Questions & Answers: DEQ Permits and Industrial Development in the Lower Columbia River Area

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State of Oregon
Department of
Environmental
Quality

Northwest Region
Air Quality Program
Water Quality Program
2020 SW 4th Avenue
Portland, OR 97201
Phone: (503) 229-5263
(800) 452-4011
Fax: (503) 229-6945

www.deq.state.or.us

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By: Marcia Danab
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Q&A: Lower Columbia River

In January 2007, the Oregon Department of Environmental Quality (DEQ) hosted meetings in Knappa and Clatskanie, to share information and talk with community members about significant new industrial developments taking place or proposed in the Lower Columbia River area. These developments will require environmental protection permits from DEQ.

At each meeting, DEQ staff gave a short presentation to explain DEQ's role in permitting and regulating new development. After the presentations DEQ staff spoke with citizens who asked questions. This document provides answers to their most commonly asked questions.

How does the land use process fit in with the DEQ permitting process?

The terms "land use process" or "land use approval" refer to the process used by local planning authorities to designate zones for particular uses, such as residential housing, commercial, industrial, farming, etc., and the process for approving proposed new facilities. The local planning authorities are usually the city or county governments that hold jurisdiction over the area in which the facility will be located.

In most cases, owners of businesses or industrial facilities must obtain land use approval from the local land use authority before applying for any environmental permits from DEQ. A signed Land Use Compatibility Statement (LUCS), which must be submitted with a DEQ permit application, is the local government's approval that a proposed facility is consistent with its local land use plan. Once the local government makes its land use decision, generally the DEQ permitting decision must be compatible with the local decision.

The process is a little different for proposed new energy facilities (i.e., facilities that produce electricity). Many energy facilities in Oregon must obtain an Energy Facility Siting Council (EFSC) Site Certificate, and as part of their process, the EFSC may accept the local government's land use decision or make its own. The DEQ permit process proceeds at the same time as the EFSC Site Certificate process, and DEQ often issues permits at about the same time the EFSC grants a Site Certificate

Who is "FERC" and what is DEQ's role with them?

FERC is the Federal Energy Regulatory Commission. FERC is similar to Oregon's Energy Facility Siting Council (EFSC) in that both are the primary agencies that must give approval for certain types of energy facilities. FERC regulates the interstate transmission of electricity, natural gas, and oil. FERC also has nationwide authority for licensing hydropower projects and approving proposals to build Liquid Natural Gas (LNG) terminals and interstate natural gas pipelines. EFSC is not involved in LNG facility approvals. For most other energy facilities in Oregon, including coal gasification plants, EFSC has siting and approval authority and FERC is not involved. FERC may still be involved with transmission of electricity or gas. If a coal gasification plant does not produce electricity, neither EFSC nor FERC have siting and approval authority; the local land use planning agency has that authority.

Congress gave FERC new responsibilities under the Energy Policy Act of 2005 including the authority to regulate LNG facilities. However, Congress did not give FERC authority over issuing air or water permits for LNG facilities. Proposed LNG facilities must obtain a DEQ permit before they can operate. For more information about FERC, visit: www.ferc.gov

Can DEQ deny a permit?

If a facility meets, or will meet the applicable requirements, then DEQ must issue the permit. A permit can only be denied under limited circumstances, for example, if the proposed facility could not meet the applicable standards and rules. If DEQ denies a permit because the facility would not meet air or water quality requirements, the applicant could redesign the facility to meet the requirements and submit a new application. Alternatively, if the applicant does not agree with DEQ's denial of the permit, the applicant could request a hearing to challenge DEQ's decision.

Give examples of where DEQ received a complete NPDES application and decided to deny the permit.

In the early 1990s, DEQ received a National Pollution Discharge Elimination System (NPDES) permit application for the siting of a new paper mill on the Columbia River, and after reviewing the application, DEQ denied the permit. In the past 30 years, DEQ has received only two water quality permit applications for major new facilities in Oregon; one of those was denied and one was approved.

Permit denial is rare because the vast majority of proposed facilities are pre-designed specifically to meet requirements well before the decision to apply for a permit.

What role will DEQ play with the new LNG and coal gasification projects proposed for the Lower Columbia River?

The proposed LNG and coal gasification projects must obtain permits from DEQ for air emissions and water discharges.

LNG facilities use natural gas fired burners to heat and vaporize the LNG. The burners emit air pollutants from burning natural gas. These emissions would be regulated under a permit from DEQ.

Coal gasification facilities use the gas they produce to fire one or more gas turbines to generate electricity. Burning the gas in the turbine(s) emits air pollutants, and these emissions would be regulated under a permit from DEQ.

To protect water quality, DEQ regulates wastewater from facilities through National Pollution Discharge Elimination System (NPDES) permits, which regulate potential pollutants including Biochemical Oxygen Demand, Chemical Oxygen Demand, Total Suspended Solids, ammonia, nitrate/nitrite, sulphate, magnesium, chromium, and pH.

The proposed Bradwood Landing LNG facility plans to double its capacity after they begin operations. Does DEQ take this into account despite a permit application that shows a smaller amount of capacity?

An applicant has two options for applying for permits if planning to double capacity after beginning operations. First, the applicant can apply for permit limits that reflect the full capacity of the facility, even if they don't plan to install the full capacity immediately. Alternatively, the applicant can apply for a permit only for the initial (less than full) capacity. In that case, the applicant must apply for and receive a modified permit before they can construct additional capacity. DEQ reviews the requested additions, as if the request were a new permit. DEQ requires the facility to meet the appropriate environmental standards for the new emissions or discharges, including any additional pollution control requirements that are triggered.

Are the first nations (tribes) involved in the siting and permitting of these proposed new industrial facilities?

FERC, rather than DEQ, will make decisions about siting the LNG facility, and tribal nations have a voice, as do others, in FERC's process of soliciting public input. DEQ will solicit input from tribal nations, community members and the general public on the air and water quality permit applications that the facilities submit.

DEQ has no direct role in FERC's approval process for siting LNG facilities, but LNG facilities must obtain permits from DEQ before they can operate. DEQ must determine that the projects are compatible with local land use regulations before it can issue permits.

Do ships need air and water quality permits? Who regulates air and water emissions (ballast water) from ships? A federal district court recently ruled that a permit must be issued for ballast water discharge. Is DEQ looking into that?

Ships are not required to have air quality permits. DEQ does not have the authority to regulate ship air emissions. Ship emissions can be regulated by the U.S. Environmental Protection Agency (EPA), but at this time EPA's efforts are limited to proposing tighter emissions standards for new ship engines.

EPA issued rules in 2003 that apply to Category 3 engines which are found on large commercial marine vessels, but only for those that are US flagged. The standards adopted conform to an international treaty MARPOL Annex VI, which had not yet met the minimum country adoption standards in order to be in effect.

The United States will be participating in discussions under the International Maritime Organization to advocate a new set of more stringent emission standards for marine diesel engines which would apply to engines on both US and foreign vessels.

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There is currently no requirement for ships to obtain National Pollution Discharge Elimination System (NPDES) permits for their discharge of ballast water. State and federal law allows ships to discharge ballast water and take in ocean water as they pass from port to port. However, Oregon law prohibits ships from discharging ballast water into waters of the state. (Oregon statute 783.620) A recent federal district court case decision to require a permit for ballast water discharge is currently under appeal by the EPA. DEQ will continue to track the progress of this appeal. In the interim, DEQ will not issue NPDES permits for ballast water discharge activities.

What about cumulative impacts on air and water quality? How does DEQ evaluate cumulative impacts? Is there an upper limit that emissions are measured against?

For air quality, it is very difficult to assess cumulative impacts on air quality from multiple sources. Typically, a cumulative impact assessment involves developing an emission inventory of all sources of air pollution, including large industrial facilities, smaller commercial facilities, residential sources, and mobile sources like cars and trucks. This inventory must be paired with local weather information in a computer model that estimates the amount of pollution that individuals breathe.

This estimate is then compared to either a health standard, if one exists, or a benchmark that serves as a guide for pollution-reduction purposes. If a computer model estimates that a health standard or a benchmark may be exceeded, monitors are installed to collect air quality data to verify the modeling results. There are competing priorities for this kind of monitoring statewide. DEQ evaluates where to locate monitors based on the areas where the greatest problems are expected to occur, such as in the Willamette Valley and the Medford, Ashland and Klamath Falls areas.

For water quality, DEQ's Total Maximum Daily Load (TMDL) Program assesses cumulative impacts of pollution in a specific watershed and identifies pollution discharges from various industrial, business and municipal sources as well as non-point (runoff) sources. This involves large modeling efforts to describe river conditions as water moves through the watershed.

DEQ uses that information in developed river/estuary models to examine the likely effects of pollution discharges in the river at the time of discharge. DEQ's intent is to determine whether state water quality standards would be exceeded at any point in the river outside of the designated mixing zones for individual point sources. DEQ requires permitted facilities to analyze and model their discharges to ensure that state water quality standards are met.

DEQ does not currently have the resources or information needed to model the Columbia River. DEQ needs more detailed information on the concentration of the pollutants each facility discharges, where the discharge occurs, the volume of the discharge, the timing of the discharge, and specific information on river conditions.

Are you going to add all the emissions numbers together from all the proposed new industrial facilities to get a picture of the overall emissions impact to the area?

For air quality, if a new facility proposes air emissions above the EPA Significant Emission Rates, DEQ requires the owner/operator to perform computer modeling to demonstrate that the emissions will not exceed a National Ambient Air Quality Standard (NAAQS) for six common air pollutants (ground-level ozone, carbon monoxide, particulate matter, sulfur dioxide, nitrogen dioxide, and lead). EPA has determined that these air pollutants cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare.

In most cases, DEQ air permit rules do not require a facility to compare proposed new emissions to the emissions of existing sources. DEQ does not have ability to deny a permit or impose more stringent limits based on such a comparison. However, in response to requests from community members, DEQ and the Washington Department of Ecology have compiled emissions information on a county-wide basis from both Oregon and Washington Lower Columbia counties to provide a context for the emissions from an individual facility. That emissions inventory is provided in Appendix A at the end of this document.

If a facility is large enough to trigger an additional requirement known as Prevention of Significant Deterioration (PSD) and the modeled emissions are above certain levels, the owner must model the combined effects of the nearby existing facilities plus the emissions from the proposed facility to ensure that the national air quality standards and PSD increments for the area are not exceeded.

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The DEQ Water Quality Program does not currently have the resources or information needed to calculate the overall impact to the Columbia River.

Where do air and water quality standards come from? Are they arbitrary or objective and health-based?

For air quality, EPA developed the National Ambient Air Quality Standards (NAAQS) to be protective of human health. DEQ uses these standards as the basis for air quality permits issued to businesses and industry in Oregon.

For water quality, the federal Clean Water Act (CWA) requires states to develop water quality standards. Under the CWA, each state must identify and designate the beneficial uses of the states' waters. States must then establish numeric or narrative standards that will fully protect those designated beneficial uses. The Oregon Administrative Rules (OAR 340-041) describe the beneficial uses designated for all the rivers in the state and interstate waters along Oregon's border. These rules also identify the specific water quality standards associated with each water body.

DEQ develops recommendations for water quality standards for all Oregon waters. The standards are adopted by the Oregon Environmental Quality Commission and must be approved by EPA.

Does DEQ have models to check a company's projection of air and water emissions?

For air quality, DEQ does not have models to check a company's projection of air emissions. However, a company's permit application must identify the information source used to calculate emissions from a proposed facility. DEQ examines this information and compares it to similar sources to determine whether the estimates are reasonable. In addition, DEQ requires most large facilities to test emissions to prove that emissions are no higher than what the applicant initially requested and calculated.

For water quality, during the permitting process, DEQ requires facilities to conduct a mixing zone study which evaluates proposed discharges and impacts at the point of discharge. In most cases, permit applicants use models to do this. The applicant must also provide DEQ with basic data on the wastewater discharge, including the discharge pipe, discharge flows, discharge concentrations, river flows and river concentrations. DEQ uses this information to analyze the discharge and to establish specific effluent limits in the permit.

How much enforcement of air and water quality standards does DEQ carry out? How do you learn about violations?

DEQ cannot knowingly issue a permit that allows a violation of an air or water quality standard. DEQ's air and water quality permit programs are designed to be protective of standards.

For air quality, DEQ enforces air emission permits by periodically inspecting permitted facilities, and by requiring the facilities to monitor and report their emissions. With only a few exceptions, enforcement action is taken for all permit violations.

For water quality, DEQ conducts inspections of permitted facilities and if the facility is violating its permit, DEQ takes the appropriate compliance or enforcement action. This can include issuing a warning letter or a preliminary enforcement notice, which may then lead to assessment of a civil penalty.

DEQ's website provides a monthly news release of the civil penalties; see www.deq.state.or.us/news/news.asp.

For both air and water quality permits, DEQ also learns about violations through public complaints. DEQ follows up on these complaints to determine if the facility is indeed violating its permit and then takes the appropriate compliance or enforcement action. To report a complaint, call 503-229-5263 and ask for a complaint coordinator, or email nwrcomplaints@deq.state.or.us.

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What is the impact of the new CO_2 injection well technology proposed by the coal gasification plants and how does it figure into the DEQ permit process? Will the bedrock turn into limestone?

CO_2 accounts for the majority of greenhouse gas in the atmosphere. As concern about global warming and climate change increases, there is interest in underground CO_2 injection because of the potential for this approach to reduce greenhouse gas emissions. The general idea behind underground CO_2 injection is to inject it deep into the earth so that it will be trapped and prevented from escaping back into the atmosphere. CO_2 injection is currently used to enhance oil recovery from depleted oil wells. DEQ does not know what effect CO_2 injection may have on the rock below the Lower Columbia River area.

Underground CO_2 injection is currently prohibited by Oregon's Underground Injection Control (UIC) rules, which are based on EPA's UIC rules. DEQ believes that EPA is likely to change these rules to allow CO_2 injection; however, we don't know when this change might be made.

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Specific Air Quality Questions

Do Washington and Oregon coordinate air monitoring? What kind of monitoring is there in the Longview area?

The Southwest Clean Air Agency (SWCAA) in Washington and the Oregon Department of Environmental Quality (DEQ) coordinate air monitoring for the Portland-Vancouver ozone maintenance plan. DEQ also conducted the analysis in SWCAA's air quality monitoring project for air toxics in Longview in 2004-2005.

Will DEQ install air monitors in the Lower Columbia area?

DEQ does not currently plan to initiate air monitoring in the Lower Columbia area due to lack of funding. The Oregon Legislature is now considering requests to increase state funding for air monitoring programs. DEQ must wait for the legislative process to conclude before determining if and where additional monitoring sites will be placed.

Does DEQ have any mobile monitoring stations?

DEQ does not have mobile monitoring stations. Some monitoring is done on a seasonal basis for fine particulate (i.e., particulate matter of 2.5 microns or smaller) in the wintertime and ozone in the summertime.

If the air in Longview is already brown from air pollution why would DEQ issue new permits for more development?

The air pollution in the Longview area raises many questions for which we do not have immediate answers. DEQ and SWCAA will continue working together on this issue. Our permitting rules are designed to be protective of human health and to meet National Ambient Air Quality Standards (NAAQS). The Significant Emission Rates (SER) are set by EPA at levels that are low enough to prevent adverse effects. For pollutants that exceed the SER, the required modeling will determine whether a proposed new facility will comply with the standards. If the modeling shows that the standards will be met, a new facility would likely be permitted.

What are attainment and non-attainment areas?

A non-attainment area is a geographic region where air pollution levels for one or more criteria air pollutants violate the NAAQS. Criteria air pollutants include particulates, carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, and lead.

An attainment area is a geographic region where all air pollution levels for the criteria air pollutants meet NAAQS.

Unclassified areas are areas where no air quality monitoring has taken place before, and these areas are assumed to be in attainment. DEQ systematically picks areas where monitoring should occur based on their population growth or an increase in polluting activities. Many areas of Oregon have never been monitored for air pollution.

How does DEQ treat air pollution that does not meet standards?

When a region becomes a non-attainment area, DEQ develops a plan to reduce air pollutant levels to bring the area back into attainment with the standards. The area plan will generally include more restrictive requirements that will help reduce emissions from all sources: industrial, commercial, residential, and cars and trucks.

For example, in the 1970s the Portland-Vancouver area exceeded ozone standards for several years. As a result, more stringent requirements on new industrial facilities, rules to encourage the use of public transportation options, requirements for vehicle testing to ensure proper maintenance of emission control systems, and limits on the content of certain consumer products were adopted. Today, the Portland-Vancouver area is in compliance with federal ozone standards.

Will LNG and coal gasification facilities produce significant amounts of hazardous air pollutants like benzene and formaldehyde? How will DEQ deal with them?

Pollutant emissions from LNG and coal gasification facilities come mostly from fuel-burning devices, and they all emit some level of Hazardous Air Pollutants (HAPs), including benzene and formaldehyde. However, DEQ expects that these emissions will be relatively low and will not exceed Oregon's health benchmarks.

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In general, efficient operation of these devices can hold HAP emissions to a minimum. DEQ will require combustion devices to be operated in a way to minimize HAP emissions.

If air quality permit applications for the proposed new facilities indicate that significant amounts of benzene and/or formaldehyde, or any other HAP will be produced, DEQ will require additional emission controls to reduce HAPs.

Will coal gasification facilities emit mercury?
Coal gasification facilities have the potential to emit mercury because mercury is naturally present in the coal. A coal gasification facility must meet Oregon's new standards for mercury emissions. For more information about DEQ's Utility Mercury Rule, visit: www.deq.state.or.us/aq/mercury/index.htm .

Will there be air emissions trading in the Lower Columbia area?
In the future, there may be carbon trading as a way of reducing greenhouse gases. At this time, a trading system has not been developed.

Please explain about the air toxics benchmarks. What happens if you exceed a benchmark?
In 2003, DEQ formed a state air toxics program that uses the best available science to identify and solve air toxics problems statewide. An *Air Toxics Science Advisory Committee* has helped DEQ develop health-based air toxics benchmarks, also known as standards, which are re-evaluated and/or established on an annual basis. Developing benchmarks requires approval of an air monitoring plan for a specific area and conducting monitoring for at least one year.

Monitoring results are compared with the benchmarks to determine whether an air toxics reduction plan is needed for the area. If monitored values exceed benchmarks, DEQ will develop a plan to reduce emissions of those pollutants to a level below the benchmark. The plan will include strategies to reduce emissions from all sources: industrial, commercial, residential, and mobile. Even if an area in the Lower Columbia exceeds a benchmark, it is likely that the plan for the Lower Columbia area will not be the highest priority compared to other parts of the state with more severe air toxics problems.

For more information about DEQ's Air Toxics Science Advisory Committee and Air Toxics Benchmarks visit www.deq.state.or.us/aq/toxics/index.htm .

Describe the plan for assessing cumulative impacts on air quality from the following:

- **Multiple LNG facilities and tankers**
- **Proposed coal plants planned for Port Westward, OR, and Kalama, WA**
- **PGE new and existing gas-fired power plants**
- **Mint farm gas-fired power plant planned next to Northern Star's facility in Port Westward (?)**
- **Multiple ethanol plants planned around the Lower Columbia River Estuary**

Short-Term (now to 6 months): DEQ will gather and evaluate emissions information from the States of Oregon and Washington on proposed projects in Clatsop and Columbia counties in Oregon, and Pacific, Wahkiakum, and Cowlitz counties in Washington. as they become available. DEQ will summarize this information, put it into context for the public, and present general health effects information for the pollutants emitted.

Mid-Range (6 - 12 months): Oregon DEQ will partner with Washington counterparts to conduct an analysis to estimate the impacts of the proposed projects on the populated areas of the Lower Columbia and nearby protected areas with respect to existing criteria pollutant standards and visibility goals.

Long-Range (12 months and beyond): Oregon DEQ will work with Washington partners to seek ambient monitoring resources to expand our ability to monitor for air pollution.

For more information about DEQ's air quality permitting
Please call 503-229-5359 or email aqpermit.info@deq.state.or.us .

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Specific Water Quality Questions

How does DEQ monitor water quality?

DEQ has a fixed number of water monitoring sites on rivers and streams throughout the state and has collected water quality information for over 40 years. This is called the ambient monitoring system. DEQ also conducts specific watershed monitoring and studies in basins to help develop water quality improvement plans, known as Total Maximum Daily Load (TMDL) assessments that identify water quality problems and pollutant sources. DEQ also performs split sampling of effluent during inspections of permitted facilities. On occasion, DEQ monitors specific problems identified through complaints. DEQ requires facilities discharging under water quality National Pollution Discharge Elimination System (NPDES) permits to collect samples of their effluent and report on the parameters and sampling frequencies specifically identified in the permit. This data is usually reported to DEQ on a monthly basis.

What information does DEQ use to determine beneficial use protection for Columbia River salmon?

DEQ has developed specific water quality standards designed to protect beneficial uses including fish habitat, fishing, and swimming. When DEQ conducts sampling, DEQ compares the data collected to the state's water quality standards to determine if the standard is being met and beneficial uses are being protected. DEQ also establishes discharge limits in water discharge permits that must be met by the facility to ensure water quality standards are not violated. Again, monitoring is required to ensure standards continue to be met.

Does DEQ work with the Estuary Partnership? Do they still monitor water quality and does DEQ interact with them?

The Lower Columbia River Estuary Partnership (LCREP) monitors water quality in the Lower Columbia River. In the past, DEQ has assigned staff to assist them in implementing their program. Currently, DEQ's Columbia River Coordinator interacts with LCREP on a regular basis and attends the LCREP Science Work Group meetings. Additionally, DEQ's Columbia River Coordinator is working with federal agencies, the Washington Department of Ecology, the Idaho Department of Environmental Quality, and tribal nations in the Columbia Basin to develop a toxics reduction strategy for the Columbia Basin. The current focus of this effort is to fill data gaps from Bonneville Dam up river to Grand Coulee.

What is 401 certification?

The term "401 certification" refers to Section 401 of the federal Clean Water Act. In this section of the act, Congress assigned states the responsibility of reviewing and certifying that federal license and permit actions that affect water quality will achieve state water quality standards. When federal agencies take licensing or permitting actions that could affect Oregon waters, DEQ reviews the actions to determine whether state water quality standards will be maintained. DEQ's 401 certifications often include conditions on the proposed actions to ensure water quality is protected.

For more information on 401 certification visit: www.deq.state.or.us/wq/sec401cert/sec401cert.htm.

Where would an applicant appeal if a 401 certification is denied?

If DEQ denies a 401 certification, the applicant can appeal that decision to the Oregon Environmental Quality Commission (EQC). The EQC is a five person citizen board appointed by the Governor to oversee the DEQ, establish state environmental policy and adopt rules.

Is DEQ going to issue a 401 certification related to FERC's issuance of a license for the proposed Bradwood Landing LNG facility?

Yes, DEQ plans to issue 401 certifications associated with both FERC's issuance of a license for the proposed facility and for the individual permit actions that will be taken by federal agencies. This would include dredging the boat basin area and construction of the pipeline and terminal facilities.

Has DEQ thought about reorganizing its 401 staff to manage the tremendous workload?

In order to secure additional staff and address the large workload in the 401 certification program, DEQ is asking the Oregon Legislature for permission to increase fees for 401 certification. If DEQ is not granted approval to increase fees, DEQ must continue to address all of Oregon's 401 certification applications with the two full-time employees currently funded by the program.

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Who regulates the temperature of water quality emissions?
DEQ regulates the temperature of discharged wastewater from facilities through water quality permits. Temperature is key criteria when protecting fish habitat and other beneficial uses of Oregon waters.

What about taking water out of the river?
The Oregon Water Resources Department (WRD) regulates the taking of water out of Oregon's rivers and streams. WRD must issue a state water right before any water can be withdrawn. See www.wrd.state.or.us for more information.

How does coastal zone management fit in with the permitting process?
The Oregon Department of Land Conservation and Development (www.lcd.state.or.us) manages the Coastal Zone Management program and has identified specific land use requirements in the coastal area. Permit applicants must obtain a land use compatibility statement (LUCS) from the local land use agency stating that the proposed facility is in compliance with the local land use plan, including the Coastal Zone Management Plan.

If there are three facilities with water quality permits in one area and one leaves town can the other two take the load allocation from that other facility?
If there are three facilities in a river, all with their own NPDES permits with permitted waste loads, and one facility closes, its permit will be terminated. The two remaining facilities do not have a right to the waste load identified in the closed facility's permit. If either of the remaining permitted facilities wants to obtain part of the closed facility's waste load, they will need to request a "load increase" to their own permit. Load increases for major facilities are normally presented to DEQ's governing body, the Oregon Environmental Quality Commission (EQC). DEQ reviews these requests and makes a recommendation to the EQC, which has the authority to reject or approve the application for increased discharge.

What is going on with domestic waste water at Port Westward?
Port Westward is pursuing a state Water Pollution Control Facility (WPCF) permit from DEQ to construct a large on-site wastewater system at the location of the plant.

For more information about the DEQ water quality permitting
Please contact Elliot Zais, zais.elliot@deq.state.or.us, 503-229-5292, or toll-free in Oregon, 800-452-4011.

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Appendix A – Emission Inventory of Clatsop, Columbia, Wahkiakum & Cowlitz Counties

The following table gives the emissions inventories for Clatsop, Columbia, Wahkiakum and Cowlitz Counties. Each inventory is for the entire county.

The data for Clatsop and Columbia Counties are from the Oregon Department of Environmental Quality's Air Quality Emissions Inventory for 2002.

The data for Wahkiakum and Cowlitz Counties are from the Washington Department of Ecology's Air Quality Emissions Inventory for 2005 (draft).

County	Source	CO	SO2	NOX	PM10	VOC
Clatsop	Area	6,606	50	262	5,653	2,742
Clatsop	Biogenic	1,804	0	41	0	7,309
Clatsop	Nonroad	5,961	198	793	81	1,017
Clatsop	Onroad	17,185	47	1,626	39	1,368
Clatsop	Point	2,021	1,325	0	1,600	432
Columbia	Area	6,402	44	276	7,718	2,619
Columbia	Biogenic	2,042	0	61	0	9,045
Columbia	Nonroad	4,161	155	711	65	663
Columbia	Onroad	15,040	39	1,392	32	1,264
Columbia	Point	8,008	1,149	0	600	2,423
Wahkiakum	Area	149	1	4	115	126
Wahkiakum	Biogenic	1,362		50		5,784
Wahkiakum	Nonroad Mobile	331	2	17	2	56
Wahkiakum	Onroad Mobile	1,150	3	129	3	91
Wahkiakum	Point					
Cowlitz	Area	2,389	12	59	733	2,214
Cowlitz	Biogenic	3,472		115		15,933
Cowlitz	Nonroad Mobile	7,589	117	1,408	82	1,234
Cowlitz	Onroad Mobile	30,668	66	3,449	81	2,404
Cowlitz	Point	4,181	1,097	3,603	439	2,389
Total	**All Sources**	**120,522**	**4,304**	**13,998**	**17,243**	**59,113**
Total	Area	15,546	107	601	14,219	7,701
Total	Biogenic	8,680	0	267	0	38,070
Total	Nonroad	18,043	471	2,930	230	2,971
Total	Onroad	64,043	155	6,596	155	5,127
Total	Point	14,210	3,571	3,603	2,639	5,244

CO = carbon monoxide; SO_2 = sulfur dioxide; NOx = nitrogen oxides; PM_{10} = particulate matter that is 10 micrometers and smaller in size; VOC = volatile organic compounds. Emissions are listed in tons.

Area refers to smaller industrial and commercial facilities that generally are not required to obtain environmental permits, such as small printers and dry cleaners. This category also covers the pollution resulting from activities such as residential wood combustion, painting, residential backyard burning, structure fires, and vehicle refueling.
Biogenic refers to emissions from biological sources, such as forests and other vegetation.
Nonroad refers to vehicles and machinery that are not used on roads (e.g. construction machinery, off-road recreational vehicles, etc.).
Onroad refers to emissions from vehicles operated on roads (cars, trucks, and buses).
Point refers to emissions from larger industrial facilities that generally have an environmental permit.