Updates from the

Office of Shellfish and Water Protection

Commercial shellfish, shellfish growing areas, biotoxins and pathogens;
Wastewater and on-site sewage issues

Washington State Department of Health
Environmental Public Health
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In this Issue:

Send Comments to the Editor:
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Message from the Office Director

Innovative Wastewater Design Approved for Eco-Friendly Building

In late July our engineers approved the wastewater treatment design for construction of the Bullitt Center, a mid-rise commercial office building in downtown Seattle. Projected to be the greenest and most energy efficient commercial building in the world, the Bullitt Center is designed to generate all the electricity the building needs, capture and utilize rainfall for non-potable uses, and treat all wastewater on site.

The wastewater treatment process separates greywater from blackwater and uses constructed wetlands within the building for treatment. This innovative approach to wastewater management required us to think "outside the box", as the design did not neatly fit within existing regulatory structure. Thanks go to Craig Riley for his leadership and creativity in working with the design firms. His open-minded approach to the project and detailed engineering reviews enabled designers to meet regulatory compliance while using unusual approaches to wastewater treatment.

The project sponsor will make additional submittals for monitoring and operation & maintenance before an operating permit is issued.

While this project proved both interesting and challenging, I expect we will see others like it in the future. A paradigm shift is underway in how buildings and developments are designed and built. There seems to be a need for a shift in how they are regulated as well.

Jerrod Davis, P.E.

Large On-Stite Sewage Systems (LOSS) Update

Our major work to find existing LOSS in the 12 Puget Sound counties is done. We expect we'll turn up other existing systems here and there.

After contact with nearly 300 on-site sewage system owners in these counties to see if they are LOSS, we found and permitted an additional 145 systems that fall under our jurisdiction. There are now over 270 permitted LOSS in Puget Sound.

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We've begun looking for existing LOSS with no DOH operating permit in the rest of the state, starting in the Spokane critical aquifer zone and in the Yakima area, where groundwater has high nitrates. So far we've issued permits to an additional 20 existing LOSS – and we're still looking!

Denitrification (Nitrogen Reduction) Verification Project

In the last edition of our newsletter we told you about a denitrification project we've begun. We are partnering with the University of Washington's Department of Civil and Environmental Engineering to evaluate the denitrification performance of some existing on-site sewage technologies. The goal of the project is to expand the list of affordable treatment options available for use in areas where nitrogen is identified as a contaminant of concern. Because the processes for denitrification are temperature dependent, we are testing these systems in Washington to see if they perform well in our climate.

Construction of the test systems at the WWTP. In this photo the orange septic tanks are already in place and the recirculating gravel filter systems are being built.

The US Environmental Protection Agency is paying for this project using funds from the National Estuary Program's (NEP) Toxics and Nutrients Reduction and Prevention Grant. About $620,000 in NEP funds have been allotted for the project.

The systems chosen for evaluation were constructed on the grounds of the Snoqualmie Wastewater Treatment Plant (WWTP). We selected this site because it has residential strength influent (diverted to the three systems at the WWTP headworks), adequate space to locate the three systems, reasonable proximity for DOH and UW personnel, and support from the City of Snoqualmie. The systems will be removed at the project's conclusion. Construction was completed in June and evaluation has begun. The project is scheduled for completion by December 2013.

Vegetated recirculating gravel filter. Staff planted a variety of grasses, shrubs, and flowering plants.

Informational flyers are available for the three systems we are evaluating:

- *A vegetated recirculating gravel filter system that is comparable to a recirculating vertical flow constructed wetland.*
- *A passive two-stage denitrification system that includes a recirculating gravel filter and a vegetated woodchip bed.*
- *An enhanced recirculating gravel filter that is also designed to maximize nitrogen removal efficiencies.*

These technologies will be tested and evaluated over a one-year period.

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Recirculating gravel filter with vegetated woodchip bed. Water-loving plants are required; project staff planted cattails.

Penn Cove Oil Spill Response

On Sunday, May 13, the "FV Deep Sea", a 128-foot derelict vessel, caught fire and sank within a short distance of Penn Cove Shellfish's mussel rafts. Fortunately, quick action taken by both Penn Cove Shellfish and the Department of Ecology limited the damage. Penn Cove Shellfish voluntarily ceased harvesting shellfish and moved its wet stored product out of Penn Cove, and Ecology placed booms around the ship to capture escaping fuel.

The initial report from the boat owner was that only a small amount of diesel fuel was on board. However, it was soon clear that there was a great deal more on board (eventually over 7,000 gallons was recovered). On May 15 and 16, diesel escaped the boom and passed over both commercial and recreational shellfish harvest areas in Penn Cove, necessitating a formal closure of the growing area.

We were responsible for determining whether the shellfish were safe to consume and whether they were tainted. We followed criteria established by NOAA, which allow harvest only after:

- The source of the oil contaminating the growing area has been removed.
- There is no visible oil sheen on the water.
- Shellfish tissue samples pass tests for chemicals of concern, in this case polycyclic aromatic hydrocarbons (PAHs).
- Shellfish tissue samples pass taint tests (taste and smell) done by the NOAA Seafood Inspection Program.

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On May 18, two days after the oil sheen passed over Penn Cove's mussel rafts, shellfish were collected for the PAH analyses. All of the samples passed the PAH tests. On June 4, tissue samples were collected for the taint tests. Some of the locations failed the initial tests, but all the samples collected on June 8 (with the exception of one recreational beach) passed the tests.

As a result of the taint testing, there were three different reopening dates. North Penn Cove's recreational shellfish areas reopened on June 5, the commercial operations reopened on June 8 and the southern recreational beaches opened on June 22.

Inside the boomed area (bottom right) is a diving vessel that responded to the sinking of the FV Deep Sea. In the background are the mussel rafts.

Photo courtesy of the Department of Ecology

800 Acres in Oakland Bay Upgraded to Approved

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For the first time since sampling of the area began, the main basin of Oakland Bay is classified as Approved. Before the change in classification this area of the bay was classified as Conditionally Approved and was closed to harvest after heavy rains and whenever the Shelton wastewater treatment plant experienced problems.

Water quality improvements in the area are the result of work through a Shellfish Protection District formed by Mason County in 2007. The group included the county, the Squaxin Island Tribe, the city of Shelton, Mason Conservation District, state agencies, shellfish growers, and many property owners. Improvements to the city's wastewater treatment plant also helped. The northern part of the bay and Chapman Cove remain conditionally approved and must be closed to harvest when one inch or more of rain falls in a 24-hour period.

Samish Bay Pollution Problems Continue

The goal to reclassify Samish Bay to Approved this year has fallen short. Water quality tests show that after rain storms the Samish River still carries trillions of fecal coliform bacteria into Samish bay. Because of this, 4,000 acres of Samish Bay remains classified as Conditionally Approved. In just the first six months of 2012, we closed the bay almost 60 days because of pollution events.

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An intensive multi-party effort, involving Skagit County, state and federal government agencies, shellfish growers, Tribes and volunteers began in 2009. The potential sources of pollution in the watershed include livestock manure, on-site sewage systems and wildlife. Pollution corrections are mainly focused on livestock operations and several landowners are under orders to change their practices. More than 1,500 on-site sewage systems have been inspected and less than two percent were failing. Wildlife, especially waterfowl, are abundant in the area during the winter, but pollution occurs primarily in the spring when livestock are turned out to pasture. Efforts to correct the problems in Samish Bay are continuing.

OSWP Listservs

Get the latest updates via email by joining our office listservs. You must join each list individually, and you can unsubscribe at any time.

Shellfish – Notifications that impact commercial shellfish operations such as closures, rulemaking activity, vibrio illnesses, newsletters, etc.

Wastewater – General information such as updates on RS&Gs, proprietary product lists, TAG agendas, newsletters, and other general topics.

Wastewater-LOSS – Large On-site Sewage System issues and updates.

Pathogen Management Funding for Puget Sound

Our office received one of six grants that EPA provided to Washington state and tribal agencies to implement the Puget Sound Action Agenda. In July, OSWP received the third year of funding of the six year grant to carry out pathogen management actions from the Puget Sound Action Agenda. Third year funding of $3.6 million will bring the total to more than $12 million received from the federal National Estuary Program since 2011. Over 70% of the funds will help local governments improve management of sewage systems, livestock, vessels and other pathogen sources that threaten shellfish growing areas and swimming beaches. We're also investing in projects to improve understanding of pathogens and making improvements in our data management and public notification systems to prevent disease. The grant helped quickly ramp up a program this summer to monitor and inform the public about a biotoxin recently found in Puget Sound shellfish which causes Diarrhetic Shellfish Poisoning. OSWP developed a multi-year funding strategy for the Pathogen Grant along with a third year work plan which is available on our website along with information about specific awards and projects.

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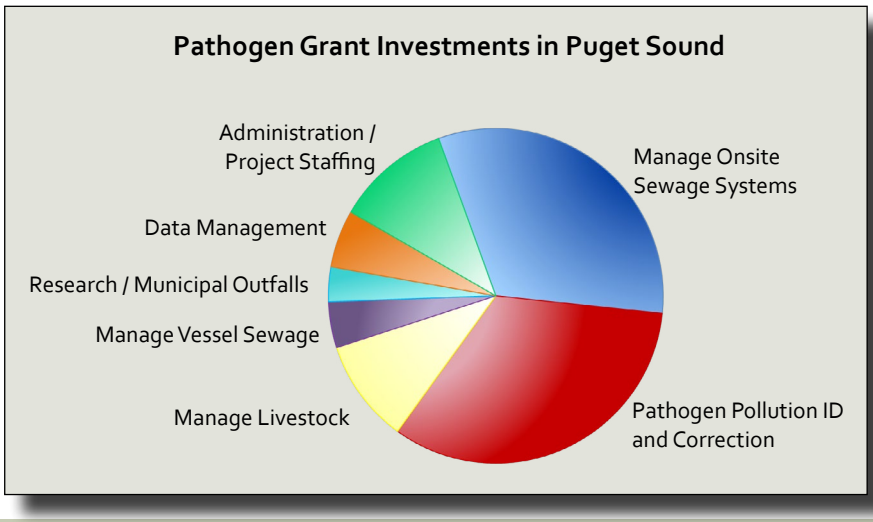

Vibrio Updates

This year we closed a number of commercial growing areas for oyster harvest because multiple *Vibrio* illnesses were associated with these areas. They automatically re-opened on October 1 as established in the Washington *Vibrio* Rule. An area in mid Hood Canal, north of Sisters Point to Sunset Beach, was also closed mid-July to mid-September because of extremely high bacterial counts. To date the number people ill from *Vibrio* this year is 59; 49 from commercial harvest and 10 from recreational harvest around Puget Sound.

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We were able to hire two interns this summer to help with *Vibrio* monitoring and assist in several studies. They monitored 16 areas that had been implicated in *Vibrio* illnesses in the past, and helped with the Oakland Bay pilot project, a study that looked at levels of *Vibrio parahaemolyticus* in oysters placed in natural wet storage in Penn Cove, and a study looking at illnesses and *Vibrio* levels in shucked oyster meats.

Monitoring bacterial loads in shellfish meats might be a way in the future to prevent instead of react to illnesses.

We implemented a "pilot project" in Oakland Bay this year. This project closed Oakland Bay when oyster meats showed elevated numbers of *Vibrio* species, and reopened the bay when levels declined. Growers in the area voluntarily approved of this approach to see if *Vibrio* illnesses implicating Oakland Bay would decline. The growing area was tested weekly; it closed and reopened twice this summer due to high *Vibrio* levels.

Oakland Bay was not implicated in any Vibrio illnesses this year, so the pilot project appears to have been successful.

Shellfish Program Upgrading Databases

We use a number of databases to capture information about growing areas such as water sample test results, biotoxin, vibrio, and pollution closures, harvest site information, and other data that we use to protect public health from shellfish-related illness. These databases are out of date, unstable, and limited in their ability to incorporate new technologies. Plus, extracting data into a format that stakeholders and the public can easily access is difficult and time consuming.

We have begun the process to consolidate our many databases into one system. We are currently working with an in-house business analyst to define what we need from a comprehensive application. Scheduled for completion in late 2013, the new application will combine all of our data that can be accessed through points on a map. The final step will be to provide this information to the public and industry on a new shellfish safety web site that will allow users to view site-specific, real time information about recreational and commercial harvest, closures and advisories, sampling results, and more.

Report Tsunami Debris 1-855-WACOAST

On March 11, 2011 a devastating earthquake and tsunami hit Japan. Eighteen months later, the debris swept into the ocean by the tsunami is washing up on our shores. Experts estimate the debris will continue to show up on coastal beaches sporadically over the next several years. The Department of Ecology is directing citizens to call their toll free reporting and information line 1-855-WACOAST if they spot potential tsunami debris. For more information visit Ecology's web page on tsunami marine debris http://marinedebris.wa.gov/ or join their marine debris listserv http://listserv.wa.gov/cgi-bin/wa?A0=WA-MARINE-DEBRIS.

Staff updates

Megan Schell

Megan is our new Office Manager, and steps into this position recently vacated by Ashley Bazarov who accepted a promotional opportunity. Megan earned a bachelor's degree in English/Arts from the Evergreen State College. She comes to us from the Department of Natural Resources, where she worked for eight years in various administrative capacities in that agency's Forest Practices, Timber Sales, and Appraisal units. Megan grew up in western Washington (her grandparents had a place near Lilliwaup) and is looking forward to working with people and activities that protect and restore our marine waters.

Rose Oram

Rose recently began working for the wastewater section as their administrative assistant. She has a Training Specialist Certificate from the University of Washington, and is 25 credits away from a Bachelor's degree in communications, minors in public relations and marketing, and additional emphasis in business.

Rose spent 26 years at Labor and Industries working with executive and risk management staff at all state agencies, including DOH, to review safety practices and technical reports, give workshops, and assist with return to work, loss control, and incentive programs.

She has two grown daughters, and two grandchildren who are the light of her life. She volunteers with groups for homeless teens, Stand up For Kids, the Little Red Schoolhouse project, YWCA, The Backpack Project, Grub, Restore, and does fundraising and gathers donations for several other programs. She likes gardening, travel, yoga, reading, music and loves the Pacific Northwest. She does frequent day hikes, and walks her year old rescue dog that she's training and nursing back to health.

Laura Wigand

Laura Wigand is our new Hershman Marine Policy Fellow. Originally from Rhode Island and Maine, Laura earned her undergraduate degree in Environmental Studies, Peace and Conflict Studies, and Religious Studies at Guilford College in North Carolina. After graduation she interned briefly in Geneva for the UN, then worked in Washington D.C. for several years before the University of Washington's graduate school lured her to the west coast. On this side of the country Laura interned for the World Wildlife Fund's arctic program, working with marine life in Alaska.

Laura would like to do more with marine science and policy issues for Washington State. We will definitely give her that opportunity as we hope to bring our *Vibrio* Control Plan into current times with a more proactive approach. Her main project will be supporting development for predictive modeling for *Vibrio* and also hopefully for harmful algal blooms. There's much to do and Laura will be helping us move forward with this work. If she's able to find any spare time within the next year (!) you'll likely find her hiking, rock climbing, or kayaking.

The Marc Hershman Marine Policy Fellowship is a program that matches outstanding, highly motivated graduate students with state agency "hosts" for a one-year paid fellowship. Washington Sea Grant created the Hershman Fellowship in 2008 to introduce students to ocean and coastal policy and enable state agencies to benefit from the students' knowledge and experience on those subjects.

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