



You and Your MRA

Published Summer 2011
 Supplement to the *Septics Edition* newsletter for properties in the MRA

“Marine Recovery Area” for Clallam County

The MRA is located in eastern Clallam County as shown in pink on this map. It was established for this area because parts of Dungeness Bay are closed for commercial and recreational shellfish gathering, and there are bacterial pollution problems in some of the streams that empty into the bay. Human waste, most likely from poorly functioning or failing septic systems, are contributing to these problems according to recent research.

2000 from approved status to conditional or prohibited. The closure area expanded in 2001 and again in 2003.

Local natural resource managers knew the climb out of a downgrade would be steep, since DOH looks at data over the long term to make its determinations. Water quality would need to improve consistently over time – potentially decades – for approved status to be restored.

Grade: Improving

The technical group overseeing activities intended to bring about an upgrade in the Bay calls itself the “Clean Water Work Group,” a coordinating body for on-the-ground improvements to protect water quality as well as research and ongoing monitoring to track the status of

Demolition of the former Dungeness Bay “Oyster House” in February 2010. The profitable oyster industry in the Bay was lost starting in the late 1990s after closure of commercial shellfishing by the state Dept. of Health, due to increasing bacterial pollution in the Bay. The County acquired the property from the Port of Port Angeles in 2001 to create “Dungeness Landing County Park.” The state recently upgraded the shellfishing status offshore from prohibited to conditional (seasonally-open). See related article above and map.

Photo courtesy Clallam County Parks Department

Are there Dungeness Bay oysters in your future?

Remember the day when we could buy fresh, local oysters from Dungeness Bay? The Jamestown S’Klallam Tribe and others maintained commercial oyster beds at what is now Dungeness Landing County Park until 2000, when WA Department of Health (DOH) first officially “downgraded” the Bay due to high bacteria counts.

The commercial shellfishing downgrade forced the closure of the Bay’s oyster industry. Jobs were lost. Recreational harvesting was restricted as well for both oysters and clams. It was a sad juncture in Sequim’s history. Our idyllic countryside was suddenly put on par with more urban neighboring counties with multiple polluted harbors and bays. Locals found it impossible to believe that our beautiful, rural watershed wasn’t as idyllic as it looked.

Not Meeting Standards

Certification of oyster beds for commercial harvest is regulated by DOH in order to meet interstate food sanitation guidelines from Federal agencies, and is based on marine water quality standards. Monthly samples from monitoring stations in the Bay began to exceed standards in 1997, leading to the shellfishing downgrade in

fresh-water inputs to the Bay. The group includes staff from state and local agencies and the Jamestown S’Klallam Tribe working with public and private land-owners to help ensure that wastewater from farms and septic systems, and stormwater runoff from everywhere, is treated and cleaned up before it reaches natural drainages including streams, wetlands, the marine shoreline, or groundwater aquifers.

Of particular concern in Dungeness Bay has been the level of fecal coliform contamination resulting from a mixture of human and animal wastes. “Studies by the Tribe, Battelle, and WA State agencies showed that the bacteria came from many dispersed sources,” says

(Con’t on pg. 4)



Onsite Septics, Water Quality, & Shellfish Websites

Onsite septic systems in general:

“Septics Edition” newsletters:

Surface & groundwater quality reports:

Dungeness Bay shellfishing background:

Biotoxin info for Recreational harvest:

Commercial harvest info:

<http://www.clallam.net/HHS/EnvironmentalHealth/onsite.html>

<http://www.clallam.net/HHS/EnvironmentalHealth/ehnewsletter1.html>

<http://www.clallam.net/environment/index.htm>

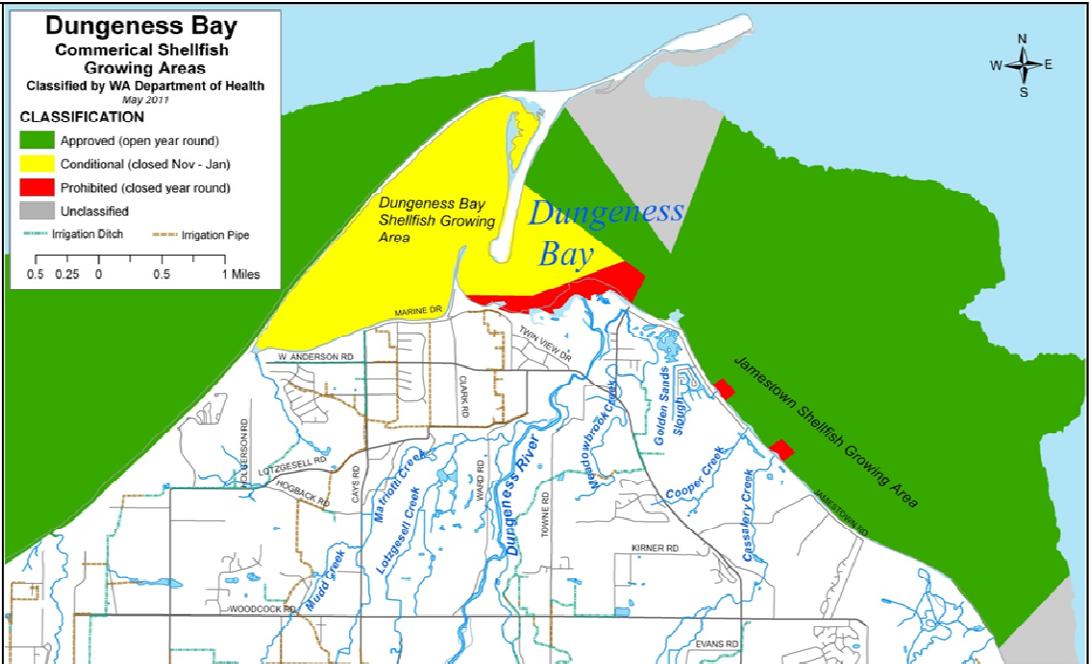
http://www.clallam.net/HHS/EnvironmentalHealth/shellfish_downgrade.html

<http://www.doh.wa.gov/ehp/sf/recshell.htm>

<http://www.doh.wa.gov/ehp/sf/grow.htm>

This illustration shows the recently-updated status of shellfish growing areas in Dungeness Bay.

If persistent levels of bacterial contamination exist then an area is classified as "Prohibited" or "Conditional," depending on the seasonality of the pollution.



GOOD NEWS!

- ☺ *A low interest loan program to fix failing septic systems will be coming to the Dungeness Marine Recovery Area (see map on pg. 1) in August 2011.*
- ☺ *If you have a problem septic system but do not think you can afford to fix it then this program is for you!*
- ☺ *Clallam County Environmental Health has been working with Enterprise Cascadia to provide the loan program.*
- ☺ *Contact us for more information at 360-417-2593.*

Nitrates in Drinking Water

Why are nitrates so unpopular? After all, plants love them and they're even added to our wine and food for preservative! Nitrates are like bullies when they get into groundwater – they creep around and won't leave a decent aquifer alone. Plus, they probably started out as revolting wastewater or festering fertilizer. It's no wonder we get upset when they assault a perfectly innocent drinking water well leading to someone's kitchen tap.

But back to how those sneaky nitrates got into our groundwater. To be blunt, one route they take is straight through us: the average household produces 20-50 lbs of nitrogen waste each year (see box on pg. 3, "Septic System Type"). But, you say, our septic system is a miniature wastewater treatment plant, removing all the pollutants we rinse and flush, sending clean water back into the environment – right? No, not exactly.

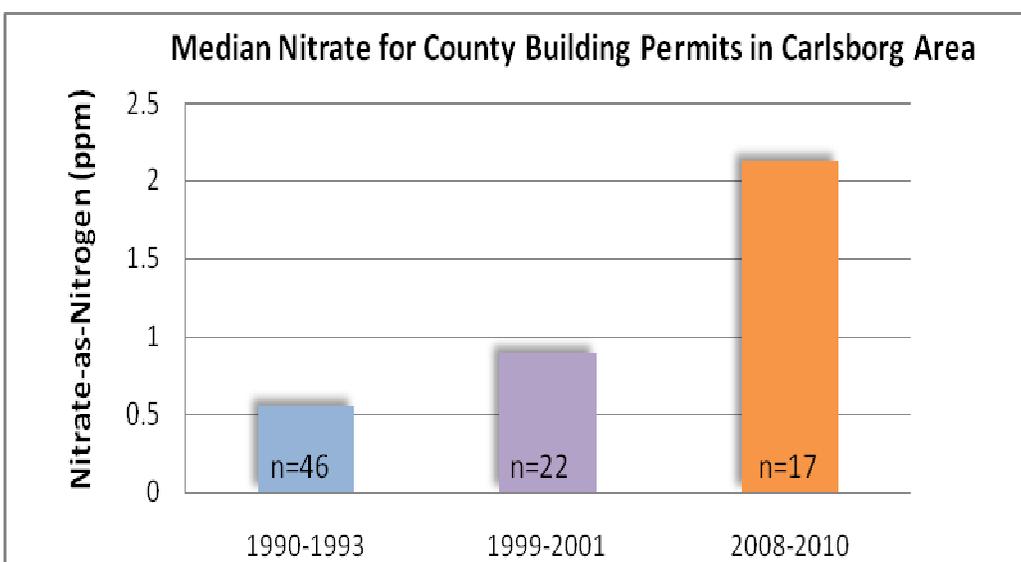
Onsite septic systems were initially designed to utilize the properties of native soils to filter out disease-causing bacteria (and other nasties) from human waste. And they do a bang-up job when properly designed, installed and maintained, and in sandy-loam soils at

The drinking water standard for nitrate* is set low enough that health issues won't present until a good deal of contaminated water is ingested. However, those with a compromised digestive system (including infants and the elderly) are at higher risk. For specific information on health effects, consult Washington Dept. of Health at <http://www.doh.wa.gov/ehp/dw/Programs/nitrate.htm>. In the Sequim-Dungeness region, the background level of nitrate-as-Nitrogen in groundwater is less than 1 mg/L (aka 1 ppm). *10 parts per million [ppm] as Nitrogen

rural densities. But as septic systems have become more prevalent – regardless of soil type – and our waste has become more laden with chemicals, we have

learned that the ability of the soils and receiving groundwater to assimilate some contaminants is limited. Special technology is sometimes required in certain soils, or to achieve adequate treatment of many compounds – such as nitrogen.

In the Carlsborg Urban Growth Area (UGA) there is a requirement for many new septic systems to have nitrogen-removal capability, such as from an "Aerobic

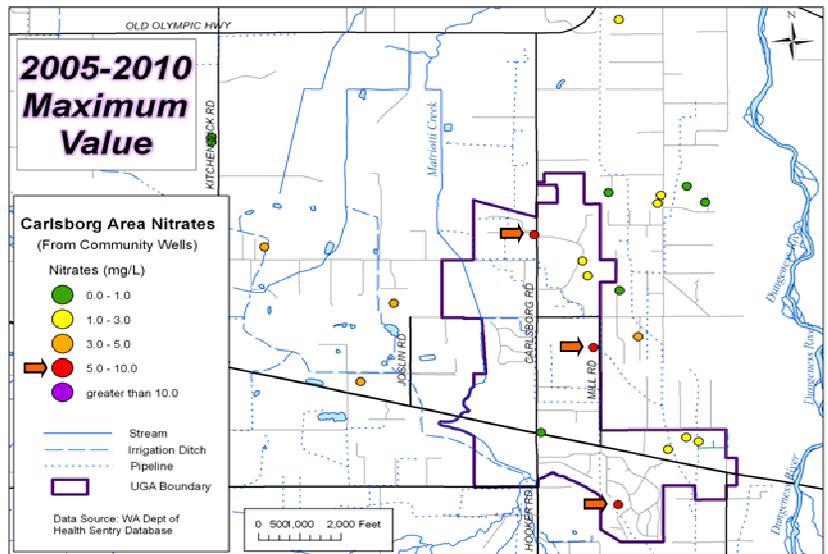


Treatment Unit,” for example. The requirement was originally imposed to protect groundwater quality because the coarse soils lack organic content, the groundwater is shallow, and the higher densities of a UGA create unwanted risk of contamination to the aquifer. The illustrations here convey the trouble nitrates are already causing in Carlsborg-area groundwater. Planning for a community sewer there is underway for public health protection as well as to foster economic health, protect water quality and wildlife, and comply with state requirements for areas designated for urban-type growth.

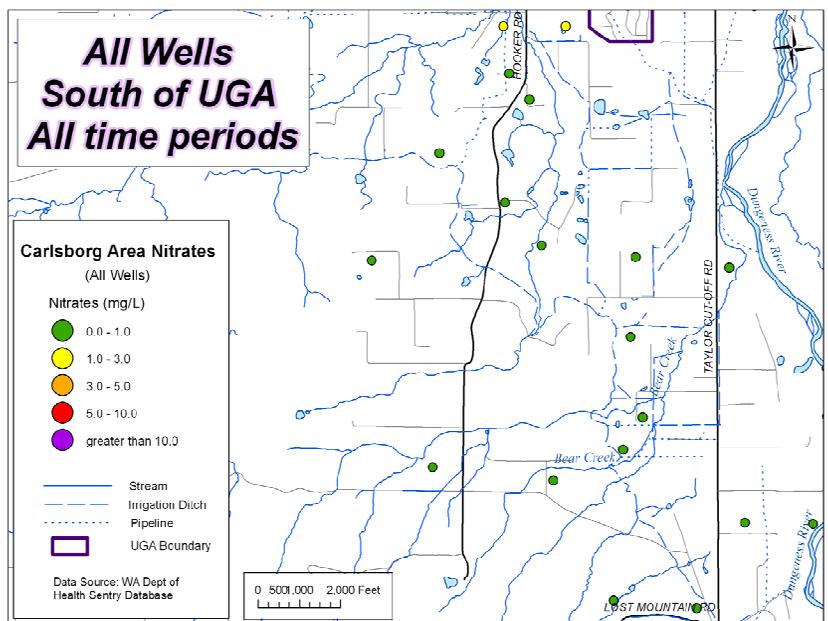
And if nitrates in our aquifer weren't creepy enough, what are the nitrates telling us about the potential for other shady outsiders that could be trickling down underground? A lot. Due to the particularly “mobile” character of nitrate (that is, it moves easily through soil and water), above-background concentrations indicate that activities at ground level are degrading water quality down below. As mentioned, fine-grained soils with good organic content effectively filter out many contaminants, protecting our drinking water supply.

It is also important that every water well have a proper surface seal of bentonite clay, extending down to at least 18' by law, to prevent shallow groundwater from flowing down the space alongside the well casing. See the Summer 2011 Septics Edition “Water Column” for a description of a good well seal.

Stand up to the nitrate bully by making sure your onsite septic system is working as it should, and that your well is properly sealed!



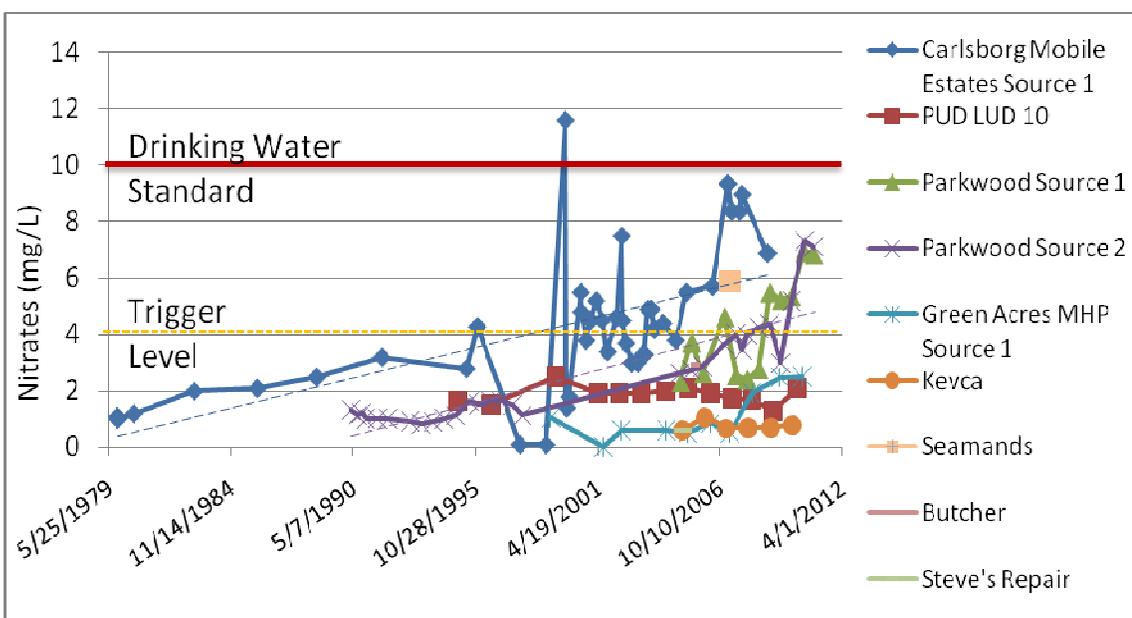
Nitrates in and around Carlsborg are elevated above the natural/background level of 1 mg/L for most public water systems located in this area. Some wells (marked in red) had results above 5 mg/L. Source: Washington State Dept. of Health Sentry Database for public water systems, 2005-2010.



Nitrates in the region south (upgradient) of Carlsborg are generally within natural/background levels. Source: Clallam County building permit database for three periods studied (1991-93, 1999-2001, and 2008-10).

Septic System Type	Annual Nitrogen Loading (conservative)	Estimated Nitrogen Removal	# of systems* in Carlsborg UGA	Estimated Annual Loading
Conventional	20 lbs/yr	About 10%	260	4,680 lbs N
Alternative/pressurized	20 lbs/yr	About 25%	206	3,090 lbs N
N-Reduction	20 lbs/yr	About 50%	77	770 lbs N
Total: appx. 8,540 lbs (4.3 Tons) N per year				

*# of systems or # of connections (in the case of a community system)



Carlsborg UGA Group A and B public water system nitrate data from WA Dept. of Health. Trend lines have been added for Carlsborg Mobile Estates Source 1 and Parkwood Source 2. Note that Carlsborg Mobile Estates Source 1 was replaced with a deeper well in 2007. All wells except for PUD and Kevca obtain water from between 60' and 126' depth (within the shallow aquifer).

(Con't from pg. 1)

Hansi Hals, environmental planning manager for the Tribe. Battelle's research involved analyzing the DNA of the bacteria to match it to those found in specific animals. Results indicated that birds were a primary contributor for the period studied, and implicated humans as well.

While there are various ways that bacteria from human waste probably enters the Bay, Clallam County Health & Human Services (HHS) has a direct role in regulating household waste from onsite septic systems. Since the County onsite septic code was updated in 2008, the Dungeness watershed became part of a "Marine Recovery Area" (MRA), where the County could focus efforts on improving Dungeness Bay. Specifically, Clallam County is identifying failing septic systems in the MRA and encouraging owners to make the needed repairs. Janine Reed, operation and maintenance program staff with the HHS Environmental Health Section, says, "It's really awesome to see so many homeowners who know the importance of maintenance. They have opened their doors to me, showed me where their system is located, and if they learn it's failing they've repaired it."

Other identified sources of bacteria in the Bay include farm animals and pets – evidence that wide-spread community activities are also impacting water quality. "Bird and wildlife sources are mostly out of our control, but bacteria derived from domestic and community activities is within our control, and we should concern ourselves with those activities," stated Liz Maier, water quality specialist with HHS Environmental Health Section.

Technical work group members have been coordinating efforts for over a decade now, and their approach seems to be working. "The fecal pollution index appears to have

"It's really awesome to see so many homeowners who know the importance of [septic system] maintenance."

Janine Reed, Clallam County HHS Environmental Health

peaked in 2004 and is dropping," Hals said. "The data indicate that the community's clean-up efforts have been effective. The solution has been a combination of farm planning by the Clallam Conservation District, septic system fixes by Clallam County, and even a pet waste information program by the Jamestown S'Klallam Tribe."

Whatever the exact sources of bacteria are, and whichever mitigating activities might have been effective, the bacteria counts have consistently dropped to the point that DOH upgraded approximately 500 acres in outer Dungeness Bay from Prohibited to Conditionally Approved, in April 2011. (illustration top of pg. 2 shows current status)

What Does the Upgrade Mean?

Is it time to celebrate? Pop the champagne?

"Definitely," says Andy Brastad, Environmental Health manager in HHS. "The residents of the Dungeness watershed have been working hard to improve water quality in rivers, streams and marine water. It's good to see a reward for this effort. We all need to keep up the good work."

PACIFIC OYSTER *Crassostrea gigas*

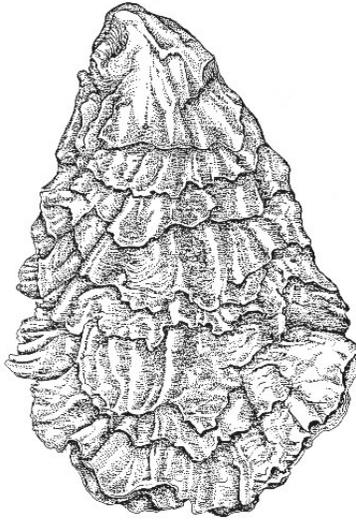


Illustration courtesy of NOAA.

Joe Holtrop, manager of Clallam Conservation District, agrees. "The District is delighted that the years of hard work piping irrigation ditches to eliminate contamination from irrigation tailwaters and working with landowners to install conservation practices is finally paying off. Hopefully this is a sign of even more improvements to come."

Some people may actually hold off celebrating until the entire Bay returns to "Approved" status *without* conditions. For example, an additional 500 acres is now approved for commercial growing – but with the condition that it's seasonal, i.e., only during non-winter months. Plus, the tidelands nearest the shore at Dungeness Landing County Park are still prohibited year-round. Bacteria counts remain high all over the Bay in winter, and near the mouth of the Dungeness River year-round – enough

so that *recreational* harvesting is only allowed in the inner Bay in non-winter months.

Dana Woodruff, PhD, and lead Battelle scientist for the recent Dungeness Watershed studies is cautiously optimistic. "Overall, I think the change is very encouraging, but we need to understand more about why the positive change is occurring only in certain areas of the Bay and during part of the year. This will better inform the continued cleanup strategy in the remainder of the Bay and watershed."

Will the oyster industry return to Dungeness Bay? Kelly Toy, shellfish program manager for the Tribe, indicated there is "no specific plan to re-start operations, but the Tribe is very pleased to have the opportunity to consider our options."

Take a Deep Breath, and then...

Can we sit back and relax? Wouldn't it be nice if we could dig for clams anywhere in the Bay like we used to, any time of the year? If waste from our homes, pets, farms and communities never again made it into streams, bays or aquifers? This is a terrific vision, full of hope – and many local residents already practice good stewardship through their daily actions. However, with new activities, new residents and visitors, and old habits resistant to change, protecting water quality will require ongoing vigilance from the entire community to avoid unintended consequences.

Clean Water Work Group members understand their mission is not yet complete. After taking a deep breath, they will resume efforts to eliminate sources of contamination and runoff, and continually encourage landowners to maintain their onsite septic system, keep pet waste out of the environment, use best management practices on farms, and avoid stormwater runoff from their property.

"If we protect our gains so we don't see a back-slide, another upgrade could be in our future," notes Maier. "The way it works is that a couple samples with high bacteria counts affect the data set for several years – and then it could be a long wait until the next upgrade."

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Sources: Direct quotes from Clean Water Work Group members; Jamestown S'Klallam Tribe press release, 5/13/11, "Good News for a Change: Dungeness Bay Shellfish Status Upgraded"; and WA Department of Health, March 2011, "Addendum to the September 2009 Sanitary Survey of Dungeness Bay."