

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



New Wastewater Operators Newsletter

Volume 2, Issue 9, November 2011

Dear Ladies and Gentlemen:

Numbers: My email victims' list is now at 244, we gained 10 subscribers since October'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: Emergency Chlorine gas scrubber

Page 3: Job Openings: Calling out for contract/temporary wastewater operators;
building a list, checking it twice!

Page 4-14: Cool Ideas of the month—we've hit the mother lode this month! 😊

Page 14-15: Lab tips: Tidbits about BOD and fecal coliforms, etc.

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Page 17: Important Biosolids information (dredging lagoons) update.

Page 17-18: Read your Permit—Everybody else can.

Page 19: WWTP certification study session in Grandview scheduled for a Saturday!

Corrections: *Nada!*

Page 20: Signature block: Includes a disclaimer.

Page 21: Parting shots

Equipment for sale or to give away:

Larry Swift, the Public Works Director of the City of Ritzville writes:

“Hi Darrel

I was thinking about getting rid of a purafil gas scrubber model FOC5 and was wondering if I could put it in your newsletter. If so they can call City Hall at 509-659-1930 or email me at larry.swift@ritzville-wa.gov.

Thanks

Larry Swift”

He says it is 10 years old, but was hardly ever used. It’s a Purafil FOC5 Emergency gas scrubber for chlorine gas leaks. No word on price. Thanks Larry! It’s a dry media scrubber and will ab-



sorb 150 lb. of chlorine, according to Purafil’s brochure, downloadable here: http://purafil.com/PDFs/Product%20Bulletins/Equipment/Water-Wastewater/EGS%20Brochure_Chlorosorb%20Ultra_8.5x11.pdf Parts and supplies are apparently still available for it.



The network works, I tell ya! 😊

Job Openings:

Temporary/Contract Operations: With budgets the way they are nowadays, small towns (and even the larger ones) are having a hard time replacing operators who retire, move on to other jobs, etc. There's an increasing need for qualified wastewater operators to do temporary or contract operations.

I was recently asked by a consulting engineer if there's an official list of contract wastewater operators. There is none.

Evergreen Rural Water of Washington has a list—here: <http://www.erwow.org/wastewateroperators.htm>

Hey Casie M. and Ron R., you better get on this list—you know who you are.

This is Evergreen Rural Water of Washington's (ERWOW) home page: <http://www.erwow.org/index.htm>

If anybody else reading this would like to be added to a list of temporary/contract operators, please contact ERWOW or email me so we can know what resources are available.

Sometimes a one-operator town needs a fill-in for medical emergencies or vacations.

DMR and other official document signatures: Keep in mind that if you're doing contract operations and filling in and signing DMRs (discharge monitoring reports), you need to send in an application for signatory authorization to your regional Ecology office. Otherwise, the local official (mayor or public works director, corporate officer, etc.) will have to sign them prior to submittal.

A form template for applying for signatory approval is available in the "Information Manual for Treatment Plant Operators", (see Appendix G) downloadable here:

<http://www.ecy.wa.gov/biblio/0410020.html>

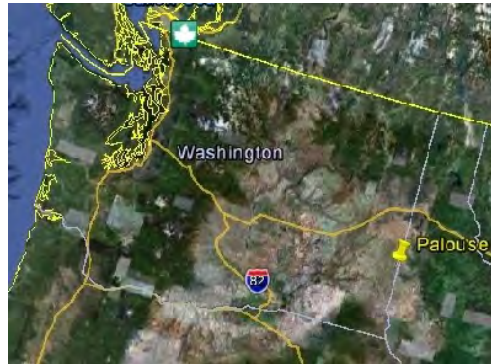
WATER Certification: Also keep in mind that there's a growing need for persons with a combination of certificates. Try to get as much training and experience as you can in both fields (water and wastewater). Get those certificates and keep them current if you can.

Cool Ideas of the Month, November 2011:

Cool Ideas 1, 2 and 3: We have five this month. Woohoo!

First, we fly way southeast to beautiful Whitman County near the Idaho State border to Palouse, Washington. It's east of Colfax and North of Pullman.

State Location map courtesy of Google Earth©:



This is a Biolac® plant (extended aeration activated sludge). They have UV disinfection, a belt filter press for biosolids, and discharge into the beautiful Palouse River, a tributary of the Snake River. Note that the green on their clarifier surface is duckweed, not an uncommon sight around here. Google Earth© aerial view (imagery date 8/5/2011):



Cool Ideas of the Month, November 2011, Cool Ideas 1-3, cont.:

Dwayne Griffin (Public Works Director) and Don Myott (Operator/Utility Worker), run this plant.

By the way, you can find out all about any wastewater treatment facility (industrial and municipal fact sheets and permits) on Washington State Department of Ecology's website located here: <http://www.ecy.wa.gov/programs/wq/permits/wwdischargepermits.html> . Just click on the "view permit documents in PARIS" link, then use the filter function to find the documents you want to view or download.

Problem 1:

They got a complaint that the influent screenings were too wet, such that the garbage truck operators had to stand away from the back of the truck so they wouldn't get splashed with offal when the compactor ran. Screenings were falling from the screening device into a plastic garbage bag without benefit of further draining.

Solution 1:

Now, room is tight in their headworks building, so the solution had to be small enough to fit. Correct me if I'm wrong, Dwayne and Don, but I could swear you told me you bought this from a homeless man. Yep, it's a shopping cart. They just happened to be removing old cabinets from City Hall, and cut some pieces to use in the cart. They say it is the perfect size and shape to clean out with a square point shovel. The bottom cabinet piece has holes drilled in it to allow the screenings to drain into the influent channel below. The Rex III climber-type chain driven screen has a wide discharge chute, which makes it a little messy. Maybe adding an extended slide or other barrier to the chute would clean it up some.



Cool Ideas of the Month, November 2011, 1-3, cont.:

Problem 2:

Next item: Apparently the refrigerator unit on their effluent auto sampler died, but the ISCO™ sampler unit lived. We had the same thing happen in Grand Coulee. Mark Adelmund (formerly of the Mabton facility—congrats on the new job, Mark!) reported a similar scenario.

Solution 2:

I don't know how much an OEM replacement refrigeration unit costs, but judging from other lab equipment prices, probably a small fortune! The solution (in all three cases noted in Problem 2), was to purchase a small cheap refrigerator for the sampler unit. That's exactly what the gentlemen of Palouse did. You can get one for well under \$200 at various retail outlets. I don't know what they did in Palouse, but in Grand Coulee I cut a proper sized hole through the top with hole saw to feed the peristaltic discharge tube into the body of the fridge.

The two or three small refrigerators I've looked at closely don't have any refrigerant lines running through the top of the unit, except at the back near the freezer compartment. This makes it easier to drill without worrying about destroying the fridge. 😊



Before you start a project like this, you need to look at the size and shape of the fridge interior in person, to make sure your sample carboy is going to fit. Some of the fridges I looked at have strange ledges in the way, probably to make room for the compressor, etc.

Most sampler units don't vibrate a lot, so you don't have to worry about attaching it to the fridge. It'll stay put OK in most circumstances without mounting screws. You could use Velcro™ with sticky backs to keep it in place, or the handyman's favorite tool, duct tape, for that matter.

Furthermore, I found the small refrigerators' temperatures easy to control.

Cool Ideas of the Month, November 2011, 1 through 3, cont.:

Problem 3:

Next item: Algae was sloughing off their clarifier, carrying protected fecal coliforms along with, into the UV disinfection channel, resulting in occasional fecal hits. Besides the obvious solution of frequent hosing of the clarifier or opaque covers over the launders and weirs to keep algae from growing, they came up with the following solution.

Solution 3:

I think Dwayne said his brother or brother-in-law works in metal fabrication. Anyway, he built this stainless screen to catch the algae strands. As you can see in the photo below, the algae sticks to the plate. Numerous small holes were drilled in it to allow the effluent to pass through into the UV section. They didn't count the holes, but it's estimated it's the same number necessary to fill the Albert Hall. [For the very young, I'm alluding to the tune "A Day in the Life", by the Beatles (YouTube video here): <http://www.youtube.com/watch?v=ybU-Zw33PM4&feature=related>] That's Don Myott holding the slide gate up so I could get a shot of it. Cool!



Three big dam **Saaaaalutes!** to Dwayne Griffin and Don Myott for these cool ideas. And they did it all without duct tape! They're obviously interested in saving their town money and staying in compliance. Thanks for sharing. It's not the size of the idea, it's having one that works for you that counts. Engage the brain, adapt, overcome. It's all good!

Cool Ideas of the Month, November 2011, Cool Idea 4:

Next, we motor even further southeast to Asotin County, just south of Clarkston, Washington.

State Location map courtesy of Google Earth©:



We're going to visit the City of Asotin WWTP, an oxidation ditch system with UV disinfection and a belt filter press for biosolids processing. Google Earth© aerial view (imagery date 8/5/2011):



Operator Bill Frye runs this plant, replacing long-time operator Dan Watson, who retired last year.

Problem 4:

The influent sampler strainer was catching too many rags in the influent channel just upstream of the Parshall flume, decreasing the sample quantity and causing inconsistencies. By some quirk of engineering, the screen is downstream of the Parshall flume. I think it had to do with the sequence of plant upgrades that the sampler is located in the unscreened influent channel.

Cool Ideas of the Month, November 2011, Cool Idea 4, cont.:

Solution 4:

Bill cut a piece of 3/4" PVC pipe, added a couple of set screws and attached it to his influent sampler strainer. The wastewater and small influent solids can get into the suction tube, but rags and other large debris cannot. Located in the influent channel at the spot shown, there is no accumulation of grit and silt.

Also note that the strainer is located far enough upstream such that any turbulence created, subsides before it reaches the influent flow ultrasonic sensor (transducer) zone. Too much turbulence causes inaccurate flow readings.

Two more things: if the strainer is kept near the center of the channel (not against the wall), there's less chance of eddies creating an accumulation of silt and grit. Also, slack is kept to a minimum so rags can't drag the tube downstream very far. Short leash!

The only other alternative would be to relocate the sampler shack downstream of the screen (expensive and impractical in this situation). Bill says the week-to-week influent samples have been much more consistent since he added the shield.



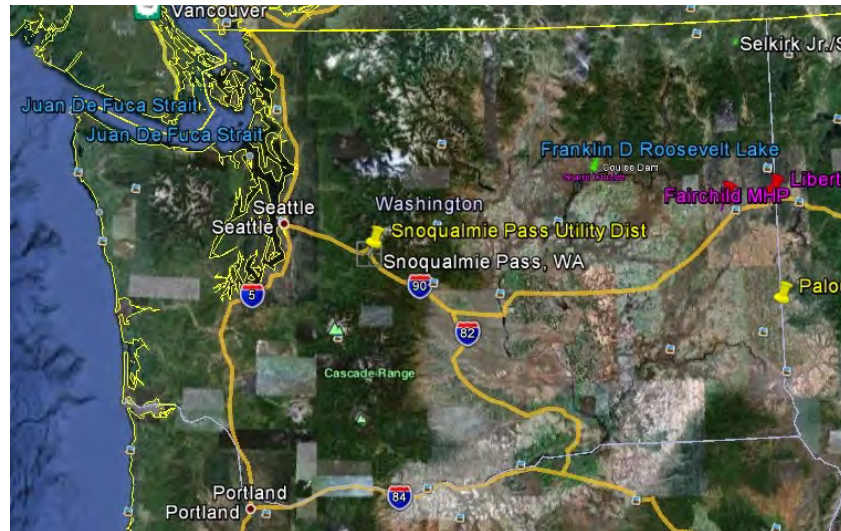
It's little ideas and changes, the result of operator ingenuity, which keeps our environmental data valid. In certain ways, good influent loading data is invaluable for providing planning information to design engineers.

A big dam [Saaaalute!](#) to Bill Frye for this cool idea! Asotin is lucky to have you.

Cool Ideas of the Month, November 2011, Cool Idea 5:

Finally, we slip 'n slide to the Snoqualmie Pass Utility District west of Easton. Their office and shop is located in the unincorporated community of Hyak, Washington. They provide drinking water and wastewater treatment for areas located in western Kittitas County and eastern King County.

State Location map courtesy of Google Earth©:



We're going to visit their facility, consisting of aerated lagoons and a sprayfield, which essentially discharges chlorinated effluent to ground water.

Their shop/office is located between the two lagoon cells shown below. Google Earth© aerial view (imagery date 6/30/2006):



Cool Ideas of the Month, November 2011, Cool Idea 5, cont.:

General Manager Terry Lenihan runs this tight ship; Steve Brockett and Jeff Freeman are Operators. They may have other personnel I'm not aware of. They run a huge number of tests in their well-equipped lab monthly, including nitrogens. I consider Steve a good resource for the Hach Digestahl TKN procedure.

Problem 5:

A man is in an aluminum boat...mostly. One of his legs is out and his foot is scooting the boat and himself across a frozen lagoon cell at Hyak. He has to get to one of the floating aerators to fix it. It's hazardous work. I cringe at the potential for groin injuries. There must be a better way.

Solution 5: Oh yeah! This is more like it! It seems the National Park Service had surplused this..... HoverTrek hovercraft! Terry bought it for the crew.

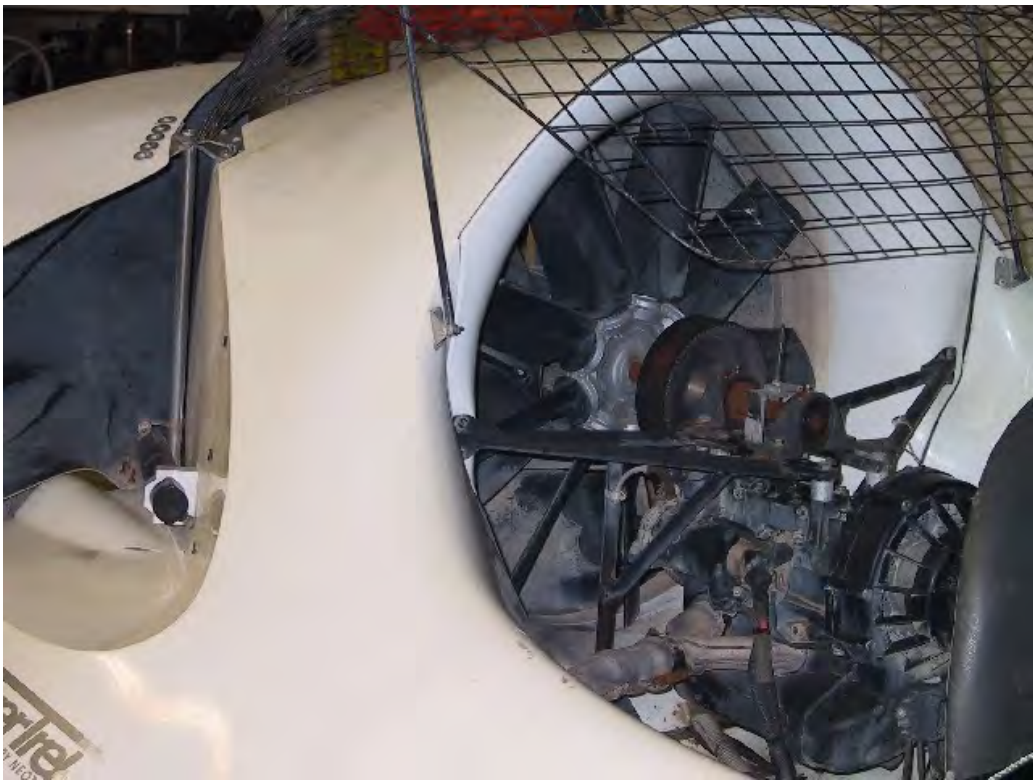


It has an inverted 2-cycle engine with its sparkplug on the bottom. It has a solid hull, so it floats with the engine off. It can turn on a dime on snow, dirt, mud, and yeah, lagoon water. All they need is to replace the skirts and it will be ready to go.

Check out this video where one is being used in a rescue mission: <http://www.youtube.com/user/NeotericHovercraft?feature=mhum#p/u/10/bcV7cNUBa9k>

Cool Ideas of the Month, November 2011, Cool Idea 5, cont.:

It has running lights, a spotlight, seats for four (I think), and motorcycle style handlebars.



Cool Ideas of the Month, November 2011, Cool Idea 5, cont.:

Here's another shot of it:



And a couple from [Hovercraft.com's](http://www.hovercraft.com) gallery, of guys about to have accidents. 😊



Their gallery page:

http://www.hovercraft.com/content/index.php?main_page=index&cPath=1_4_222

Cool stuff!

And check out the video of the Hoverwing™ here: http://www.hovercraft.com/content/index.php?main_page=index&cPath=53



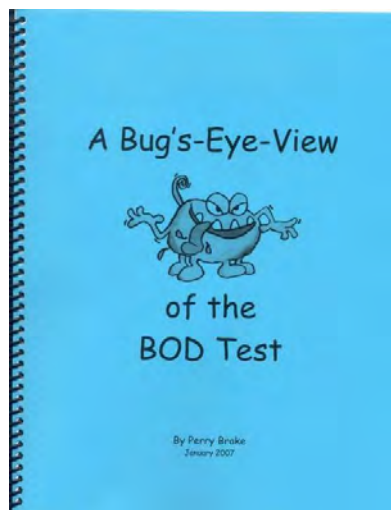
Cool Ideas of the Month, November 2011, Cool Idea 5, cont.:

A big dam **Saaaaalute!** to Terry and his crew of the Snoqualmie Pass Utility District for sharing this ultimate boy-toy idea with us. Too cool! Don't forget your ear and eye protection, guys!

Lab tidbits:

Surfing the web for information on BOD dilutions, I ran across Perry Brake's website.

<http://www.perrybrake.com/> He's led a very interesting life, and is a master of BODs. Check out his new book (2007) **A Bug's-Eye-View of the BOD Test** here: <http://www.perrybrake.com/BODBook.html> It comes with a supplementary CD for \$15 total (about half of what USA Blue



Book is selling it for).

And here's a link to his page where he cuts to the chase about changes in the 20th and 21st Editions of Standard Methods regarding BODs. <http://www.perrybrake.com/BODSolutions.html>

I was asked last week what the correct order is to add components to BOD bottles: Hach™ powder pillows (for 300 mL bottles), seed, distilled water and samples were the components. The answer is (1) distilled water, (2) powder pillow, then the seed and samples can follow in whatever order. The reason why is in the next paragraphs.

Did you ever wonder why you have to use buffer solutions when you do BODs, fecal coliforms and just about every other kind of bacterial culture test? Why can't you just use distilled or de-ionized water?

Think of bacteria as vessels containing sugars and salts, proteins, enzymes, etc. If you add them (seed bacteria or samples) to distilled water, the water wants to enter their cells to equalize the osmotic pressure on both sides of the cell wall. Without balancing buffers outside the cells they swell up and explode. No bacteria, no results (false negatives).

Lab tidbits, cont.:

By the same token, if the solution outside of the cell is too strong, water wants to exit through the cell membrane and cell wall, shriveling your bacteria.

That's why when you're hospitalized, you get a normal saline IV, not sterile distilled water. Your blood cells would rupture, putting you in a world of hurt. Same principle.

Salamander Invasion!

Three lagoon systems in Eastern Washington that I know of are having problems with salamanders. Washtucna and Ritzville for two, and I've seen one on dry ground at the Creston facility. There are probably more out there. At Diamond Lake, they have a bumper crop of little bitty green frogs. You can't win, and you can't walk on their spray field without stepping on them. Ewww!

In Washtucna, the salamanders (a.k.a. mud puppies, waterdogs, etc.), some nearly a foot long, are exiting the lagoon through a pipe and immediately jamming their effluent pumps. In that case, they've added a screen to keep them out of the lift station wet well.

It would be nice if they could get rid of them in some humane way. In any case, I've been told that certain trout and turtles will control them. But if you muck about with special trout, you'll have the Washington State Department of Fish and Wildlife to deal with. Turtles are pump jammers too, if they can get sucked up.

The California Tiger Salamander is on the endangered species list (fact sheet here: <http://www.epa.gov/espp/factsheets/ca-tiger-salamander.pdf>), as if we need one more thing to worry about. Checking their range, I don't see them living in Washington State (whew!). Here's a shot of that one.

Endangered California Tiger Salamander



Salamander Invasion!, cont.:

I found an abstract of an article here <http://www.jstor.org/pss/1565448> about using trout to control the larval stages of the salamanders. I think the best bet is to employ barriers like screens to keep them out of wet wells, etc. Here are a couple of species present in Washington State.

Tiger Salamander



Long-Toed Salamander



To their credit, salamanders are predators on insects and insect larvae, daphnia (fresh water crustaceans, also known as water fleas), worms, etc. The larval stages (the ones that get chewed up in pumps) are aquatic and have gill structures. The adults are mostly terrestrial.

These are tough guys, hibernating over the winter in rotting logs, under leaves or underground. They can lose limbs and grow them back, and often release their tails as a defense when caught. They've been studied to find out if something in their nature can be applied to human amputees.

Salamanders also have glands in their skin which secrete a mild toxin that makes them taste bad to predators such as birds.

The females lay up to about 100 internally fertilized eggs individually under water, so if you have a nice lagoon system or wetland, it's easy to see how they could proliferate and turn into pests.

Most are vulnerable to a special fungus, and here's an article about that from the Seattle Times, published in May 2008. It involves the Ellensburg and Potholes areas. The problem with the fungus is it also kills frogs. Hey, I don't analyze 'em, I just report 'em.

http://seattletimes.nwsources.com/html/localnews/2004387294_sickfrogs02m.html

Here's a quote from the last sentence of the article: "*Zoos around the world are mounting emergency, captive-breeding programs to try to preserve amphibian species on the verge of extinction, Wisniewski said. "It's definitely something that we're talking about here."* Copyright © 2008 The Seattle Times Company, by Sandi Doughton

Yoohoo! Come get ours!

FaceBook Group:

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

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

We got one new member of the group from British Columbia, and I've posted a few more links.

Important Biosolids Info:

Lagoon dredging: I've been asked several times "Who does Biosolids dredging/removal from lagoons and other vessels?" (from last month's newsletter)

I was politely informed that lagoon dredging for biosolids is a highly competitive business, and that if you want a complete list, you should contact your regional Biosolids Coordinator for a list. Naming just a few companies might make others mad if they aren't included.

Also, Maile Lono-Batura (Northwest Biosolids Management Association) may have a list of companies which do biosolids dredging and hauling.

NBMA website: <http://www.nwbiosolids.org/>

Maile's email address and phones: Email: maile.lono@nwbiosolids.org

Tim Cooper of Yakima informed me that Natural Selection Farms out of Sunnyside do a great job, and are good to work with. Thanks Tim!

Read Your Permit—Everybody else can: The following is a heads-up, not a lecture. Now anybody and everybody can find out about your discharge permit, your violations if any, and all documents, even inspections conducted with regard to your facility. It's all in the public domain, and you can count on watchdog groups and their myriad attorneys paying attention to you whether they have an axe to grind or not. So, you might as well take advantage of the information too.

All permits in the State of Washington and associated fact sheets can be accessed in PARIS, Ecology's Water Quality Permitting and Reporting Information System. To view or download your permit and/or fact sheet (including drafts, etc.), click here: <http://www.ecy.wa.gov/programs/wq/permits/wwdischargepermits.html>

Then click where it says:

[View permit documents in PARIS](#)

<<this image is the link.

Once you're on that page, you can fill in search criteria on a dialog box that looks like this:

Permit Document Search

Fill in one or more fields and click **Search**

Permit Number Example: WAR0011379 or 11379

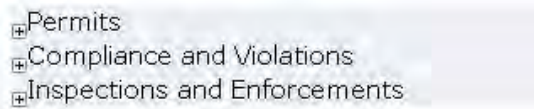
Facility / Project Name

City

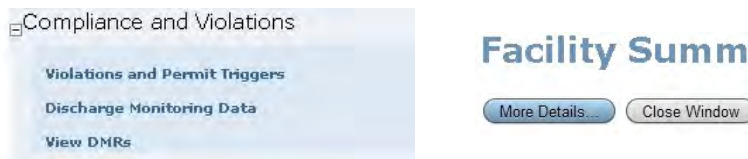
County

Read Your Permit—Everybody else can, cont.:

At the upper left of that page, you'll see a box with little pluses, which you can expand to find out all kinds of details about your selected city or industrial facility. It looks like this:

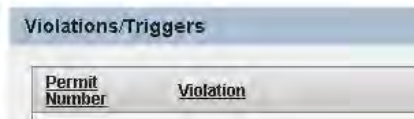


Once you're in there, you might as well click on Compliance and Violations (+) and "Violations and Permit Triggers". Work with it, and select the "More Details" button. You can find out what violations you have, some of which you might not be aware.

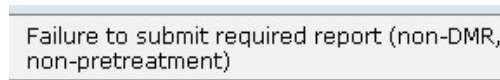


Some of these include missing documents, such as I&I reports, Wasteload Assessments, or O&M manual updates, etc.

Under the "Violations/Triggers" heading, it lists all violations from most recent to oldest for a certain period of time.



If you see something that looks like this (below), you can look above on that page under the heading "Submittals" and find out which document is missing.



Anyway, knowledge is power, and if you find a violation reported in PARIS that you know to be untrue, you can contact your Permit Manager to get it corrected. Or, you can submit amended DMRs (procedure is in the Information Manual for Treatment Plant Operators) if you accidentally omitted data or made a typo boo-boo. It happens.

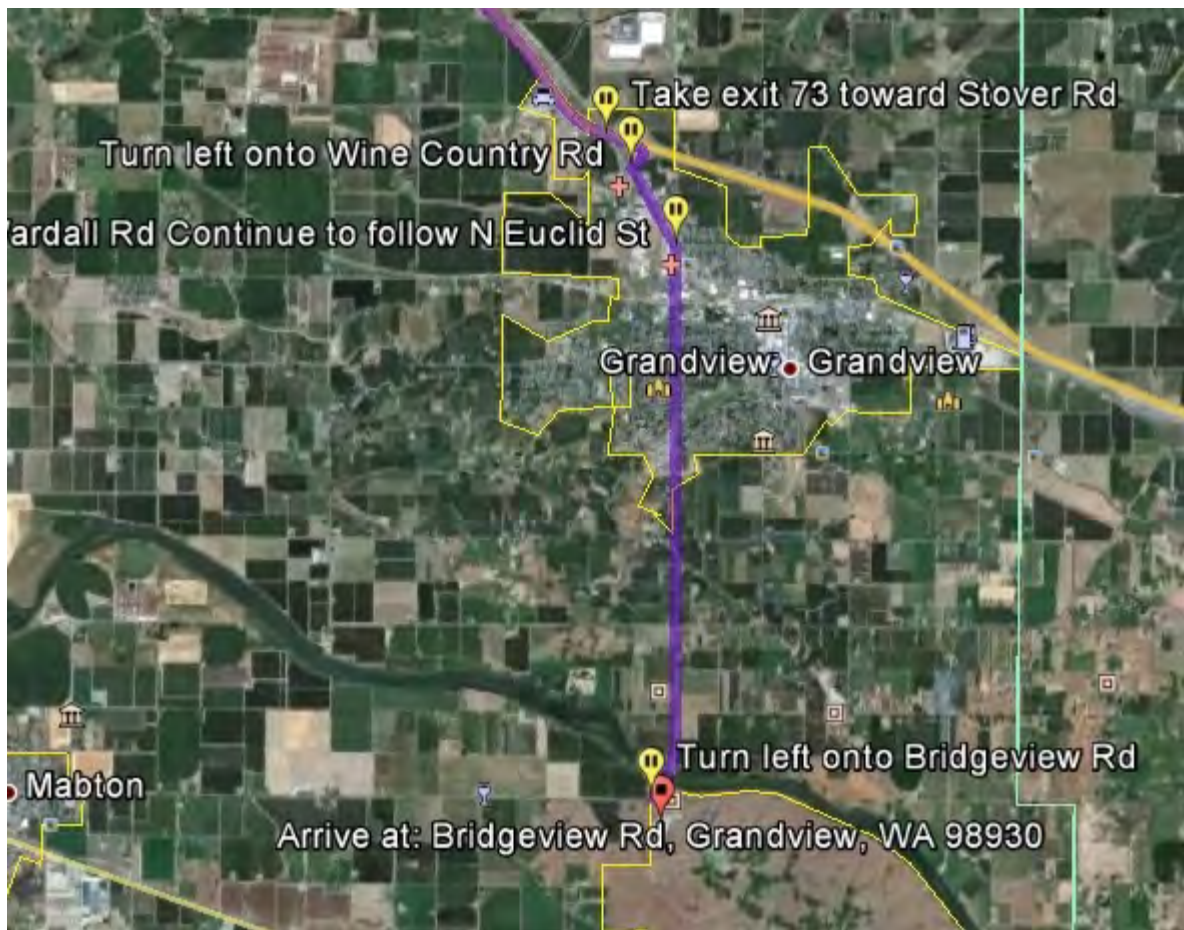
Keep in mind that PARIS is a work in progress, and some of the buttons and functions are subject to change over time. Also, typos or erroneous criteria occur internally to PARIS on occasion. Nothing is perfect.

The bottom line is, if you are intimately familiar with your permit, you can avoid problems like missing document submittals. Your permit has a table on about page 4 which lists the reports needed and their due dates. Annotate your calendar so you don't miss any of those.

I hope this helps you to avoid compliance problems in the future.

WWTPO Certification Study Session Scheduled in Grandview:

That's right, I'm going to show up at the Grandview WWTP on Saturday, December 3, 2011 for some quality Q&A with an operator having trouble with his certification exam. ETA about 0800 hours, and I plan to stick around for 4 hours. We'll be hitting some of the tough math, general operations and basics of collection systems, lab procedures, etc. Level of study, Group 1 and 2. I intend to apply for 0.4 CEU for myself and anybody else attending. There's room for probably 10-15 people to attend if you want. Dress warmly, because we're touring the plant too, walking and talking. Bring your own refreshments—I'm broke. Thanks to Manager Dave Lorenz for allowing us to study at the facility. Please let me know by email if you're planning to attend.



The facility is located at 850 Bridgeview Road, Grandview, WA 98930

From I-82, take Exit 73 toward Stover Road, 0.4 mi.

Turn left onto Wine Country Road, go 0.5 mi.

Slight right onto N Euclid St./Wardall Rd. Continue to follow N Euclid St. southward, go 3.3 mi.

You'll cross a bridge on the Yakima River—take the first left after the bridge onto Bridgeview Rd. Go 322 feet—you're there! If you're coming from a direction other than north, adjust!

It's [free training](#) on a weekend—sometimes that's the way it has to be. 😊

Happy Thanksgiving to all. May you be continuously blessed.

Keep up the good work! See you next time.

All the best to you and yours,

Darrel Fleischman

Publish date: 11-22-2011 —yeah, it's on my own time—I'm on annual leave. 😊

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. I swear!

See a couple of bird photos and links to a couple of funnies on the next page. Enjoy!

Parting Shots:

“Seagull in Flight” at Pateros City Park, ca. 1986, 35mm transparency scanned to digital



Check this ultimate dog tease video! (YouTube Video: <http://www.youtube.com/watch?v=nGeKSICQkPw&feature=related>)

Too funny! 'You Bet Your Life' video with Bill Cosby—Understanding Southern! <http://www.youtube.com/watch?v=E1NsC98xVN0>



“Walk This Way”, 35mm
Transparency scanned to
digital from about '86.