

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



New Wastewater Operators Newsletter

Volume 2, Issue 8, October 2011

Dear Ladies and Gentlemen:

Numbers: My email victims' list is now at 233, we lost a couple and gained two from September's issue. Subscribers include wastewater operators, public works directors, civil engineers, Ecology employees and other interested parties.

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. I've also got both eyes open for surplus items around the state, which could be of use to other wastewater facilities.

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, please email me about it. If you've solved a problem at your facility, there are likely 10 others puzzling over it at theirs.

Issue Summary:

Page 2: Equipment for sale or to give away: Updates

Page 3: Job Openings: 1 new-ish job opening, 3 others already sent out.

Page 4+: Cool Idea of the month plus follow-up on Grand Coulee's Raptors.

Page 10+: Lab tips: Tidbit

Page 12: Facebook group: a few new members and postings.

Page 12: Important Biosolids information (screening deadline extension, dredging)

Page 13: Old toxic compound still in the environment

Corrections: There were a couple of typos last issue—shock! I'm not perfect! 😊

Page 14: Signature block: Includes publication date for the first time. Also a disclaimer.

Page 15: Parting shots

Equipment for sale or to give away:

MAGNESIUM HYDROXIDE: The (Mead, WA) Mountainside Middle School treatment plant ...I think Quincy may have made a deal for this product.

FLOATING AERATORS: A medium sized city has 4 floating aerators sitting on the ground. No movement on these. I have not received word if these have officially been surplused.

SIGMA AUTOSAMPLERS: Via the grapevine, I heard these units offered by Cheney went faster than hotcakes at a cowboy camp, as predicted. One operator said he was 5 minutes too slow. Better luck next time.

Also, Cheney probably still has some other nice surplused items, e.g., a 2-ton electric hoist, a small compressor with air dryer, and a gas-powered pump. If you need a list, just ask and I'll dredge up the list from an earlier newsletter for you.

The network works, I tell ya! 😊

Job Openings:

The [City of Moses Lake, WA](#) has a Wastewater Treatment Lead Operator — apparently filled; their website doesn't list it anymore.

I sent out 3 job announcements for Simplot, Pullman and Airway Heights in the past 2 weeks.

I just got a new announcement by snail mail yesterday (October 7th) from [Ellensburg](#). This position requires a Group III WWTP certificate and other prerequisites. Salary range is \$20.99 to \$27.99 per hour, DOE, plus benefits. Open until filled. See details here:

<http://www.ci.ellensburg.wa.us/jobs.aspx>

Cool Ideas of the Month, October 2011:

Cool Ideas : We have one and a follow-up.

First, we flow way up northeast to Pend Oreille County near Metaline to the Selkirk Jr./Sr. High School.

State Location map:



Google© aerial view: The treatment plant we're visiting is that tiny white building to the left of the caption. The water body at lower right is the Pend Oreille River, which flows northwest out of Montana and Idaho, eventually merging with the Columbia River in British Columbia.



Cool Ideas of the Month, October 2011, Cool Idea 1, cont.:

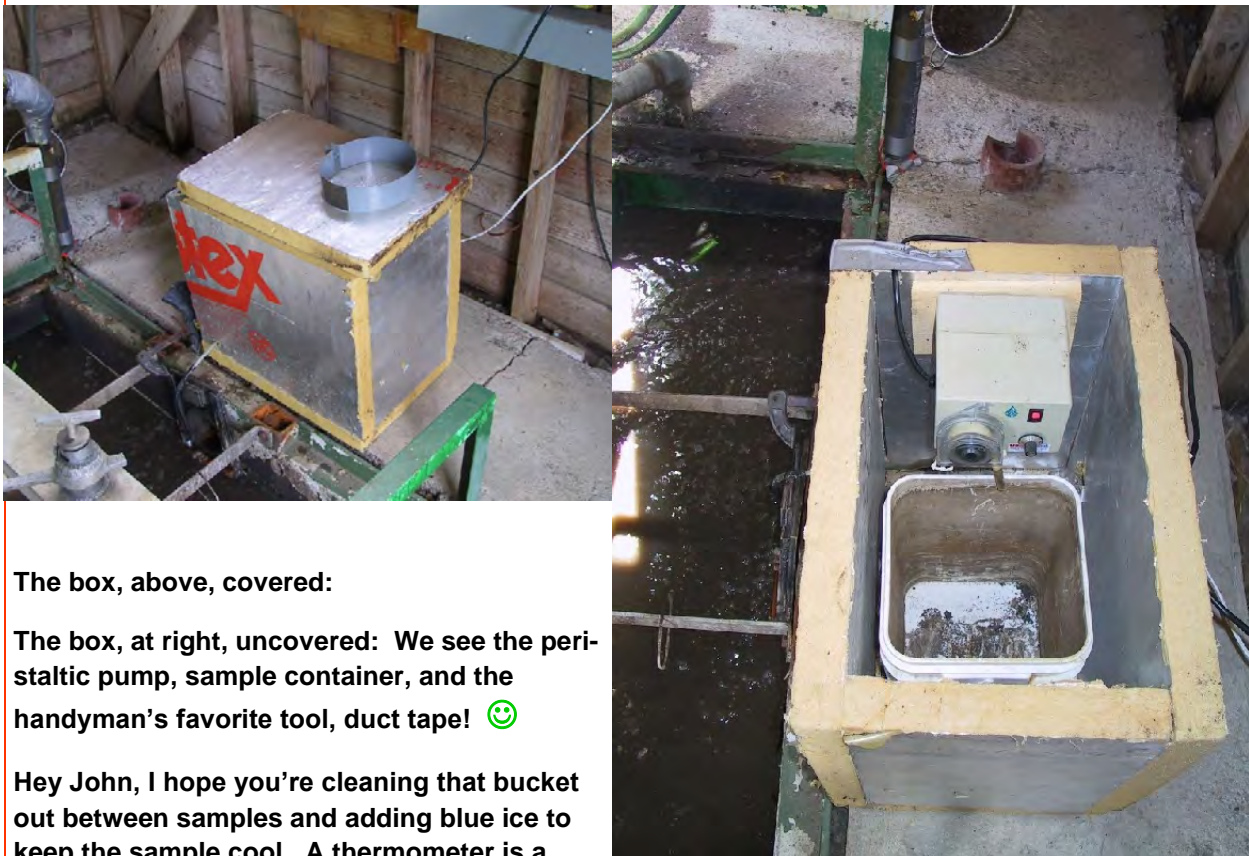
John Kinney, Teacher and Operator, runs the facility. As I wrote in an earlier newsletter, this plant is just about big enough to park 2 full sized cars inside. It's an activated sludge system, complete with grit containment, aeration basin, clarifier, chlorine disinfection (being replaced by UV), sand filter and final discharge into the Pend Oreille River. To be honest, I don't know for sure if the sand filter is still in use.

Problem:

OK, what if your budget is so tight that you can't afford an automatic influent compositing sampler? Those things start at about \$2000 and up.

Solution:

Well, if you're clever like John Kinney, you adapt and overcome. While not perfect (what is?), you get a little peristaltic pump, some tubing, build an insulated box and add a timer. Bingo! An automatic influent sampler is born!



The box, above, covered:

The box, at right, uncovered: We see the peristaltic pump, sample container, and the handyman's favorite tool, duct tape! 😊

Hey John, I hope you're cleaning that bucket out between samples and adding blue ice to keep the sample cool. A thermometer is a good idea too. Samples are supposed to be maintained at 4° C during compositing. Perhaps a smaller sample container would suffice so it would be easier to keep cool.

Incidentally, peristaltic pumps run about \$400 and up. I found some in USA BlueBook®. You might find lower prices elsewhere.

Cool Ideas of the Month, October 2011, Cool Idea 1, cont.:

Below, the thing that brings it all together, the electronic timer. You can find similar ones for \$120 or less. They can be set up for multiple "ON" events, timed to the minute.

Great idea, John! If I had a dime for every time an operator asked me about a cheap auto sampler, I'd have a dollar or so.

A big dam **Saaaalute!** to John Kinney and the Selkirk School District for this innovative idea.



Cool Ideas of the Month, October 2011, Cool Idea 2 follow-up:

Following the Columbia River out of British Columbia to the first dam in Washington State, the Grand Coulee Dam, we clamber out of our canoes and walk up the hill to the Grand Coulee-Electric City WWTF. The last time we visited, operators Gary Abbott and Don Abel were celebrating the addition of dual Lakeside® Raptor influent screening devices. They had been installed and were awaiting electrical connections.

A local electrical contractor was hired, and their first Raptor is up and running! I visited on September 21st and got a few photos of it.

Below: Ultra sonic sensor which detects liquid level, starting and stopping the screening device. As you can see, the second raptor is braced out of the other channel, awaiting electrical connections.



Cool Ideas of the Month, October 2011, Cool Idea 2 follow-up, cont.:

Here's the new control box, freshly wired up.



Below: the helix with brushes. The capped pipe at photo bottom delivers spray water.



Cool Ideas of the Month, October 2011, Cool Idea 2 follow-up, cont.:

This thing is definitely cool! Of course, it doesn't take much to amuse us kids. When the sensor (transducer) detects the appropriate water level to trigger a start, the helix starts rotating, water



starts washing, and this is the result. In this shot, there is some spill over the barriers on the sides. They've adjusted the trigger level so that doesn't happen any more. From experience, there's a definite improvement in the visual quality of the influent. No more chunks of grease and rags downstream. The grit is cleaner too, with far less organic material in it. In fact, we think a lot of the grit is being twisted up into the rags and mop strings.

The Raptors® have been installed in the open, exposed to the weather. There are plans to add a shelter for them in the future, so that they may be maintained in inclement weather.

When I reported this idea in the June 2011 newsletter, Gary said he wouldn't want to do this again, mainly because of the extra paperwork. But now that one of the Raptors is operating, he says it was worth it.

Future: The old comminutors will be removed, and in the holes they sit on will be screens to catch smaller stuff that gets through the Raptors, like little grease balls, etc.

[Speaking of screening, be sure to read the item about it, on page 12.](#)

Lab tidbit:

Did you ever wonder about pH color indicators? No? Then skip these 2 pages. Otherwise...

TYPES OF ACID-BASE INDICATORS

A list of compounds having acid-base indicator properties is very large and comprises a variety of organic structures. An indicator covering almost any desired pH range can ordinarily be found. A few of the most common indicators are given in Table 13-3.

The large majority of acid-base indicators can be classified into perhaps half a dozen categories based upon structural similarities. Three of these classes are described below.

TABLE 13-3

Some important Acid-base Indicators

Common Name	Transition Range		Color Change		Indicator Type*
	pH		Acid	Base	
Methyl violet	0.5 – 1.5		Yellow	Blue	--
Thymol Blue	1.2 – 2.8		Red	Yellow	2
“ “	8.0 – 9.6		Yellow	Blue	“
Methyl Yellow	2.9 – 4.0		Red	Yellow	3
Methyl Orange	3.1 – 4.4		Red	Yellow	3
Bromcresol Green	3.8 – 5.4		Yellow	Blue	2
Methyl Red	4.2 – 6.3		Red	Yellow	3
Chlorophenol Red	4.8 – 6.4		Yellow	Red	2
Bromthymol Blue	6.0 – 7.6		Yellow	Blue	2
Phenol Red	6.4 – 8.0		Yellow	Red	2
Neutral Red	6.8 – 8.0		Red	Yellow-Orange	--
Cresol Purple	7.4 – 9.0		Yellow	Purple	2
“ “	1.2 – 2.8		Red	Yellow	“
Phenolphthalein	8.0 – 9.6		Colorless	Red	1
Thymolphthalein	9.3 – 10.5		Colorless	Blue	1
Alizarin Yello	10.1 – 12.0		Colorless	Violet	3

Taken from I. M. Kolthoff and H. A. Laitinen, *pH and Electro Titrations*, 29. New York: John Wiley and Sons, Inc., 1941

Lab tidbit, cont.:

1=phthalein; 2=sulfonphthalein; 3=azo

Phthalein Indicators. Most phthalein indicators are colorless in moderately acidic solutions and exhibit a variety of colors in alkaline media. In strongly alkaline solutions their colors tend to fade slowly; in some applications this is an inconvenience. As a group the phthaleins are insoluble in water but quite soluble in alcohol; the latter is the preferred solvent in preparing solutions of these indicators.

Sulphonphthalein Indicators. Many of the sulfonphthaleins exhibit two useful color-change ranges. One color range change occurs in rather acidic solutions and the other in neutral or moderately basic media. In contrast to the phthaleins, the basic color shows good stability toward strong alkali.

Azo Indicators. Most of the azo indicators exhibit a color change from red to yellow with increasing basicity. Their transition range is generally on the acid side. The best-known compounds in this class are methyl orange and methyl red.

VARIABLES THAT INFLUENCE THE BEHAVIOR OF INDICATORS

Several factors play a part in determining the pH interval over which a given indicator exhibits a color change. Among these are temperature, electrolyte concentration, the presence of organic solvents, and the presence of colloidal particles. Some of these effects, particularly the last two, can cause a shift in the color range of one or more pH units.

Shocking as it seems, there are still color comparators being used “out there” for everything from swimming pools to wastewater lagoons. For official environmental pH determinations, those should be replaced with a “real” pH meter.

FaceBook Group:

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

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

We got a few new members of the group in the past month, and with Mike Barnett (Douglas County-East Wenatchee) and Tom Hastings (Veolia-Cle Elum) posting a couple of links for us. Thanks guys!

Important Biosolids Info:

Screening requirement: As you probably already know, July 1, 2012 is the deadline to have screening in place (or alternative) to significantly remove manufactured inerts from Biosolids.

A Biosolids Coordinator tells me the following:

If your facility isn't going to have screening or alternatives in place by that date, **you can apply for an extension**. Notably, Seattle has done it, and so should you to avoid a violation. But you have to apply for the extension **in writing**. Contact your regional Biosolids Coordinator for information as to format. Do it soon, before the rush!

Lagoon dredging: Removed. See November issue.

DDT was banned in the USA in 1972, due to the damage it was doing in the environment. It had saved millions of lives world wide (malaria, typhus). Very persistent, it's still being found in waters and soils of Washington State. Here's a magazine ad from 1947. How things change...

Thanks to Richard Marcley for the copy. 😊

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

All the best to you and yours,

Darrel Fleischman

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P.S. If you want off this list for any reason, just let me know.

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.

P.P.P.P.S. My Wastewater page is located here: <http://www.whiteravendata.com/Wastewater.htm>

And here's a disclaimer. Just about everybody receiving this newsletter knows where I work, but I should tell you this newsletter is not endorsed by, contributed to, or reviewed by the Washington State Department of Ecology. It's all done on my own time, my home computer, and using my personal email address and camera. So there!

See a scenic photo and a link to a funny on the next page. Enjoy!

Parting Shots:

Bruneau Sand Dunes State Park, Idaho at dawn in June, 2011. Digital



Check out this dog having fun! (YouTube Video) http://www.youtube.com/watch_popup?v=cqxTUxzOceE&feature=youtube_gdata_plaJ