TLC.

That means Chad has to access them relatively frequently. So the question is, how does an operator with or without a helper pull an aerator out for servicing?

The short answer is "very carefully". You can detach it from the support cable and float it to "shore" lashed to your boat or your operator. Then you have to be careful not to damage the digester liner while transporting it to level ground for maintenance.

Cool Idea of the Month, August 2011, cont.:

Now this is where Chad's idea and his skills come into the picture. Below is a shot of his solution. Yes, it's a section of plastic dock surplus by the City, once used, I'm guessing, in their public swimming area on Soap Lake.

But Chad didn't stop there, with merely a floating platform. He put his welding and fabrication skills to work.



Recognize the origin of the lifting device? Yes, it's salvaged from a utility truck rack normally used to transport pipes, ladders, lumber, etc. There's another view of it on the next page.

Cool Idea of the Month, August 2011 cont.:



So Chad gets on this thing, paddles or pulls himself out to the aerator needing service, swings around and attaches the chain, and the rest is obvious.

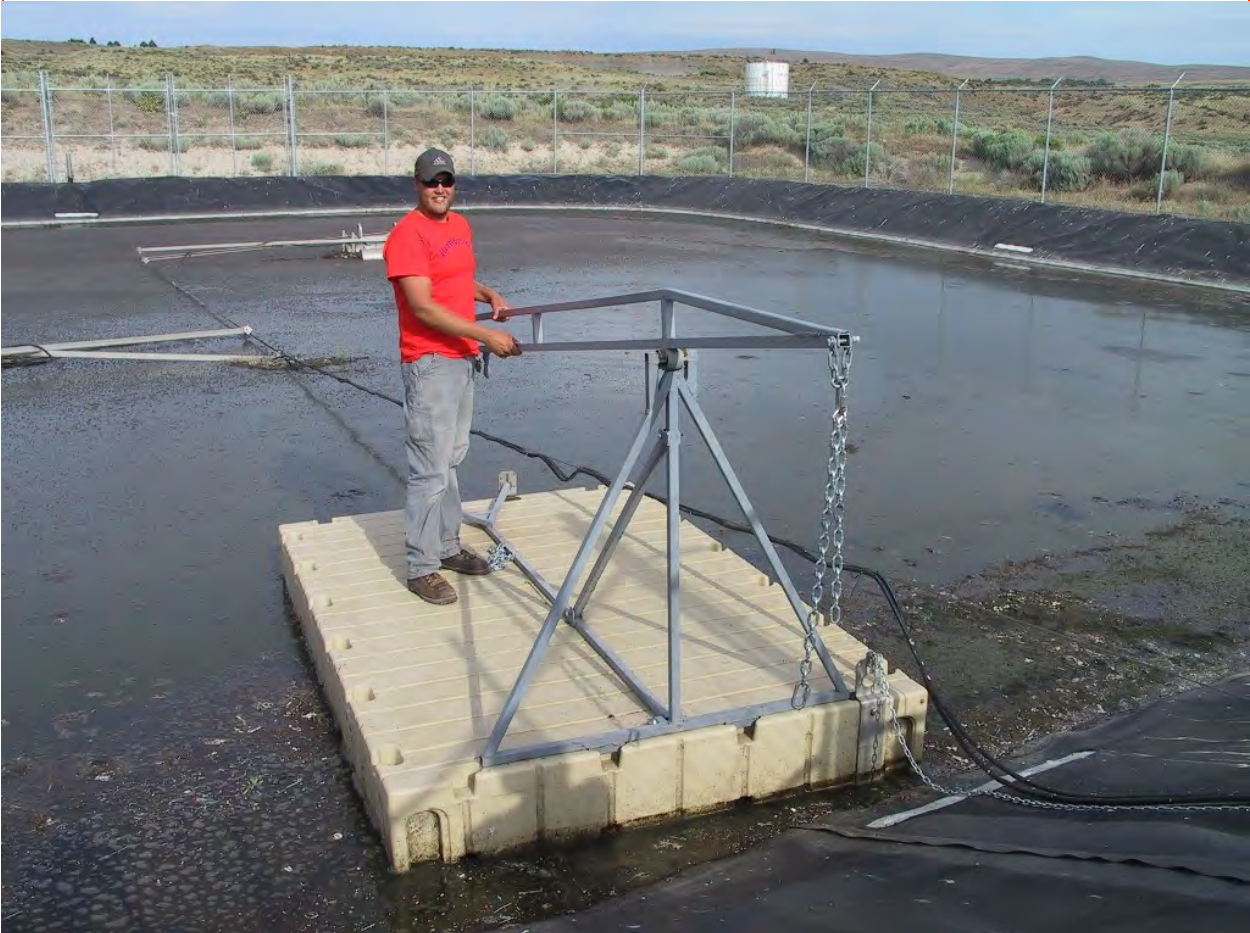
There are a couple of things I'd add to this scenario if I were in charge:

1. I'd add a safety rail; the holes are there in the dock section to place one. One misstep, Chad, and your whole day just got, um, nastier. Whoopsie-poopsie! 😞
2. I'd add a soft leading edge to the dock like a couple of small tires or boat bumpers to protect the lagoon liner. Wind- or Chad-action may tend to abrade a hole in it.

Notice the aerators point in opposite directions so the sludge circulates in a counter-clockwise direction. Seems logical, right? I've seen lagoons where they all point in one direction—bad design, because the sludge and scum piles up on one end of the cell instead of being distributed evenly.

Cool Idea of the Month, August 2011, cont.:

Here's a shot of Chad demonstrating the lifting device for me. Very cool!



Notice there's a chain at Chad's feet, for keeping the aerator suspended while he paddles or pulls the dock back to "shore".

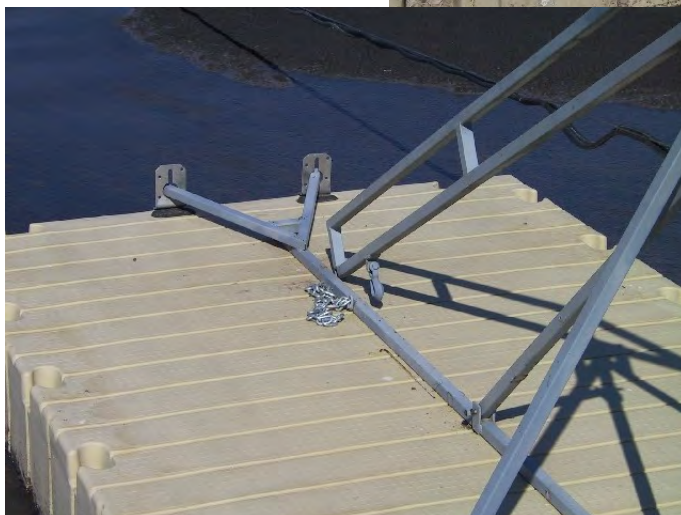
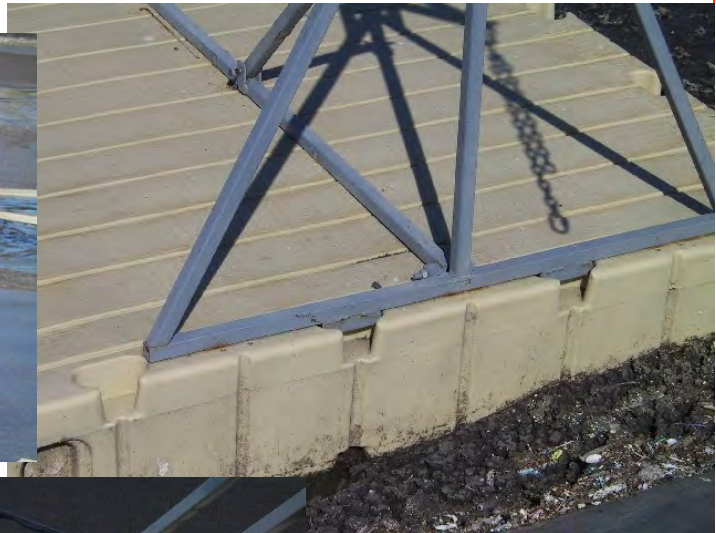
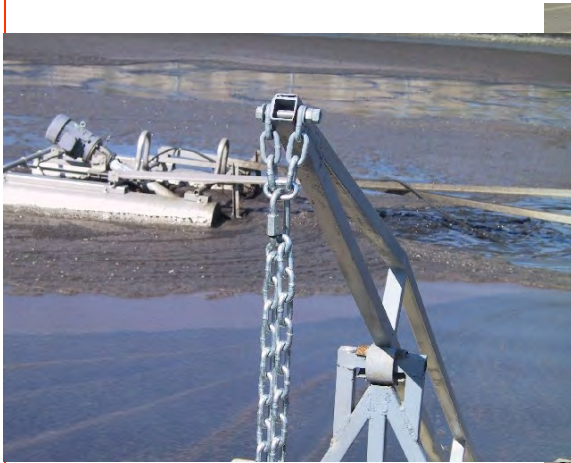
I can see other applications for the dock section, where (with a safety rail), operators could pull weeds and load them into a boat or other floating container in relative safety. Or, they could sound their lagoons for sludge depths in a grid pattern.

I did a search online for plastic dock sections. There are a number of manufacturers, but they're kind of quiet when it comes to price. I think I saw one section similar to Soap Lake's going for about \$415.

A big dam **Saaaalute!** to Chad Noah and the City of Soap Lake for this outstanding idea. Nice work, Chad!

Cool Idea of the Month, August 2011, cont.:

A few more detailed shots below.



Notice the hook and chain
at left for suspending the
load.

(Work) party barge! 😊

Money Saver:

This comes from the City of Richland WWTP lab, courtesy of MaryAnn St. Martin and Jeffery Jennings, long-time friends of mine .

The issue: Jeff and MaryAnn do lots of BOD tests every week, and the facility has a large investment in YSI® DO meters and membrane style BOD probes. They haven't converted to Luminescent DO systems yet (except for a field Hach® LDO meter/probe combo). Consequently, they have to change membrane caps on their probes frequently.

OK, you can get a Membrane Cap Kit like this (below, left), which contains 6 screw-on caps and filling solution for \$51 and change. Or, if you're resourceful like MaryAnn and Jeff, you can get a Standard Membrane Kit (below right), which contains 30 membranes and a bottle of filling solution for about \$32. Then you apply their technique outlined below for changing the membranes, not the entire membrane caps. We do the math: To replace one membrane cap, you're looking



at \$8.50 and change. Salvaging the used cap, and replacing just the membrane, it's only \$1.07 a pop.

Instructions on next page...

In the meantime, check out YSI's website: <http://www.ysi.com/index.php>

I found YSI's "The Dissolved Oxygen Handbook—a practical guide to dissolved oxygen measurements", a .pdf file you can download once you register on their main site. I registered and skimmed through it, finding 76 pages of great information (some of it surprising) about the various technologies for measuring DO. It tells history, displays some new research data and comparisons of polarographic vs. galvanic sensors vs. optical devices. This will be fascinating to lab people and operators alike.

Money Saver, cont:

Changing membrane on YSI BOD Probe

Supplies

YSI® Standard Membrane Kit – Manufacturer No. 5793 (contains 10 ea. 15-membrane packs-ed)

YSI® Standard Membrane Kit with KCl – Manufacturer No. 5775 (Includes bottle of electrolyte, 2 o-rings, and 30 1-mil Teflon membranes-ed)

Scissors

Screw driver or something to tap the cap down

Procedure

Pull off outside cap while assembly is still attached to the electrode. (here's a shot of the BOD probe we're talking about—the YSI® model 5905-ed)



Unthread inner cap from the probe.

Clean both inner and outside cap with soap/water rinse, allow to dry.

Place inner cap with o-ring facing up, on solid work surface.

Lay membrane over the top of the inner cap (as shown below-ed).



Money Saver, cont:

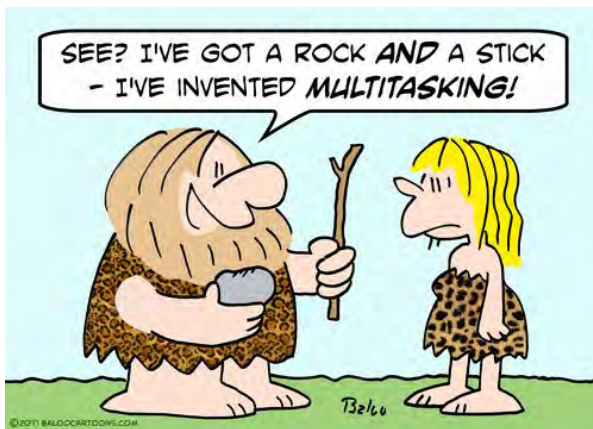
Firmly place outside cap over the membrane, but use caution to avoid wrinkles. You want a smooth surface.

Push down slightly to seat the o-ring inside the outside cap.

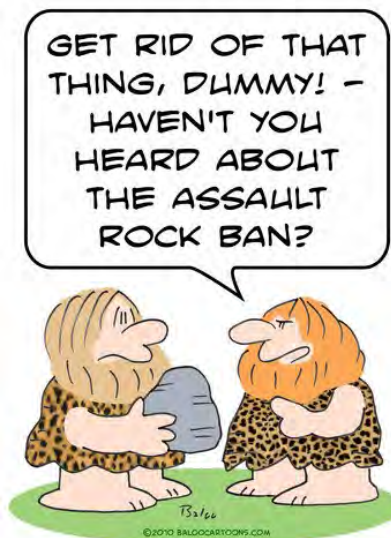


Trim excess membrane with scissors or a sharp blade.

Tap gently on outside cap with the handle of a screw driver or a rock to seat outside cap at desired level (use caution – tapping too hard could crack the outside cap or push it down too far for use.) ([Excuse me? A rock?-I cannot resist; the mental image is too strong—ed](#))



A big dam **Saaaalute!** to MaryAnn St. Martin Jennings for this money-saver. Nice work!



and Jeff

Sad Story:

The public utilities industry mourns Bryan Paul Coffey, Sr., 57, who passed away unexpectedly on July 21, 2011. He was an 11-year employee of the City of Omak, WA. I will remember him as a friendly guy and fellow wastewater operator. Our sincere condolences to the family and friends.

Obituary here: http://www.omakchronicle.com/obits/db_obits.asp?obit=20110727_03

FaceBook Group:

The Friends of New Wastewater Operators Newsletters group is located here:

<http://www.facebook.com/groups/fonwon/>

I've gone through all the newsletters and posted all (OK, 99%) of the links mentioned since March 2010. There are 12 members of the group, and at this time, nothing further is planned. The crickets are deafening—but I still think this could be a good networking venue.

Interesting Links:

For lagoon lovers, there is a good article on geomembrane case histories in the current *Geosynthetics* magazine: This link is from Ginny Darrell, Toxics Control Program Supervisor, Eastern Regional Office of the Washington State Department of Ecology. Thanks Ginny!

The article is all about the longevity (and lack thereof), of lagoon liners, and resistance to environmental factors. Interesting case studies are showcased.

http://geosyntheticsmagazine.com/articles/0611_f5_geomembrane_performance.html

From the UCCE (University of California Cooperative Extension): <http://danr.ucop.edu/ucce/r/h29.htm> , how DO affects fish (table).

I've been waiting for this one for awhile: North Central Labs' NEW online catalog, located here: <http://www.nclabs.com/onlinecatalog.html> If you're setting up a new lab (I know a couple of operators in Central and Eastern Washington who are), you should check out NCL's pricing for apparatus, re-agents and supplies, comparing them to USA BlueBook®, Hach®, Cole-Parmer®, and others.

Training Events and Links:

The PNCWA (Pacific Northwest Clean Water Association) is putting on its 2011 Conference September 18-21 in Vancouver, WA. I'm going to sign up for the Operator Package (Sun.-Mon. training sessions for a total of \$100 whether you're a member of the Association or not). Link here:

http://www.pncwa.org/index.php?option=com_content&view=article&catid=26:2011-pncwa2011-annual&id=186:pncwa2011

ERWOW (Evergreen Rural Water of Washington) has their Fall Conference from August 30-September 1, 2011, also in Vancouver, WA. Link to conference form: <http://www.erwow.org/documents/2011fallconferenceform.pdf>

Dean Smith (City of Yakima) has released copies of his Membrane Technology presentation. It's about 8 MB in size, in pdf format. Available from me via email. Good info there, Dean! 😊

Training Events and Links, cont:

WETRC (Washington Environmental Training Center) Home <http://www.wetrc.org/> . Link to their course catalog: <http://www.campusce.net/wetrc/category/category.aspx> . WETRC's training calendar: <http://www.wetrc.org/pdf/training-calendar.pdf> .

Ecology's OpCert website has some interesting associations and training links here:

http://www.ecy.wa.gov/programs/wq/wastewater/op_cert/othertraining.html#associations

Check out some of their online training links. [CEU Plan](#) caught my eye; they have one-hour courses for as little as \$9.95. These look good for operators who can't get away for training.

Corrections:

I incorrectly ascribed copyrights to last month's lagoon article as NESC's. [Pipeline](#) actually belongs to the Small Flows Clearing House.

What if?...

My long-suffering wife Joyce puts up with things like this.

When I woke up this morning at about 0530, after I said "Good Morning" to Joyce, I posed this question "What if clouds are really living beings, and we're just too stupid to realize it? I mean, think of the possibilities." Puzzled look and a laugh from Joyce. Grabbing my first cup of coffee, I continued.

"If we could learn to communicate with clouds, assuming they really are living beings, we could direct them to go where they're needed. Like: "Hey! You clouds right here! Get down to Texas and give 'em some of your rain. Not so much that they have flash floods, but enough to cool things down and help replenish the aquifers, 'K?"

"Or, 'Wisconsin doesn't need you guys flooding them anymore. Go back to Seattle!"

"But if they aren't intelligent beings, more like cattle, what was that song?—Oh yeah, 'Ghost Riders in the Sky'. Maybe we could herd 'em."

Second cup of coffee down, and I'm humming "Ghost Riders..." Chilling, haunting, powerful song. I remember listening to it as a kid. Frankie Laine made it popular. Link to a YouTube® rendition by Mr. Laine.

<http://www.youtube.com/watch?v=ZwAPa0qHmLo> The instrumental by the Ramrods ain't bad either, on the same page, not to mention Johnny Cash and Willie Nelson, and the original, Burl Ives. Dick Dale, Tom Jones, Bing Crosby, Lorne Green, Elvis, Marty Robbins, Sha-Na-Na and many others also recorded the song. Cool stuff.

Stan Jones wrote "Ghost Riders in the Sky" in 1948 on his 34th birthday, from outside his home in Death Valley. I was 1 year old at the time.

"Yippee Aye Aaaa, Yippee Aye Oooo, you can't herd clouds, the answer is Nooo." 😊

Happy Labor Day weekend to all, coming up in a few weeks.

Hey! Keep up the good work! See you next time.

All the best to you and yours,

Darrel Fleischman

P.S. If you want off this list for any reason, just let me know. I'm still missing some of the "old" members, so if you know of anyone who'd like to get back on this wagon, tell 'em to email me.

P.P.S. All previous newsletter issues are available by email.

P.P.P.S. Feedback is welcome, both positive 😊 and negative 😞, so let me have it! You and your opinions are appreciated.