



DEPARTMENT OF
ECOLOGY
State of Washington

Economic Impact Analysis

National Pollutant Discharge Elimination
System (NPDES) Vessel Deconstruction
General Permit

Vessel Deconstruction General Permit

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Economic Impact Analysis

**National Pollutant Discharge Elimination
System (NPDES) Vessel Deconstruction
General Permit**

Vessel Deconstruction General Permit

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Executive Summary

The Vessel Deconstruction General Permit authorizes the discharge of stormwater and a limited number of non-stormwater discharges associated with vessel deconstruction activity beginning over water.

WAC 173-226-120 requires an economic analysis of any proposed water-quality general permit to serve the following purposes. The analysis must provide:

- A brief description of the compliance requirements of the general permit.
- The estimated costs for complying with the permit, based upon existing data for facilities intended to be covered under the general permit.
- A comparison, to the greatest extent possible, of the cost of compliance for small businesses with the cost of compliance for the largest ten percent of the facilities intended to be covered under the general permit.
- A summary of how the permit provides mitigation to reduce the effect on small businesses (if a disproportionate impact is expected), without compromising the mandated intent of the permit.

A small business is defined as any business entity, including a sole proprietorship, corporation, partnership, or other legal entity, that is owned and operated independently from all other businesses, and that has 50 or fewer employees.

Costs to comply with the new permit

Compliance costs are dependent on the size and complexity of the vessel deconstruction project. While it may be the case that a large firm takes on a small project, it is highly unlikely that a small firm will take on a large project. Also, as the costs were determined on a weekly basis, and larger projects tend to take more time than smaller projects, costs for larger projects are larger than costs for smaller projects. When comparing annual estimated sales between large and small firms, there is more than a 12 to 1 disparity. Even if we make the assumption that large firms only do large projects and small firms only do small projects (which is the most conservative assumption possible), the costs, while larger for larger projects, will not be 12 times greater. Therefore, the cost-to-sales ratios fall as sales rise. Ecology concluded, based on this result, that *the general permit has a disproportionate impact on small businesses.*

Mitigation measures in the permit

Ecology considered options for lessening the burden of permit compliance on Permittees where possible while protecting water quality and maintaining compliance with federal and state law and rule. The primary area where Ecology provided mitigation for smaller, less complicated vessel deconstruction activities is in permit section *S8. Deconstruction and Site Management Plan requirements*. The requirements in this section are scalable based on the size and complexity of the vessel deconstruction project seeking permit coverage. For example, a barge without propulsion systems is likely to contain less hazardous waste and potential for spills and debris to be discharged into state waters. For these vessels, a more streamlined Deconstruction

and Site Management Plan (DSMP) would be acceptable. Larger, more complex projects will require more BMPs and are likely to contain more hazardous materials and potential for discharge. The DSMP for these larger projects will be accordingly more extensive and costly to produce.

Chapter 1: Compliance Requirements for the Vessel Deconstruction General Permit

Permit overview

The Vessel Deconstruction General Permit authorizes the discharge of stormwater and a limited number of non-stormwater discharges associated with vessel deconstruction activity beginning over water.

Deconstruction and Site Management Plan (DSMP)

All permit holders and applicants for coverage under this permit are required to develop a DSMP for the permitted activity. The DSMP must contain:

- A site map.
- A detailed assessment of the vessel.
- A detailed description of the best management practices (BMPs) necessary to:
 - Provide all known, available and reasonable methods of prevention, control and treatment (AKART).
 - Comply with state water quality standards and applicable federal technology-based treatment requirements under 40 CFR 125.3.
- A sampling plan.

Sampling and testing

Stormwater associated with deconstruction and deconstruction support activities

The general permit requires all facilities to sample stormwater discharges from designated locations once every calendar week when stormwater (or authorized non-stormwater) discharges from the site. Permittees must sample each distinct point of *discharge*, prior to entry into waters of the state.

Each sample must be visually monitored for oil sheen and tested using the following parameters:

1. Oil and Grease
2. Turbidity
3. TSS
4. pH
5. Copper, Total
6. Zinc, Total
7. Lead, Total

Permittees must ensure the analytical methods they use to meet the sampling requirements conform to the latest versions of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136. However, if an alternate method from those in 40 CFR

Part 136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis.

For each stormwater sample taken, facilities must record the following in the site log:

- Sample date, time, and location.
- Method of sampling and method of sample preservation.
- Name of person who performed the sampling.

Drydock effluent

Subject to compliance with the terms and conditions of this permit, Permittees are authorized to discharge drydock floodwater to surface waters of the State. The general permit limits the Oil Sheen, Oil and Grease, and Turbidity in these discharges.

Non-routine discharges

Non-routine discharges are allowed on a case-by-case basis if approved in advance by Ecology. In such cases, the Permittee is required to test for a variety of parameters as discussed in S5.B of the permit. Because such discharges cannot be anticipated at the time of publication (only anticipated in the short-run by the permittee) and occur at the discretion of the Permittee, these costs are not included in this analysis.

Visual inspections

Facilities must now conduct visual inspections of the site each day and document these inspections with the DSMP. Each inspection shall consist of:

- Observations made at all areas disturbed or otherwise impacted by deconstruction activities, all BMPs, and all discharge points.
- Observations for the presence of turbidity, floating materials, visible sheen, discoloration, etc., in the discharge.
- Observation for the presence of illicit discharges.
- Assessment of all BMPs that have been implemented.

Reporting and recordkeeping

The general permit sets reporting and recordkeeping requirements for all facilities.

Reporting

Facilities must use Discharge Monitoring Report (DMR) forms to report the sampling data they collect each reporting period.

Records retention

Facilities must retain the following records for the entire life of the deconstruction project and for a minimum of 3 years:

- Records of all monitoring information (site log book, sampling results, inspection reports/checklists, etc.).
- Deconstruction and Site Management Plan (DSMP).
- Any other documentation of compliance with permit.
- All calibration and maintenance records.
- Records of all data used to complete the application for this permit.

Chapter 2: Overview of Analysis

This Economic Impact Analysis (EIA) estimates the costs of complying with the general permit. It also compares the costs of complying with the permit for small businesses, to the costs of compliance for large businesses, to determine whether the permit disproportionately impacts small businesses.

Definition of small and large businesses

For the purpose of this analysis, a small business is an independent entity with 50 or fewer employees organized for the purpose of making a profit. Enterprises owned by larger corporations are excluded from the definition of small business, as are not-for-profit and government enterprises. There are both small and large businesses that must comply with this permit.

The following SIC (Standard Industry Codes) Code Groups are required to obtain permit coverage. This activity does not have to be the primary activity for a Permittee; it only has to be part of a Permittee's activities.

Table 1:

Impacted Industries SIC Codes		
3731	3732	4499

Compliance costs included in the EIA

According to WAC 173-226-120, the EIA must estimate the costs of the following:

- Minimum treatment technology
- Monitoring
- Reporting
- Recordkeeping
- Plan submittal
- Equipment
- Supplies
- Labor
- Administrative costs

The following table is a summary of the permit requirements, and the last column indicates whether Ecology is required to consider the costs associated with each section for the economic analysis.

Table 2: Compliance costs included in the EIA

Requirement	Condition Number	Basis of Requirement	Required to be in EIA
Submittal of application for coverage	S2.A	Federal	No
Development of DSMP	S3	Federal	No
General sampling requirements	S4	Federal (once/year) State (once/week)	No Yes, extra Samples
Non-Routine Discharges	S5	State	Yes
Sampling discharges to impaired waters			
Discharges to 303(d)-listed waters	S6	State ¹	No
Discharges to waters with TMDLs	S6	State ²	No
Inspections	S7	Federal (quarterly) State (daily)	No Yes
Corrective Actions	S8	State ³	No
Solid and Liquid Waste Disposal	S9	Federal	No
Reporting and Recordkeeping			
Reporting DMRs	S9.A	Federal	No
Records Retention	S9.B	Federal (3 years)	No
Non-Compliance	S9.E	Federal	No

Compliance costs excluded from the EIA

The cost of complying with permit conditions required by the following laws and rules are not included in the EIA's analysis of compliance costs:

1. State Groundwater Quality Standards (Chapter 173-200 WAC)
2. State Surface Water Quality Standards (Chapter 173-201 WAC)
3. State Sediment Management Standards (Chapter 173-204 WAC)
4. Wastewater Discharge Permit Fees (Chapter 173-224 WAC)
5. Federal law and regulations, in particular the Clean Water Act and federal NPDES regulations.

¹ MSGP largely defers to the appropriate state authority. Sampling requirements in Ecology's permit are primarily a state requirement. However, since the benchmarks are based on the acute water quality criterion in WAC Chapter 173-201A, the economic analysis is not allowed to consider these sampling costs.

² MSGP largely defers to the appropriate state authority. Sampling requirements in Ecology's permit are primarily a state requirement. However, since the benchmarks are based on the acute water quality criterion in WAC Chapter 173-201A, the economic analysis is not allowed to consider these sampling costs.

³ MSGP does not require eventual compliance with all benchmarks and therefore the corrective action and adaptive management set in this permit are primarily a state requirement. However, these benchmarks and the adaptive management conditions are necessary to comply with WAC 173-201(Water Quality Standards) and are therefore exempt from the economic analysis.

The justification for excluding compliance costs related to these laws and rules is that permit holders cannot be exempt from these laws through the permit process and, therefore, any cost impacts of these laws and regulations cannot be mitigated. Permit holders must comply with existing regulation independent of permit requirements.

Data used in analysis

The first step in the analysis is to estimate a range of sales for small and large firms within the given sector. Firm size data are gathered from the County Businesses Patterns (CBP) 2011. The CBP data give numbers of firms in certain size ranges defined by the number of employees (for instance, how many firms in an industry have 1 to 4 employees, or 5 to 9 employees, etc.). By taking the mid-points of these employee ranges, we can derive a range of typical sizes for both small and the 10 percent of firms that are the largest in the industry. These data are presented in Table 3. It should be noted that all of the firms in SIC 4499 are small firms.

Table 3: Average Number of Employees, Small and Large Firms

Average number of Employees, Small and Large Firms				
Descriptions	1987 SIC	2007 NAICS	Average Employees	
			Small	Large
Ship Building and Repairing	3731	336611	14.2	182.8
Boat Building and Repairing	3732	336612	9.8	111.5
Water Transportation Services, Not Elsewhere Classified	4499	488390	6.0	

The next step is to estimate sales per employee for SICs 3731 and 3732. Due to the small number of firms in SIC 3731, sales data are not available, as it may allow for identification of sales for specific firms. Therefore, we used SIC 3732 to estimate sales per employee for both sectors. For each sector chosen, sales and employment are taken from the Economic Census 2007 (which uses NAICS). These data are presented in Table 4 below. These figures yielded an average level of sales per employee in the sector within Washington.

Table 4: Estimated sales per Employee, SIC 3732

Estimated sales per employee SIC 3732, 2007		
Sales	Employees	Sales per employee
\$ 516,798,000	3,721	\$ 138,887

Multiplying these sales-per-employee numbers by the firm sizes derived in the first step of the calculation described above, we get estimates of average sales by small and large firms in the sector. This data is presented in Table 5.

Table 5: Calculations

Calculations				
Descriptions	1987 SIC	2007 NAICS	Estimated Sales	
			Small	Large
Ship Building and Repairing	3731	336611	\$ 1,972,193	\$ 25,388,518
Boat Building and Repairing	3732	336612	\$ 1,361,091	\$ 15,485,885

Chapter 3: Estimated Costs for Permit Compliance

Compliance costs are dependent on the size of the deconstruction project. In this chapter, Ecology estimated ranges of costs for most requirements—a low cost and a high cost. The low cost estimate is for small projects and the high cost estimate is for large projects. Some requirements have the same cost for small and large projects.

The assumptions used in making the compliance cost estimates are presented in this chapter. In general, we assume that large projects will have twice as many samples and requirements will take twice as long to complete. In addition, assumptions used in making estimates of capital costs are included.

It is necessary to annualize some costs because some costs are annual (incurred every year), while other costs are capital costs (incurred once). For example, equipment for pH testing is a one-time capital cost, while monitoring is an annual cost that must be incurred every year.

Estimated costs for sampling and monitoring

All Permittees must sample and monitor their discharges weekly. Water Quality Program staff provided estimates for the employee time needed to carry out each of the major tasks required by the permit, divided into time of professional or supervisory personnel and time of other employees.

The Bureau of Labor Statistics⁴ identified labor costs of \$54.47 per hour for professional or supervisory personnel and \$25.80 per hour for employees. The calculations in Table 6 utilize these wages. For activities associated with monitoring (such as sample collection, record keeping, reporting), large projects are assumed to require twice as much labor as small projects, to reflect greater sampling activity.

Table 6: Labor Costs for Sampling and Monitoring Small and Large Projects

Labor Costs for Sampling and Monitoring				
	Small Projects		Large Projects	
	Prof/Sup	Staff	Prof/Sup	Staff
Sampling	.25 – .5 hr	1.5 – 3 hr	.5 – 1 hr	3 – 6 hr
Training	0 – .5 hr	0 hr	0 – 1 hr	0 hr
Recordkeeping	0 hr	.5 – 1 hr	0 hr	1 – 2 hr
Total Time	.25 – 1 hr	2 – 4 hr	.5 – 2 hr	4 – 8 hr
Weekly Cost	\$14 - \$54	\$51 - \$103	\$27- \$109	\$102 - \$206
Total Weekly Cost	\$65 - \$157		\$129 - \$315	

⁴ http://www.bls.gov/oes/current/oes_wa.htm on May 5, 2014.

Estimated costs for lab analysis

The permit also requires Permittees to send samples to a laboratory for analysis. In 2007, Ecology surveyed the three primary labs used by Treatment, Storage, and Disposal facilities regarding their fees for various water quality parameters. These values have been updated to 2014 dollar values. This provided average fee levels for each of the monitoring parameters required by the permit.

It is assumed that small projects will have one sample analyzed for each parameter, while large projects will have two samples analyzed for each parameter, to reflect the probability that sampling in more than one location would be necessary to capture the impact of a large project. These lab fees only include the cost for analyzing parameters that are not required in the Federal Multi-Sector General Permit (MSGP).

Table 7: Weekly Laboratory Fees

Weekly Laboratory Fees	
Small	\$ 36
Large	\$ 71

In 1998 Ecology's Lab Accreditation Program surveyed environmental laboratories to get information on equipment requirements for pH testing. For a sample to be valid, pH testing needs to be done immediately after a sample is drawn. Ecology annualized values for long-term purchase based on a three percent real rate of interest and a five-year period of use.

A suitable pH meter and probe was assumed to cost \$225, with annual replacement parts costs of \$56.⁵ For the low cost estimate, Permittees were assumed to already own the equipment, leaving only the annual purchase of replacement parts. Large projects were assumed to have twice the replacements parts costs, to reflect increased sampling. There are no lab fees for pH analysis because pH testing is done on site.

Table 8: Equipment Costs for pH Testing

Equipment Costs for pH Testing		
	Small	Large
Initial Cost, Annualized	\$0 - \$49	\$0 - \$49
Annual Replacement Cost	\$56 - \$56	\$113 - \$113
Total Annual Cost	\$56 - \$105	\$113 - \$162

⁵ Indexed from 1995 values. Some facilities are not subject to pH limits and can therefore use litmus paper rather than having to use a meter. This is a considerable savings, so the inclusion of the meter cost in the analysis is a conservative assumption, tending to make the estimated compliance costs higher than the actual compliance costs.

Estimated costs for visual inspections

Permittees are required to visually inspect their site each day and document the inspection with the DSMP. The Federal MSGP requires only quarterly inspections, so Ecology estimated the cost for the additional inspections on a weekly basis. Ecology assumes visual inspection will take a small project half an hour and large project a full hour. Ecology assumes a staff wage of \$25.80 per hour.

Table 9: Weekly Inspection Costs for Small and Large Projects

Method	Small Projects				Large Projects			
	Hours	Frequency	Duration	Weekly Cost	Hours	Frequency	Duration	Weekly Cost
Visual Inspection	0.5 hr	1/day	1 week	\$90	1 hr	1/day	1 week	\$181

Estimated costs for records retention

Permittees must retain records on site for a minimum of three years. The cost of complying with this provision is the cost of storing records. This cost is likely very low or close to zero.

Total compliance costs

This section presents the total costs of compliance under the Vessel Deconstruction General Permit.

Table 10: Total Weekly Compliance Costs for Vessel Deconstruction Permit Holders

	Small Projects		Large Projects	
	Low	High	Low	High
Weekly Costs	\$ 191	\$ 283	\$381	\$ 567

Conclusion of estimated costs

Compliance costs are dependent on the size and complexity of the vessel deconstruction project. While it may be the case that a large firm takes on a small project, it is highly unlikely that a small firm will take on a large project. Also, as the costs were determined on a weekly basis, and larger projects tend to take more time than smaller projects, costs for larger projects are larger than costs for smaller projects. When comparing annual estimated sales between large and small firms, there is more than a 12 to 1 disparity. Even if we make the assumption that large firms only do large projects and small firms only do small projects (which is the most conservative assumption possible), the costs, while larger for larger projects, will not be 12 times greater. Therefore, the cost-to-sales ratios fall as sales rise. Ecology concluded, based on this result, that the general permit has a disproportionate impact on small businesses.

Chapter 4: Mitigation of Disproportionate Impacts

If the compliance cost ratio is higher for small businesses than for large businesses, then small businesses are disproportionately impacted. Ecology concluded in Chapter 3 that this is the case for the new NPDES General Permit for Vessel Deconstruction.

The general permit rule (WAC 173-226-120) requires that disproportionate economic impacts of general permits on small businesses be reduced, when it is both legal and feasible to do so.

Legality and feasibility are determined by the legal context of existing state and federal regulations, such as the State Water Pollution Control Act (Chapter 90.48 RCW) and the federal Clean Water Act. Cost impacts on small businesses are reduced by modifying the conditions of the permit.

According to WAC 173-226-120, mitigation of disproportionate costs involves one or more of the following:

- Establishing differing compliance or reporting requirements or timetables for small businesses.
- Clarifying, consolidating, or simplifying the compliance and reporting requirements under the general permit for small businesses.
- Establishing performance rather than design standards.
- Exempting small businesses from parts of the general permit.

Mitigation measures must comply with state and federal requirements.

The general permit rule requiring Economic Impact Analysis (WAC 173-226-120) states that mitigation only needs to be undertaken when it is legal and feasible in meeting the stated objectives of the federal Clean Water Act, and Chapter 90.48 RCW, the State Water Pollution Act. This provision is an important restriction. If a proposed mitigation measure violates federal law or regulations, or if it violates state statute or rules, then it cannot be undertaken.

The conditions of the general permit based on federal regulations are requirements of federal law. Significant mitigation of these conditions would be a violation of federal NPDES program regulations, which establish effluent standards. Because these conditions are a consequence of federal law, they cannot be mitigated, and the compliance costs associated with them cannot be reduced. Recall that these costs were not included in this analysis, as they are not a result of general permit requirements in excess of requirements in federal and state regulation. The general permit must contain effluent limits that are at least as strict as federal effluent standards, to mitigate their impact on small businesses.

Conditions required to meet the AKART requirement of the state Water Pollution Control Act (Chapter 90.48 RCW) are also legal requirements that Ecology cannot allow permit holders to violate. Thus, compliance costs based on the AKART requirement also cannot be mitigated. Recall that these costs were not included in this analysis, as they are not a result of general permit requirements in excess of requirements in federal and state regulation.

Ecology also places conditions in general permits to ensure discharges do not violate the state surface water quality, ground water quality, or sediment management standards (173-200, 173-201, 173-204, 173-224 WAC). These conditions are legal requirements that Ecology cannot allow permit holders to violate. Compliance costs associated with these permit conditions cannot be mitigated. Recall that these costs were not included in this analysis, as they are not a result of general permit requirements in excess of requirements in federal and state regulation.

The above circumstances severely limit Ecology's ability to reduce cost impacts on small businesses. Only costs imposed by permit conditions that are stricter than those required by the above laws can be legally mitigated. Because, for the most part, the permit simply contains conditions needed to comply with these laws, usually only minor mitigation measures can legally be undertaken. The cost reductions that result are usually small.

Impact of mitigation on effectiveness of general permit

The general permit rule states mitigation only needs to be undertaken when it is legal and feasible in meeting the stated objectives of the Clean Water Act and Chapter 90.48 RCW, the State Water Pollution Control Act. Even if a proposed mitigation measure is legal, if it would limit the general permit's effectiveness in controlling water pollution too much, it should not be undertaken.

Ecology has reduced the cost of the permit where possible. Reducing costs does not remove the disproportionate impact. There is no basis that would allow Ecology to be more lenient on small businesses without an unreasonable risk of violating federal or state water quality laws and rules.

If Ecology issues a general permit that allows Permittees to harm the quality of the water receiving the discharge then Ecology would be in violation of state and federal law. The elements in the following section can potentially reduce the cost of the permit. Most of the mitigation presented is not only for small businesses, but applies to all Permittees and therefore will benefit small and large businesses alike.

Mitigation measures in the permit

Ecology considered options for lessening the burden of permit compliance on Permittees where possible while protecting water quality and maintaining compliance with federal and state law and rule. The primary area where Ecology provided mitigation for smaller, less complicated vessel deconstruction activities is in permit section *S8. Deconstruction and Site Management Plan requirements*. The requirements in this section are scalable based on the size and complexity of the vessel deconstruction project seeking permit coverage. For example, a barge without propulsion systems is likely to contain less hazardous waste and potential for spills and debris to be discharged into state waters. For these vessels, a more streamlined Deconstruction and Site Management Plan (DSMP) would be acceptable. Larger, more complex projects will require more BMPs and are likely to contain more hazardous materials and potential for discharge. The DSMP for these larger projects will be accordingly more extensive and costly to produce.

Most of the other requirements of the permit are based on federal rule. The requirements in this permit are comparatively more restrictive than for example, the Boatyard General Permit. This is due to the nature of the work and the fact that it occurs over water where options for capturing and treating discharges are limited. The permit therefore relies on more source control BMPs to prevent exposure of pollutants to rainfall and other flows that could cause a discharge. Again, the required BMPs will vary based on the size and complexity of the vessel deconstruction activity.

Conclusion

This analysis found that the general permit likely imposes disproportionate costs on small versus large businesses complying with it. In compliance with WAC 173-226-120, Ecology included elements in the general permit that reduce compliance costs, and attempted to reduce disproportionate costs. Further cost reductions, or reductions to disproportion, were not possible due to limitations of federal and state regulation protecting the environment and regulating Permittee behavior.