Small Business Economic Impact Analysis

Biosolids Management General Permit

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For the
Solid Waste Program

Washington State Department of Ecology
Olympia, Washington

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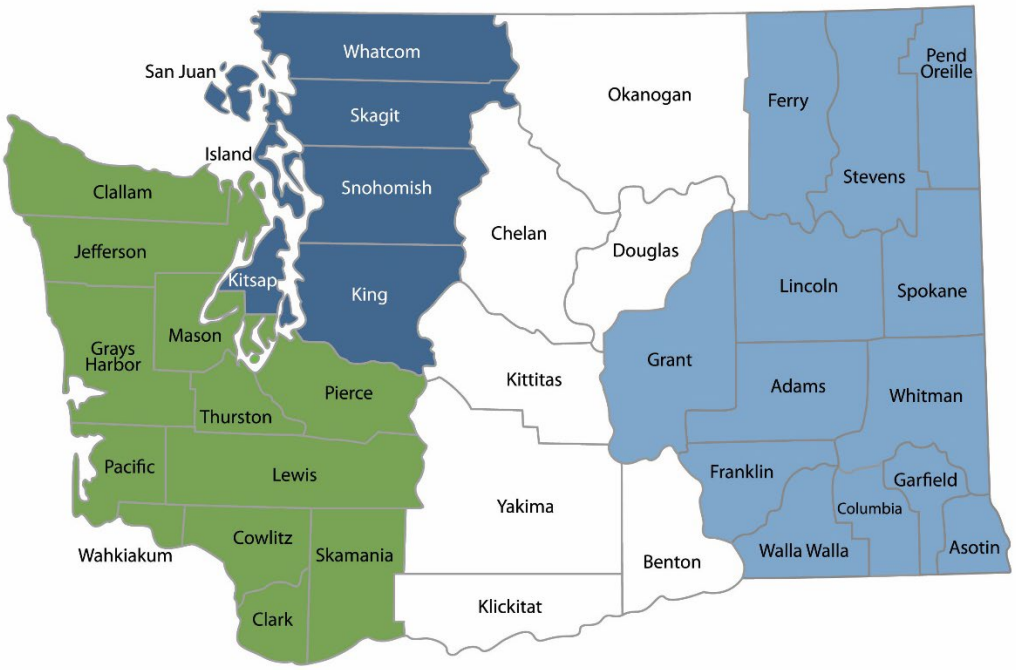

Southwest Region 360-407-6300	Northwest Region 206-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400

Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
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DEPARTMENT OF
ECOLOGY
State of Washington

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Acronyms

CFR	Code of Federal Regulations
NAICS	North American Industry Classification System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
RCW	Revised Code of Washington
SBEIA	Small Business Economic Impact Analysis
TWTDS	Treatment Works Treating Domestic Sewage
WAC	Washington Administrative Code

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Executive Summary

This Small Business Economic Impact Analysis (SBEIA) estimates the costs of complying with the draft Statewide General Permit for Biosolids Management (permit). It compares the costs of complying with the permit for small businesses to the costs of compliance for the largest 10 percent of businesses, to determine whether the permit disproportionately impacts small businesses. This analysis is required by state rule in Washington Administrative Code (WAC) 173-308-90005(4),[2] which directs Ecology to determine if the permit imposes disproportionate burden on small businesses, and if it does, to mitigate the disproportion to the extent that is legal and feasible. The rule requires Ecology to prepare a SBEIA "on all draft general permits which are intended to directly cover small business."

WAC 173-308-90005(4) requires the SBEIA to include:

- A brief description of the compliance requirements of the general permit, including:
    - The minimum quality requirements.
    - The monitoring requirements.
    - The reporting and recordkeeping requirements.
    - Any plan submittal requirements.
- The estimated costs of compliance, based upon existing data for facilities intended to be covered under the general permit. Costs must include:
    - The costs associated with (c)(i) of this subsection.
    - The costs of equipment, supplies, labor, and any increased administrative costs.
- A comparison, to the greatest extent possible, of the cost of compliance for small businesses with the cost of compliance for the largest 10 percent of the facilities intended to be covered under the general permit. The economic impact analysis must use one or more of the following as a basis for comparing costs:
    - Cost per employee.
    - Cost per hour of labor.
    - Cost per one hundred dollars of sales.

The following costs are excluded from the SBEIA, by rule, as they are associated with baseline requirements that hold regardless of the existence of the general permit:

- The costs necessary to comply with chapter 173-308[3] WAC.
- The costs of conforming or complying, or both, with the general permit requirements that are based on federal law or rule.

[2] Chapter 173-308 WAC Biosolids Management: https://apps.leg.wa.gov/wac/default.aspx?cite=173-308-90005
[3] Chapter 173-308 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308

Table 1. Summary of total compliance costs per business for 5 years

Total cost by type of facility	Estimated cost (Low)	Estimated cost (High)
1. Sampling, analysis and capacity estimate for facilities with lagoons	$1,247	$1,688
2. Protecting devices for facilities with tanks	$350	$700
3. Facilities required to post public notice	$42	$87
If (1) and (3) apply	$1,289	$1,775
If (2) and (3) apply	$392	$787
If (1), (2), and (3) apply	$1,639	$2,475

There are currently 375 facilities covered by the existing biosolids permit, and 70 of them are privately owned. We were able to find employment data on 49 of them. Eighty-four percent of the facilities are considered small businesses and average seven employees, while the largest 10 percent are seven businesses with an average of 425 employees.

Based on the estimates of costs per employee, we conclude that the general permit has a disproportionate impact on small businesses. For each compliance area, the expected impact is disproportionate, regardless of whether we make the conservative assumption that small facilities are small businesses and large facilities are large businesses.

We took all legal and feasible actions to reduce small business compliance burden. We considered the following options to reduce the impact of the permit on small businesses:

- Different compliance and reporting requirements are set for different types of facilities, which may reduce costs for small businesses to the extent they operate facilities with lower requirements.
- The permit clarifies, consolidates, and simplifies compliance and reporting requirements for all businesses. This could disproportionately benefit small businesses, however, since they have less staff and resources to work with.
- For some requirements the permit establishes performance standards rather than design standards. Choosing less expensive and labor intensive options to comply could also benefit small businesses more than larger ones.
- We were not able to exempt any businesses based on their size, as permit applicability depends on facility attributes. To the extent that small businesses operate small facilities with fewer compliance requirements, parts of the permit are inherently less or not applicable to them.

Chapter 1: Introduction to the Economic Impact Analysis

This Small Business Economic Impact Analysis (SBEIA) estimates the costs of complying with the Statewide General Permit for Biosolids Management ("permit"). It compares the costs of complying with the permit for small businesses to the costs of compliance for the largest 10 percent of businesses, to determine whether the permit disproportionately impacts small businesses. This analysis is required by state rule in Washington Administrative Code (WAC) 173-308-90005(4),[4] which directs Ecology to determine if the permit imposes disproportionate burden on small businesses, and if it does, to mitigate the disproportion to the extent that is legal and feasible.

1.1 Scope

WAC 173-308-90005(4) requires the SBEIA to include:

- A brief description of the compliance requirements of the general permit, including:
    - The minimum quality requirements.
    - The monitoring requirements.
    - The reporting and recordkeeping requirements.
    - Any plan submittal requirements.
- The estimated costs of compliance, based upon existing data for facilities intended to be covered under the general permit. Costs must include:
    - The costs associated with (c)(i) of this subsection.
    - The costs of equipment, supplies, labor, and any increased administrative costs.
- A comparison, to the greatest extent possible, of the cost of compliance for small businesses with the cost of compliance for the largest 10 percent of the facilities intended to be covered under the general permit. The economic impact analysis must use one or more of the following as a basis for comparing costs:
    - Cost per employee.
    - Cost per hour of labor.
    - Cost per one hundred dollars of sales.

The following costs are excluded from the SBEIA, by rule, as they are associated with baseline requirements that hold regardless of the existence of the general permit:

- The costs necessary to comply with chapter 173-308 WAC.[5]

[4] Chapter 173-308 WAC Biosolids Management: https://apps.leg.wa.gov/wac/default.aspx?cite=173-308-90005
[5] Chapter 173-308 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308

- The costs of conforming or complying, or both, with the general permit requirements that are based on federal law or rule.

1.2 Definitions of Small and Large Businesses

For the purposes of the SBEIA, a small business is an independent entity with 50 or fewer employees. Government enterprises are excluded. Employment is based on the highest available level of ownership data.

1.3 Permit Coverage

All facilities that qualify as a Treatment Works Treating Domestic Sewage (TWTDS) must apply for coverage under this statewide general permit. The existing definition of a TWTDS in state rules expands the definition from federal rules, to include beneficial use facilities and septage management facilities. You must apply for coverage under this permit if you own or operate a TWTDS, including but not limited to:

- Publicly owned treatment works.
- Privately owned treatment works that treat only domestic sewage, or treat domestic sewage separately from industrial wastewater.
- Septage management facilities.
- Beneficial use facilities.
- Facilities that compost biosolids, unless exempt under WAC 173-308-310(1)(a).[6]
- Facilities designated by Ecology as a treatment works treating domestic sewage in accordance with WAC 173-308-310(1)(b).[7]
- Facilities that mix non-exceptional quality biosolids with other material, including other biosolids.
- Facilities that combine septage with biosolids for treatment, before beneficial use.

The following are the NAICS (North American Industry Classification System) codes[8] of industries where at least one facility would comply with the general permit.

[6] Chapter 173-308 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-310
[7] ibid
[8] North American Industry Classification System definitions and hierarchy: https://www.census.gov/naics/

Table 2. NAICS of Facilities Complying with General Permit

NAICS code	Industry name	NAICS code	Industry name
112990	All Other Animal Production	531110	Lessors of Residential Buildings
221310	Water Supply and Irrigation Systems	561730	Landscaping Services
221320	Sewage Treatment Facilities	561990	All Other Support Services
236115	New Single-Family Housing Construction	562219	Nonhazardous Waste Treatment and Disposal
237210	Land Subdivision	562991	Septic Tank & Related Services
238910	Site Preparation Contractors	611110	Elementary and Secondary Schools
322110	Pulp Mills	623110	Nursing Care Facilities
325314	Fertilizer (Mixing Only) Manufacturing	721110	Hotels and Motels
331312	Primary Aluminum Production	721199	All Other Traveler Accommodation
423510	Metal Merchant Wholesalers	721211	RV Parks and Campgrounds
423930	Recyclable Material Merchant Wholesalers	721214	Recreational and Vacation Camps
424720	Other Petroleum Merchant Wholesalers	813910	Business Associations
444190	Other Building Material Dealers		

1.3.1 Structure of the General Permit

There are significant changes in the structure of the permit, compared to the current permit. The new permit is organized as follows:

- Section1: Introduction
- Section 2: Applies to all facilities.
- Section 3: Applies to facilities that manage septage (not mixtures of septage and biosolids from treatment works).
- Section 4: Applies to facilities with programs that apply biosolids to the land, or sell or give away biosolids (other than septage) in any form or quantity for a beneficial use (includes facilities that mix septage and biosolids).

Permit applications will differ depending upon the section(s) of coverage required.

1.4 Excluded Costs

This SBEIA does not include the costs of complying with existing laws and rules, because permittees are required to comply regardless of whether the permit reiterated or referenced them, or if the permit did not exist. Costs excluded from all SBEIAs include the costs of complying with:

- Water Quality Standards for Groundwaters of the State of Washington (WAC 173-200)[9]
- Water Quality Standards for Surface Waters of the State of Washington (WAC 173-201A)[10]
- Federal laws and rules, including but not limited to the Clean Water Act and federal National Pollutant Discharge Elimination System (NPDES) rule if discharging to surface waters.
- Municipal Sewage Sludge-Biosolids (RCW 70A.226)[11]
- Biosolids Management (WAC 173-308)[12]
- Solid Waste Handling Standards (WAC 173-350)[13]
- State Environmental Policy (RCW 43.21C)[14]
- SEPA Rules (WAC 197-11)[15]
- Local rules and ordinances, as applicable.

1.5 Compliance Costs Included in the SBEIA

The SBEIA includes estimates of costs that are discretionary (costs of permit requirements that Ecology chose to include, which are not specifically dictated by law or rule), and excludes the costs of complying with baseline laws and rules that set requirements regardless of whether there is a general permit. The table below summarizes the types of requirements in the permit, and whether they are included in cost estimates in the SBEIA.

[9] Chapter 173-200 WAC Water Quality Standards for Groundwaters of the State of Washington: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-200
[10] Chapter 173-201A WAC Water Quality Standards for Surface Waters of the State of Washington: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-201A
[11] Chapter 70A.226 RCW Municipal Sewage Sludge-Biosolids: https://app.leg.wa.gov/RCW/default.aspx?cite=70A.226
[12] Chapter 173-308 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308
[13] Chapter 173-350 WAC Solid Waste Handling Standards: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-350
[14] Chapter 43.21C RCW State Environmental Policy: https://apps.leg.wa.gov/RCW/default.aspx?cite=43.21C
[15] Chapter 197-11 WAC SEPA Rules: https://apps.leg.wa.gov/wac/default.aspx?cite=197-11

1.5.1 Requirements in the Permit Applicable to all Facilities

Table 3 Requirements in the permit applicable to all Facilities

Type of Requirement	Permit Condition Number	Basis of Requirement	Required to be in SBEIA
Applying for coverage and plan submittal.	2.1	Compliance with baseline laws and rules	No
Transporting biosolids	2.4	Compliance with baseline laws and rules	No
Storing biosolids	2.5	Above baseline; Compliance with baseline laws and rules	Yes
Disposal of sewage sludge in a municipal solid waste landfill	2.6	Compliance with baseline laws and rules	No
Transferring biosolids	2.7	Above baseline; Compliance with baseline laws and rules	Yes
Reporting	2.17	Above baseline; Compliance with baseline laws and rules	Yes
Recordkeeping requirements	2.23	Compliance with baseline laws and rules	No

1.5.2 Requirements in the Permit for Active Septage Management Facilities

Table 4 Requirements in the permit for active septage management facilities

Type of Requirement	Permit Condition Number	Basis of Requirement	Required to be in SBEIA
Public notice	3.2	Above baseline; Compliance with baseline laws and rules	Yes
Sampling, analysis, and process monitoring	3.4	Above baseline; Compliance with baseline laws and rules	Yes
Land applying septage	3.6	Compliance with baseline laws and rules	No
Site management and public access restrictions	3.8	Compliance with baseline laws and rules	No

1.5.3 Requirements in the Permit for Active Biosolids Management Facilities

Table 5 Requirements in the permit for active biosolids management facilities

Type of Requirement	Permit Condition Number	Basis of Requirement	Required to be in SBEIA
Public notice	4.2	Above baseline; Compliance with baseline laws and rules	Yes
Sampling, analysis, and process monitoring	4.4	Above baseline; Compliance with baseline laws and rules	Yes
Non-exceptional quality biosolids applied to agricultural land, forest land, public contact sites, or land reclamation sites	4.5	Compliance with baseline laws and rules	No
Exceptional quality biosolids	4.6	Above baseline; Compliance with baseline laws and rules	Yes
Labeling for exceptional quality biosolids	4.6.1	Above baseline; Compliance with baseline laws and rules	Yes

1.6 Compliance Requirements for the Biosolids General Permit

This section provides a brief explanation of the general permit compliance requirements with a focus on the requirements for:

- Applying for permit coverage and plan submittal.
- Reporting for all facilities.
- Recordkeeping for facilities who prepare or apply biosolids.
- Monitoring of biosolids applied to the land or sold/given away.
- The quality of biosolids applied to the land or sold/given away.

1.6.1 Applying for Permit Coverage and Plan Submittal

All existing facilities required to be covered under the general permit would have to submit a complete application within 90 days of the effective date of the general permit. All new facilities would have to submit a complete application at least 180 days in advance of engaging in applicable biosolids management activities.

A complete permit application package includes:

1. An Application for Coverage.
2. A vicinity map of the facility.
3. A vicinity map of any associated treatment or storage facilities.
4. A treatment facility schematic.
5. Confirmation that State Environmental Policy Act requirements have been met.
6. Confirmation that public notice requirements have been met.
7. Land application plans if applying non-exceptional quality biosolids or septage.
8. Monitoring data if appropriate.
9. A biosolids sampling and analysis plan if appropriate.
10. A contingency plan for exceptional quality biosolids if appropriate.
11. A temporary disposal plan if appropriate.
12. A spill prevention/response plan if transporting biosolids.

1.6.2 Reporting Requirements

Permittees would have to submit an annual report for the previous calendar year, using the format and process specified by Ecology by March 1, of each calendar year.

Facilities are also required to notify Ecology sooner if there are any:

- Planned physical alterations or additions to their facility.
- Significant changes to their biosolids management practices.
- Planned changes in the permitted facility or activity that may result in noncompliance.
- Noncompliance – within 24 hours of becoming aware, with a written explanation of the noncompliance – within 5 days.
- Spills – immediately to the Ecology regional office, to the regional biosolids coordinator within 24 hours, and as otherwise specified in individually approved spill prevention and response plan.
- Incorrect information submitted in a permit application

1.6.3 Recordkeeping Requirements

The general permit defers to the recordkeeping requirements defined in WAC 173-308-290.[16] There are specific recordkeeping requirements for those who:

- Prepare biosolids.
- Apply biosolids.
- Prepare or apply septage.

In general, facilities must keep records for five years.

- Preparers of biosolids or septage must keep records on the:
    - Amount of biosolids managed or stored.
    - Quality of the biosolids.
- Land appliers must keep records on:
    - The amount of biosolids or septage they have applied.
    - The location where they applied it.
    - How they met site management and access restrictions.
- All facilities must maintain statements certifying the accuracy of their records.

1.6.4 Requirements for Transporting Biosolids

Facilities also would have to submit a spill response plan to Ecology which describes how it will attempt to notify of and respond to any spills.

1.6.5 Requirements for Storing Biosolids

Facilities would have to store biosolids in a manner that is not likely to result in the contamination of ground water, surface water, air or land. Facilities must meet specific standards to store biosolids in surface impoundments and tanks.

1.6.6 Requirements for Disposal of Sewage Sludge in a Municipal Solid Waste Landfill

- Facilities would have to obtain the proper approval from the local health jurisdiction (LHJ) and notify Ecology for disposal.
- Temporary disposal – Requires a temporary disposal plan.
- Long-term disposal – Requires documentation showing beneficial use is "economically infeasible", and not simply more costly.

[16] Chapter 173-308 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-290

1.6.7 Requirements for Transferring Biosolids

Coverage under the general permit allows the transfer of biosolids from one facility to another for treatment or management as long as:

- Each facility's permit allows the transfer.
- The facilities exchange adequate information for compliance.
- Ecology has approved the transfer.

1.6.8 Requirement for Public Notice

A facility must have Ecology's approval before they issue a public notice of permit actions.

Notices published or posted under this permit would have to meet Ecology standards.

1.6.9 Requirements for Sampling, Analysis, and Process Monitoring

Facilities would have to submit a sampling and analysis plan that addresses how they intend to meet the analyzing and monitoring requirements. Samples collected for analysis and monitoring would have to be representative of the biosolids or the treatment process used to prepare the biosolids.

The following table is the minimum frequency of biosolids analysis for the:

- Pollutants in WAC 173-308-160.[17]
- Pathogen reduction requirements in WAC 173-308-170.[18]
- Vector attraction reduction standards in WAC 173-308-180.[19]
- Nitrogen concentrations and percent solids needed to support agronomic rate determinations.

[17] Chapter 173-308-160 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-160
[18] Chapter 173-308-170 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-170
[19] Chapter 173-308-180 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-180

Table 6. Minimum Frequency of Biosolids Analysis (adapted from WAC 173-308-150)[20]

Metric tons per Year	Frequency[21]
<1 - 290 (<1 - 320 U.S. tons)	once per year (1X per year)
290 - 1,500 (320 - 1,653 U.S. tons)	once per quarter (4X per year)
1,500 - 15,000 (1,653 - 16,535 U.S. tons)	once per 60 days (6X per year)
>15,000 (>16,535 U.S. tons)	once per month (12X per year)

Monitoring of the processes used to prepare biosolids which are land applied, sold or given away would have to be conducted at a frequency that will ensure the process meets the applicable requirements. This applies to the pathogen reduction processes in WAC 173-308-170[22] and the vector attraction reduction processes in WAC 173-308-180.[23]

All required biosolids analyses would have to be performed by a laboratory that is accredited by Ecology for the respective method used, if an accreditation program for the method exists.

1.6.10 Requirements for Land Applying Septage

Septage that is land applied would have to meet the:

- Removal of manufactured inerts standards in WAC 173-308-205.[24]
- Pathogen and vector attraction reduction standards in WAC 173-308-270(3).[25]
- Agronomic rates determined by soil testing for background levels of nutrients.

In addition, numerous site management and crop harvesting restrictions apply.

1.6.11 Requirements for Site Management and Public Access Restrictions

The time between the last application of septage and Class B biosolids and crop harvesting would have to adhere to the waiting periods in 173-308-210(5)[26] and 173-308-270(4).[27] Public access would have to be restricted following the application of septage and Class B biosolids.

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[20] Chapter 173-308-150 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-150
[21] After two years of analyzing at this frequency, analysis for the pollutant concentrations may be reduced, but it must not be less than 1 time per year.
[22] ibid
[23] ibid
[24] Chapter 173-308-205 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-205
[25] Chapter 173-308-270 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-270
[26] Chapter 173-308-210 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-210
[27] ibid

1.6.12 Requirements for Non-exceptional Quality Biosolids Land Applied to Agricultural Land, Forest Land, a Public Contact Site or a Land Reclamation Site

Biosolids that are land applied would have to meet the:

- Removal of manufactured inerts standards in WAC 173-308-205.[28]
- Pollutant standards in WAC 173-308-160.[29]
- Pathogen reduction standards in WAC 173-308-170.[30]
- Either the vector attraction reduction standards in WAC 173-308-180[31] or be managed on site to reduce vector attraction reduction.
- Agronomic rates determined by soil testing for background levels of nutrients.

In addition, for septage or biosolids that are Class B for pathogens, numerous site management and crop-harvesting restrictions would apply.

To apply non-exceptional quality biosolids a permittee would have to submit:

- Site specific land application plans.
- General land application plans.[32]
- Landowner consent.

1.6.13 Requirements for Exceptional Quality Biosolids

For all first-generation exceptional quality biosolids products, the preparer must provide a label or information sheet with information about the biosolids and how they will manage the biosolids.

This permit does not regulate second-generation exceptional quality biosolids products. Facilities that manufacture second-generation exceptional quality biosolids products would have to ensure physical separation of those products from first-generation exceptional quality biosolids.

[28] ibid
[29] ibid
[30] ibid
[31] ibid
[32] This requirement applies if a facility decides to develop more sites.

Chapter 2: Costs of Compliance with the General Permit

We estimated likely compliance costs based on equipment, labor, and services needed to comply with the permit, in excess of the baseline (requirements of existing laws and rules).

2.1 Compliance Costs

Costs associated with permit requirements include:

- Requirements for all facilities that:
  - Store biosolids.
  - Transfer biosolids.
  - Report.
- Requirements for active septage management facilities to:
  - Issue a public notice.
  - Submit a sampling, analysis, and process monitoring plan.
- Requirements for active biosolids management facilities to.
  - Issue a public notice.
  - Submit a sampling, analysis, and process monitoring plan.
  - Produce exceptional quality biosolids.
  - Label exceptional quality biosolids.

Note that in this chapter we only address costs in excess of the baseline. See Chapter 1 for discussion.

2.1.1. ListServ Membership Requirement

The permit would require all facilities to provide and maintain at least one point of contact on the Biosolids ListServ maintained by Ecology. Ecology provides a link in the permit to subscribe to the Biosolids ListServ. Subscription itself is free. We estimate that completing this task should take about one minute. Therefore, Ecology believes this requirement will not add significant costs for facilities.

2.1.2 Requirements for Storing Biosolids: Lagoons

There are several requirements for surface impoundments (lagoons) used for storage or treatment. Facilities that operate surface impoundments would have to annually report several estimates. Some of them have no cost, because they would not require additional labor or equipment, but professional judgement of an operator:

- Estimating year when solids removal will be required to stay within capacity or prevent violations of discharge limits.

- Planning and notifying Ecology at least one year in advance of solids removal.

Others would incur costs:

- Estimating remaining capacity for biosolids accumulation to the nearest half foot.
- Analyze for the pollutants within 24 months of the date this permit is issued, unless biosolids were analyzed on or after September 1, 2019.

Estimating remaining capacity for biosolids accumulation to the nearest half foot.

The costs for facilities, with lagoons, to comply with the general permit would depend on the size of the lagoon. While it seems appropriate to assume that facilities with lagoons smaller in size will be those with fewer employees, we do not have a specific information that this is always the case. In this section we estimated ranges of costs for some requirements – a low cost and a high cost, although other requirements have the same cost independent to the size of a lagoon.

Lagoon size and depth likely influence the cost of meeting this requirement of the permit. Operators of very small lagoons may be able to assess solids accumulation visually, depending on depth and water quality. This exercise would cost just above $30, if the operator is able to give an estimate by visual inspection, without any additional equipment, within one hour of work. Ecology believes the maximum practical size for a visual assessment is less than one acre. Assessing larger lagoons, and smaller lagoons that are deeper or potentially less clear, will require a small boat and sludge judge to perform the assessment, as well as up to four hours of operators[33] work ($120). We assumed that a permittee would buy a used aluminum or polyurethane utility boat (up to 12 feet in length), which on average costs around $600,[34] and it would take them up to four hours. We do not know how many permittees already own the required equipment. We assume that all will have to purchase the equipment because all will have to collect samples in the first 24 months of the permit, if they have not done so since September of 2019.

Table 7. Estimated labor cost of evaluating remaining capacity for biosolids accumulation

Activity	Cost	Hours (Simple)	Hours (Complex)
Remaining capacity assessment	$30	1	4
Total cost		$30	$120

[33] Water and Wastewater Treatment Plant and System Operators. Median hourly wage $30.61. U.S. Bureau of labor statistics. https://www.bls.gov/oes/current/oes_wa.htm#47-0000

[34] Internet survey of used polyurethane and aluminum boats for sale in Washington, March 16, 2021.

Table 8. Estimated cost of buying equipment for evaluating remaining capacity for biosolids accumulation, sampling for analysis for pollutants

Item	Cost
Sludge judge	$ 50
Utility boat (used)	$600
Buying equipment	$120
Total	$870

Analyzing for the pollutants within 24 months of the date the permit is issued, unless biosolids were analyzed on or after September 1, 2019.

To perform sampling, a facility would need to use additional equipment – a small utility boat and a sludge judge, with no regards to the size of the lagoon. Similarly, Ecology's survey found that the price for pollutants laboratory analysis is consistently $110.[35]

All sampling events require a plan, but Ecology expects a basic plan will be adequate for the purposes of this sampling requirement, and anticipates providing a reliable template and guidance. Consequently, plan preparation should not be burdensome. Additionally, in the year sampling for pollutants is performed, Ecology anticipates that biosolids accumulation and remaining capacity can be assessed at the same time.

Table 9. Total costs for sampling for pollution analysis

Activity	Cost	Hours (Simple)	Hours (Complex)
Sampling for pollution analysis	$30	4	4
Total cost		$120	$120

Total cost

In addition to calculating one-time and annual costs, Ecology calculates present value (PV) costs in analyses that have various streams of costs (different timing of different types of cost). Present values discount all costs to a single equivalent value in the first year of the permit. Costs incurred in subsequent years are discounted based on inflation and opportunity cost.[36] Present values allow for comparison of total costs when different types of costs may be incurred at different

[35] Email communication with Kyle Dorsey, with information from 3 labs on costs of pollutants analysis. Best professional judgement. Email dated 03/01/21.
[36] Ecology uses a discount rate based on the historic average real (accounting for inflation) rate of return on US Treasury I bonds. This rate reflects expected inflation, and the opportunity cost of foregone investment. The current real discount rate is 0.98 percent. US Treasury Department (2020). http://www.treasurydirect.gov/indiv/research/indepth/ibonds/res_ibonds_iratesandterms.htm

times, and by different facilities. When we don't know which year costs will be incurred in, we assume they are incurred in the first year.

Table 10. Total costs for estimating remaining capacity for biosolids accumulation and pollution analysis

Cost	Simple	Complex	Frequency	Average annual cost (nominal)[37]	5-year PV (Simple)	5-year PV (Complex)
Remaining capacity assessment	$30	$120	Every year	$30-$120	$147	$588
Sampling	$120	$120	Once per permit cycle	$24	$120	$120
Pollution test	$110	$110	Once per permit cycle	$22	$110	$110
Equipment	$870	$870	Once	$174	$870	$870
Total				$250 - $340	$1,247	$1,688

Ecology believes these requirements are important, and will save facilities extra costs in the long run. Ecology staff has observed treatment works to postpone removal of solids until it becomes critical – even to the point that solids are visible above the surface. They may not allow adequate time for planning, cost analysis or the bidding process. In that circumstance, costs can increase due to limited availability of contractors with the required equipment and expertise.

It is not common, but operators occasionally find concentrations of pollutants in excess of lower pollutant limits (WAC 173-308-160 – Table 3). When that occurs, beneficial use may not be an option, and solids must be disposed through the landfill system, often at a higher tipping fee. Disposal is also contrary to the state program expectations in law, which seek to maximize beneficial use. If a facility can identify a pollutant issue earlier, they have an opportunity to identify the source and correct the problem. It may not then be necessary to landfill solids when it is time to clean out the lagoon. In a worst case scenario, landfilling can be limited to the amount accumulated and many years of accumulating contaminated sludge can be avoided.

2.1.3 Requirements for Storing Biosolids: Tanks

Facilities are required to protect all tanks using bollards or other devices placed in a manner to prevent accidental damage from vehicles and movement of equipment.

Below we provide examples and estimates for different types of devices that may be used to protect tanks from moving vehicles.

[37] Nominal values are not adjusted for inflation or opportunity cost.

Table 11. Estimate of cost of bollards per tank

Item	Cost	Quantity
Bollard	$130[38]	2
Concrete	$15	2
Labor	$30	2
Total	$350	

Table 12. Estimate of cost of ecology blocks per one tank

Item	Cost	Quantity
Ecology block	$100[39]	1
Delivery	$100	1
Labor	$30[40]	2
Total	$260	

The other options that would require minimal labor costs from an operator is Jersey barriers – $175 per tank.[41]

We assume that (based on the Ecology's staff observation and estimate) that a typical facility[42] has two tanks.[43]

Table 13. Estimated cost of tank protection devices (from low to high) per facility.

Device	One-time cost
Jersey barriers	$350
Ecology blocks	$520
Bollards	$700

One-time costs, assumed to be incurred in the first year of the permit cycle, have equivalent 5-year present value costs.

[38] Surveyed online prices for bollards, March 2021.
[39] Surveyed online prices for ecology blocks, March 2021.
[40] Water and Wastewater Treatment Plant and System Operators. Median hourly wage $30.61. U.S. Bureau of labor statistics. https://www.bls.gov/oes/current/oes_wa.htm#47-0000
[41] Surveyed online prices for jersey barriers, March 2021.
[42] We note that lagoon facilities probably do not have tanks.
[43] We assumed a typical facility has two tanks, although Ecology is aware of at least one facility that has ten tanks, and several that have one tank.

To be conservative, we assume that a typical permittee does not have other items on site that could be used as protection device, for this reason, we chose to set the low estimate limit at $160 per facility. Permittees are likely to choose the least-cost option that works for their facility, so depending on facility attributes and preferences, they may choose to comply using a higher-cost option up to $350.

2.1.4 Requirements for Transferring Biosolids

When biosolids are transferred to another person for unrestricted use, facilities would be required to comply with WAC 173-308-260[44], including providing a label or information sheet. This requirement is above the baseline because although the rule requires a label or information sheet for a vehicle or bag with a capacity of one metric ton or less, it is not clear about larger quantities. The permit expands the requirement for a label or information sheet to cover all quantities of exceptional quality products. The informational sheet should include:

1. The name, address, and phone number of the person who prepared the biosolids.
2. A statement that the product complies with applicable regulations for biosolids.
3. A statement or information that encourages proper use of the product and protection of public health and the environment.
4. Agronomic rates for typical applications or guidance on how to determine the agronomic rate of application.
5. A statement or information indicating that the product contains or is derived from biosolids.
6. Unless registered as a fertilizer by the Washington state department of agriculture, a disclaimer stating that the product is not a commercial fertilizer and that all nutrient claims are estimates or averages and not guaranteed.

Assuming that this requirement exceeds baseline only for larger quantities, we estimate that the cost of complying with this provision is the cost of printing an additional sheet of paper. This cost is likely very low or close to zero.

2.1.5 Reporting Requirements

In the permit, Section 2.17.4 Reporting in Event of a Spill, requires facilities to report any spill to their relevant Ecology regional office immediately, to the regional biosolids coordinator within 24 hours, and as otherwise specified in approved spill prevention and response plan.

This requirement is not necessarily more stringent than the rule, which says spills should be reported. This requirement does not affect whether or not a report is required; it only affects *when* reporting occurs.

Ecology compares costs incurred at different times using present values, which are based on future values converted to current dollars using a discount rate. Discount rates reflect not only

[44] Chapter 173-308 WAC Biosolids Management: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-308-260

the difference in the purchasing power of money over time (inflation), but also the opportunity cost of getting money later versus getting the same amount now (e.g., if you have $1 now, you could invest it and have more than you would if you just got the same $1 later). Ecology uses a risk-free real (guaranteed and accounting for inflation) rate of return based on historic rates of US Treasury Department I-Bonds.[45] Since 1998, this rate has averaged 0.98 percent per year. [46] The table below summarizes the present values of $1 of costs spent in each year of the permit cycle.

Table 14. The differences between present values are how much could be saved by delaying a dollar of reporting costs.

Year	Nominal Cost (value in the year cost is incurred)	Present Value (in 2021 dollars)
1	$1	$1
2	$1	$0.99
3	$1	$0.98
4	$1	$0.97
5	$1	$0.96

If, under the baseline, reporting a spill would be delayed up to five years, permittees would save *up to* four cents for each dollar of reporting cost, in present value. By requiring immediate reporting, the general permit would create a cost of up to this four percent of reporting costs.

Based on experience, Ecology staff observe that most reporting happens within three days of a spill. We therefore expect this cost to be minimal.

2.1.6 Public Notice Requirement

Notices required to be published or posted under this permit, would have to meet Ecology standards as to content, overall dimension, font size, and placement. This requirement does not affect whether or not a notice is required; it only affects its specific characteristics. There are two types of notices that are required by the rule:

- Notice in a newspaper of general circulation.
- Notices posted at a site.

The pricing for public notices in the newspapers are usually per word rather than per square inch and are published in a special section with similar public notices, therefore, Ecology's standards would not impose additional costs.

[45] US Treasury Department (2020): http://www.treasurydirect.gov/indiv/research/indepth/ibonds/res_ibonds_iratesandterms.htm
[46] ibid

For notices posted at a site, exact requirements would differ and depend on the region. For an illustration of costs of sign-posting requirements we can look to the analysis of compliance costs for Ecology's Aquatic Plant and Algae Management General Permit.[47] The 2021 printing cost of an 11-inch by 17-inch is $3.50 per water resistant sign; and of two-sided, corrugated plastic two-foot by four-foot signs with metal stakes is $45 per sign. The smaller signs usually required around the site of land application at significant site access points. Ecology expects 12 signs would be adequate to post notice at an average site. In most cases, we do not expect larger signs to be required for biosolids permittees, though under this new general permit Ecology does reserve the right to require additional or more complex signage if necessary for public notice of permit actions. The estimated total costs for public notice signs approved by Ecology is between $42 and $87.

Table 15. Total cost for public notice requirement

Item	Quantity	Cost per sign	Total one-time cost
Small water-resistant signs	12	$3.50	$42
Large sign	1	$45	$45
Both: small and large			$87

One-time costs, assumed to be incurred in the first year of the permit cycle, have equivalent 5 – year present value costs.

2.1.7 Requirement to Use an Accredited Lab

The permit would require all biosolids analyses to be performed by a laboratory accredited by Ecology for the respective method used, if an accreditation for the method exists. This requirement is based on Ecology "Executive Policy 22-02" and is more stringent than chapter 173-308 WAC and federal rules. This executive policy ensures that laboratories performing environmental analyses are capable of providing accurate and defensible data for Ecology's use in making decisions concerning the environment. Ecology publication 10-03-048, Procedural Manual for the Environmental Laboratory Accreditation Program,[48] describes the accreditation process. Many of the permittees are required to provide other data from an accredited laboratory through a different permit.[49] In this case a permittee could benefit from bulk discounts and saving time for submitting samples and communicating with the lab.

2.1.8 Requirements for Exceptional Quality Biosolids

[47] Ecology Publication 20-10-031 Small Business Economic Impact Analysis. Aquatic Plant and Algae Management General Permit National Pollutant Discharge Elimination System and State Waste Discharge General Permit, 2020: https://apps.ecology.wa.gov/publications/SummaryPages/2010031.html

[48] Ecology publication 10-03-048 Procedural Manual for the Environmental Laboratory Accreditation Program: https://apps.ecology.wa.gov/publications/SummaryPages/1003048.html

[49] For example, permits under National Pollutant Discharge Elimination System, State Waste Discharge Permits.

The permit requires facilities that manufacture second-generation exceptional quality biosolids to ensure their physical separation from first-generation exceptional quality biosolids, with no possibility of mingling. Facilities presently separate products for business purposes. This requirement is therefore not likely to impose additional costs, as behavior is not expected to change under the additional explicit requirement. Moreover, Ecology no longer regulates second-generation products, which gives the permittee an incentive to separate the two types of biosolids.

2.1.9 Labeling Requirements for Exceptional Quality Biosolids

The requirement is the same as in 2.1.4 Requirements for Transferring Biosolids, but specifically for the first-generation exceptional quality biosolids. Please see the discussion of the costs above.

2.2 Summary of Compliance Costs

The table below summarizes estimated compliance costs. For underlying assumptions, see section 2.1. See next page.

Table 16. Summary of 5-year PV compliance costs by types of facility.

Total cost by type of facility	Estimated nominal cost (Low)	Estimated nominal cost (High)	Average annual costs (nominal)	Estimated cost in 5-year PV (Low)	Estimated cost in 5-year PV (High)
1. Sampling, analysis and capacity estimate for facilities with lagoons	$1,250	$1,700	$250-$340	$1,247	$1,688
2. Protecting devices for facilities with tanks	$350	$700	$32-$70	$350	$700
3. Facilities required to post public notice	$42	$87	$8-$17	$42	$87
If (1) and (3) apply	$1,292	$1,787	$258-$357	$1,289	$1,775
If (2) and (3) apply	$392	$787	$78-$157	$392	$787
If (1), (2), and (3) apply	$1,642	$2,487	$328-$497	$1,639	$2,475

Chapter 3: Relative Compliance Costs for Small and Large Businesses

This chapter compares the costs of compliance per employee for small businesses to the compliance cost per employee at the largest ten percent of businesses covered by the permit. The governing rule (WAC 173-308-90005) allows for this comparison to be made on one of the following bases:

- Cost per employee.
- Cost per hour of labor.
- Cost per one hundred dollars of sales.

We use cost per employee, because this data is readily and most comprehensively available for businesses operating in Washington State.

3.1 Facility Size Data

There are currently 375 facilities covered by the existing biosolids permit, and 70 of them are privately owned. We were able to find employment data on 49 of them. Eighty-four percent of the facilities are considered small businesses and average seven employees, while the largest 10 percent are seven businesses with an average of 425 employees.

We identified in the previous chapter that costs would differ depending on how facilities store biosolids – whether the owns a lagoon, or a tank. We analyzed the costs for those facilities for which we have exact information in the set of permittees if there is a lagoon or a tank at the facility, additionally we assumed that any septage facility has a tank. We do not have information if any facility owns both, although this is possible. We also assumed that any permittee may be required to post signs for public notice. The table below shows the average number of employees per business by biosolids storage type.

Table 17. Average number of employees per business by biosolids storage type

Facility type	Number of small facilities	Number of largest 10 percent	Average number of employees for small	Average number of employees for largest 10 percent
All	57	7	7	425
Lagoon	7	1	8	375
Tank	16	1	5	750

3.2 Relative Costs of Compliance

A public notice requirement is established in the rule, the permit would only specify overall dimension, font size, and placement of the notices. We do not know how many of the permittees would be affected by this requirement or its exemptions, therefore we analyze compliance for the general population. For lagoons and tanks requirements we used information about facility's storage and number of employees available to us.

Table 18. Cost per employee of public notice sign per employee

Cost estimate	Small business	Largest 10%
Low	$6	$0.10
High	$12	$0.20

Table 19. Cost per employee of lagoon sampling, pollutant testing, capacity estimation, and public notice requirement

Cost estimate	Small business	Largest 10%
Low	$162	$3
High	$224	$5

Table 20. Cost per employee of protection devices for tanks, and public notice requirement

Cost estimate	Small business	Largest 10%
Low	$69	$0.50
High	$138	$1

Table 21. Total costs per employee for all requirements and all facilities

Cost estimate	Small business	Largest 10%
Low	$78	$2
High	$118	$3

Based on the estimates of costs per employee, we conclude that the general permit has a disproportionate impact on small businesses. For each compliance area, the expected impact is disproportionate, regardless of whether we make the conservative assumption that small facilities are small businesses and large facilities are large businesses.

Chapter 4: Mitigation of Disproportional Impacts

The general permit likely imposes disproportionate costs on small businesses, so Ecology took the legal and feasible actions described in this chapter to reduce small business compliance burden.

4.1 Mitigation Options Under WAC 173-226-120

We took all legal and feasible actions to reduce small business compliance burden. We considered the following options to reduce the impact of the permit on small businesses:

- Different compliance and reporting requirements are set for different types of facilities, which may reduce costs for small businesses to the extent they operate facilities with lower requirements.
- The permit clarifies, consolidates, and simplifies compliance and reporting requirements for all businesses. This could disproportionately benefit small businesses, however, since they have less staff and resources to work with.
- For some requirements the permit establishes performance standards rather than design standards. Choosing less expensive and labor intensive option to comply could also benefit small businesses more than larger ones.
- We were not able to exempt any businesses based on their size, as permit applicability depends on facility attributes. To the extent that small businesses operate small facilities with fewer compliance requirements, parts of the permit are inherently less or not applicable to them.

4.2 Mitigation Actions

Ecology has taken the following actions to mitigate the compliance cost impact of the permit. These actions were taken during the development of the permit.

In each of the features listed below, Ecology used the flexibility available to reduce costs. This will reduce costs for the affected small businesses but will also reduce costs for large businesses. The mitigation effect develops from two factors: 1) fewer permit requirements applicable to small businesses that operate small facilities and, therefore, incur less costs; 2) the benefits of costs reductions are disproportionate for small businesses as they have less staff and resources to work with.

Ecology amended the general permit to mitigate its impacts as follows:

1. Establishing differing compliance or reporting requirements or timetables for all businesses.

- Including Baseline[50] section to the permit. Facilities without active biosolids programs will have final approval of coverage under the general permit when the permit is effective. The businesses and public served by these facilities – many located in small communities with limited resources – will benefit from the reduction in burden placed on staff at their treatment works.
- Small facilities are not required to sample as often or as extensively as large facilities.

2. Clarifying, consolidating, or simplifying the compliance and reporting requirements under the general permit for all businesses.
   - Automatic coverage for some facilities. A permit application is not required from these facilities that do not have active management programs if they have no significant changes in biosolids management practices from the previous permit cycle, and if they submitted a Notice of Intent to continue coverage, before the previous general permit expires. Ecology worked to ensure all applicable facilities of record had submitted a Notice of Intent before the previous permit expired in September of 2020.
   - Collecting reports online, which saves time and money, increases accuracy of reporting and data collection.
3. Establishing performance rather than design standards.
   - Adding email option to Identification and Notice to Interested Parties requirement to confirm receipt of notification.
   - Providing options for tank protection devices, not limiting them to bollards, that may be expensive.
4. Exempting businesses from parts of the general permit.
   - Exempting requirements for application to surface impoundments at septage management facilities and mixing facilities for facilities that mix primarily septage with smaller amounts of biosolids with surface impoundments.
   - Excluding all second-generation exceptional quality biosolids products from requirements.

Some of the mitigation actions are included in the baseline:

- Including provisional approval. A facility with provisional approval is under permit and can continue to operate while Ecology approves permit coverage.

[50] Baseline as in the term used in the part of General Permit that covers all facilities, not as a term for existing laws and rules that permittees are required to comply with.

References

Independent peer review: Review is overseen by an independent third party.

US Bureau of Labor Statistics, 2019. May 2019 State Occupational Employment and Wage Estimates. Washington. https://www.bls.gov/oes/current/oes_wa.htm

US Treasury Department, 2020. Fixed rate of return to inflation-indexed I-Bonds. http://www.treasurydirect.gov/indiv/research/indepth/ibonds/res_ibonds_iratesandterms.htm

Internal peer review: Review by staff internal to Ecology.

N/A

External peer review: Review by persons that are external to and selected by Ecology.

N/A

Open review: Documented open public review process that is not limited to invited organizations or individuals.

N/A

Legal and policy documents: Documents related to the legal framework for the significant agency action, including but not limited to: federal and state statutes, court and hearings board decisions, federal and state administrative rules and regulations, and policy and regulatory documents adopted by local governments.

- Water Quality Standards for Ground Waters of the State of Washington (WAC 173-200)
- Water Quality Standards for Surface Waters of the State of Washington (WAC 173-201A)
- Sediment Management Standards (WAC 173-204)
- Water Quality Permit Fees (WAC 173-224)
- Federal laws and rules, including but not limited to the Clean Water Act and federal National Pollutant Discharge Elimination System (NPDES) regulations if discharging to surface waters.
- Municipal Sewage Sludge-Biosolids (RCW 70A.226)
- Biosolids Management (WAC 173-308)
- Solid Waste Handling Standards (WAC 173-350)

Data from primary research, monitoring activities, or other sources, but that has not been incorporated as part of documents reviewed under independent, internal, or external peer review.

Surveyed online prices for 8.5-feet steel barricades, March 2021.

Surveyed online prices for boat trailers rentals, March 2021.

Surveyed online prices for bollards, March 2021.

Surveyed online prices for ecology blocks, March 2021.

Surveyed online prices for equipment (sludge judge), March 2021.

Surveyed online prices for jersey barriers, March 2021.

Surveyed online prices for public notices publishing in local newspapers, March 2021.

Surveyed online prices for utility boat rentals, March 2021.

2020 Survey of printing prices, July 2020. Survey included prices via internet and in-person services at stores with physical locations. Prices may be lower if supplies are purchased via online-only marketplaces, but would include shipping costs.

2020 Survey of printing prices, July 2020. Survey included prices via internet and in-person services at stores with physical locations that offered two-foot by three-foot weatherproof signs.

Infogroup, 2020. Employment database for Washington State. Missing values were determined using employer websites or aggregators.

Records of the best professional judgment of Ecology employees or other individuals.

Email communication with Kyle Dorsey, with information from 3 labs on costs of pollutants analysis. Best professional judgement. Email dated 03/01/21.

Other: Sources of information that do not fit into other categories.

N/A