



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

# **Preliminary Cost-Benefit and Least Burdensome Alternative Analyses**

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*Chapter 173-351 WAC*

*Criteria for Municipal Solid Waste Landfills*

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# **Preliminary Cost-Benefit and Least Burdensome Alternative Analyses**

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## **Chapter 173-351 WAC Criteria for Municipal Solid Waste Landfills**

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for

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# Executive Summary

The Department of Ecology is proposing to amend Chapter 173-351 WAC Criteria for Municipal Solid Waste Landfills. Chapter 173-351 WAC applies to publicly or privately owned Municipal Solid Waste Landfill (MSWLF) units that may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion. The proposed rule would:

- Adopt new federal regulations and allow for issuance of Research, Development and Demonstration (RD&D) permits.
- Eliminate equivalent and arid liner designs and extend greater flexibility for alternate liner designs consistent with federal regulations.
- Eliminate arid closure cover design criteria.
- Add requirements for owners/operators **to file an environmental covenant at closure in accordance with Chapter 64.70 RCW, Uniform Environmental Covenants Act.**
- **Adopt new post-closure care period standards, which are based on potential risk to human and environmental receptors.**
- Add **alternative borehole program approval requirements to ensure quality characterization of the geology and hydrogeology of a site.**
- **Include prevailing wage law provisions for financial assurance for closure.**
- Address “general housekeeping” issues such as clarify definitions, make formatting changes, and ensure that the rule would be consistent with WAC 173-350, Solid Waste Handling Standards.

The Administrative Procedures Act (RCW 34.05.328(d)(e)) requires two types of analyses before adopting a significant legislative rule – a cost-benefit analysis and a least burdensome alternative analysis. This report provides the results of these analyses and shows the potential impacts associated with the rule.

Ecology estimated costs likely to result from the proposed rule, associated with:

- Ground Water Reporting.
- Environmental Covenant.
- Post-Closure Care.

These costs range from \$81,600 - \$161,600 in present value terms, over the 20 year period of study.

Many of the benefits associated with the proposed rule are minimal, fall outside of the time-frame of the current analysis, accrue to potential entrants into the industry (which are not able to be accurately predicted) or are non-quantifiable. These include:

- Location Restrictions.
- Issuance of RD&D permits
- Design Criteria.
- Ground Water Reporting.
- Post-Closure Care.

These benefits range from \$954,000 - \$1,908,000 in present value terms, over 20 years.

Based on qualitative and quantitative assessment of the likely costs and benefits, Ecology concludes that there is reasonable likelihood that the estimated benefits of the proposed rule exceed its costs.

In the Least Burdensome Analysis, Ecology concluded that there is sufficient evidence the rule is the least burdensome version of the rule for those who are required to comply. Ecology considered several alternatives:

- No action.
- Elimination of all unlined landfills in the state.
- Closure and Post-Closure Care.
- Removal of 10-year permit term limit.
- The Proposed Rule.

Based on those alternatives, Ecology concluded the proposed amendments are the least burdensome.

# Chapter 1: Background and Introduction

## 1.1 Introduction

This report reviews the economic analysis performed by the Washington State Department of Ecology (Ecology) to estimate the expected benefits and costs of the proposed rule, Criteria for Municipal Solid Waste Landfills (Chapter 173-351 WAC). This document is generally intended for use with an associated Least Burdensome Alternative (LBA) analysis (included in this document) to develop an understanding of the full impact of the proposed rule amendments.

The Washington Administrative Procedure Act (RCW 34.05.328) required Ecology to evaluate significant legislative rules to “[d]etermine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs, and the specific directives, of the law being implemented.”

Ecology’s analysis is based on the best available information at the time of this analysis. Ecology encourages the public to comment on this document and provide any additional pertinent information to improve the accuracy or final estimates or content.

## 1.2 Description of the proposed rule

The Department of Ecology is proposing to amend Chapter 173-351 WAC Criteria for Municipal Solid Waste Landfills. Chapter 173-351 WAC applies to publicly or privately owned Municipal Solid Waste Landfill (MSWLF) units that may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion. The proposed rule would:

- Adopt new federal regulations and allow for issuance of Research, Development and Demonstration (RD&D) permits.
- Eliminate equivalent and arid liner designs and extend greater flexibility for alternate liner designs consistent with federal regulations.
- Eliminate arid closure cover design criteria.
- Add requirements for owners/operators to file an environmental covenant at closure in accordance with Chapter 64.70 RCW, Uniform Environmental Covenants Act.
- Adopt new post-closure care period standards, which are based on potential risk to human and environmental receptors.
- Add alternative borehole program approval requirements to ensure quality characterization of the geology and hydrogeology of a site.
- Include prevailing wage law provisions for financial assurance for closure.
- Address “general housekeeping” issues such as clarify definitions, make formatting changes, and ensure that the rule would be consistent with WAC 173-350, Solid Waste Handling Standards.

The new design standards would adopt the requirements of 40 CFR Part 258.40(a)(1). This is a new federal performance-based criterion that says the design of a landfill must prevent

groundwater from exceeding the contaminant levels shown in Table 1 of the same section of the federal rule or the groundwater quality criteria in Chapter 173-200 WAC. Additional design considerations would also be adopted into the rule that correlate with the explosive gas control requirements of WAC 173-351-200(4) and 40 CFR Part 258.23.

Ecology is also proposing new “functionally stable” criteria for the post-closure care period in WAC 173-351-500(2)(a). The owner or operator must demonstrate that the closed landfill will not pose a threat to public health or the environment from exposure to waste, leachate, gas, or groundwater. The point of potential exposure would be determined by what is written into the environmental covenant. For post-closure calculations, the owner or operator would estimate the time required for a closed landfill to become functionally stable using the aforementioned conditions along with on-site conditions, readily available modeling software, and good engineering practices. Annual costs for post-closure care do not change under the proposed rule.

### **1.3 Reasons for the proposed rule**

In 2004 the U.S. Environmental Protection Agency (EPA) amended the federal rule (40 CFR Part 258) to allow Municipal Solid Waste Landfills (MSWLFs) to obtain Research, Development and Demonstration (RD&D) permits for new, existing and lateral expansions. The purpose of the RD&D component of this rule making is to expand the variance authority for innovative or new technologies or methods beyond the authority that already exists in the current state rules for MSWLF criteria. RD&D permits would provide a variance from existing requirements for run-on control systems, liquid restrictions, and the final cover requirements. The amended rule would allow landfills, with concurrence from the local health jurisdiction and state solid waste program, to take advantage of these variances provided that MSWLF owners/operators demonstrate that compliance with the RD&D permit will not increase risk to human health and the environment.

Currently, Ecology has achieved only partial approval from the Environmental Protection Agency (EPA) for the existing MSWLF rule. By incorporating the recent RD&D and other federal amendments into WAC 173-351, Ecology anticipates the agency would receive full approval of our state program from EPA. For the most part, Ecology would be incorporating the federal rules, virtually identically, into WAC 173-351. For some of the federal regulations this rule adoption would not incorporate some of the federal less stringent optional provisions, and some parts of federal rules modified to conform to the state differences in the existing regulations.

### **1.4 Document organization**

Ecology organized this document into the following sections:

- Baseline and the proposed rule (Chapter 2): Description of the baseline requirements in state and federal laws and rules and the proposed rule. Comparison of the baseline to the proposed rule, as well as how both apply in context.
- Likely costs of the proposed rule (Chapter 3): Analysis of the types and size of costs Ecology expects impacted parties to incur from the proposed rule.

- Likely benefits of proposed rule amendments (Chapter 4): Analysis of the types and size of benefits expected to result from the proposed rule.
- Cost-benefit comparison and conclusions (Chapter 5): Discussion of the complete implications of the Cost-Benefit Analysis and comments on the results.
- Least burdensome alternative analysis (Chapter 6): Analysis of considered alternatives to the proposed rule.

# Chapter 2: Baseline and Proposed Rule

## 2.1 Introduction

In this chapter, Ecology describes the baseline to which the proposed rule is compared. The baseline is the regulatory context, and its application, in the absence of the amendments being adopted.

In this chapter, Ecology also describes the proposed rule, and identifies which elements of the proposed rule require analysis under the Administrative Procedure Act (Chapter 34.05 RCW). Here, Ecology addresses complexities in the scope of analysis, and indicates which cost and benefit analyses are discussed in chapters 3 and 4 of this document.

## 2.2 Baseline

Ecology compared the proposed rule to a baseline representing what would most likely happen if the proposed rule is not adopted. This baseline includes the regulatory framework of other state and federal laws and rules, and how they would be applied. For the proposed rule amendments to the Criteria for Municipal Solid Waste Landfill Regulations, the baseline includes both the requirements in the existing rule and 40 CFR Part 258. The federal language is included because federal regulation applies to facilities in Washington State in the absence of EPA approval of Washington's program. EPA requires that state programs be at least as stringent as the federal regulations in order to grant approval.

## 2.3 Analytic scope

Requirements in proposed rules that are dictated by state and federal regulations (to the extent that Ecology has no discretion in determining them) are exempt from this analysis. Many of the aspects of the proposed rule are mandated by Federal regulations. Others are "general housekeeping", such as clarification of definitions, formatting changes, and ensuring consistency with WAC 173-350, Solid Waste Handling Standards. Only those requirements that Ecology has discretion over are subject to analysis and are analyzed relative to the baseline.

For the current analysis, Ecology uses a time-horizon of 20 years when calculating both the costs and benefits of the proposed rule.

## 2.4 Analyzed changes

Ecology qualitatively or quantitatively analyzed the impacts of the following proposed rule elements:

- Location Restrictions
- Issuance of RD&D permits
- Design Criteria
- Ground Water Reporting

- Environmental Covenant
- Post-Closure Care
- Permit Provisions

## Location Restriction

### ***Proposed rule***

The proposed rule would add channel migration zones (areas likely to be impacted by stream or river channel movement) to location restrictions.

### ***Baseline***

Under current conditions, channel migration zones are not discussed.

### ***Primary change***

The proposed rule establishes a requirement that all future locations for landfills be outside of channel migration zones. This would prevent landfills from being damaged by erosion when stream channels change over time.

## Issuance of RD&D permits

### ***Proposed rule***

The proposed rule would expand the variance authority for innovative or new technologies or methods beyond the authority that already exists in the current state rules for MSWLF criteria.

### ***Baseline***

Under current conditions, RD&D permits are not discussed.

### ***Primary change***

The key component for RD&D permits is to allow owner/operators to add water to landfills.

## Design criteria

### ***Proposed rule***

The proposed rule would require that the bottom layer of liner be at least ten feet above the seasonal high level of ground water, unless a hydraulic gradient control system can be installed which would prevent seasonal high level ground water from contacting the lowest liner level.

### ***Baseline***

The baseline in this case requires the bottom layer of liner be at least ten feet above the seasonal high level of ground water, decreasing to five feet of vertical separation from the top of the aquifer to the bottom of the landfill liner with a hydraulic gradient control system.

***Primary change***

This has the effect of increasing the potential volume of the landfill by increasing the allowable depth by five feet. Greater overall volume allows more waste to be collected and increases disposal fees collected by the landfill over the lifetime of the landfill.

## Ground water reporting

***Proposed rule***

The proposed rule would require each owner/operator to submit an annual groundwater reports in both printed and electronic form. It would also allow the owner/operator discretion in selecting which statistical method he/she used in preparing the report.

***Baseline***

Currently, annual reports are to be prepared and submitted in printed form only. Also, the statistical methods to be used are explicitly defined.

***Primary change***

The submission requirement represents a minimal change, as the information is already being collected and environmental laboratories working in Washington State are already familiar with the electronic format. Discretion in choice of statistical methods represents a potential benefit to owners /operators.

## Environmental covenant

***Proposed rule***

The proposed rule would require the owner or operator to file an environmental covenant following the closure of a MSWLF.

***Baseline***

Existing state law requires the owner or operator make a notation on the deed to the facility property following closure.

***Primary change***

Environmental covenants would be required at closure for all MSWLFs.

## Post-closure care

***Proposed rule***

The proposed rule would require a facility owner/operator to provide an estimate of the time required for care in the post-closure plan. Further, the owner/operator would be required to provide post-closure care until the landfill becomes “functionally stable”, that is it no longer poses a threat to human health or the environment by exposure to waste, leachate, landfill gas, and groundwater.

***Baseline***

Currently, owner/operators are required to provide post-closure care for a period of 30 years. The permitting authority may shorten or lengthen the post-closure period, but the rule provides no criteria for doing either.

***Primary change***

“Functionally stable” represents a risk-based approach to determining the safety-level of the site, as opposed to the previous time-based approach. When used in conjunction with the environmental covenant, the potential exists to significantly decrease the period of time that post-closure care must be performed when compared to non risk-based approaches.

**Permit provisions**

***Proposed rule***

The proposed rule would allow the term of the permit to be established by the jurisdictional health department (JHD). The term of the permit may include the life of the facility including the post-closure period. Owners/operators must renew their permit at least every five years and can be repeated.

***Baseline***

Currently, permit terms are limited to ten years and must be renewed every year. The term limit requires permits to be reissued every 10 years.

***Primary change***

Renewal is essentially resubmission of previously prepared paperwork, and places no added burden on the owner/operator. Whereas reissuance, which represents nearly beginning the permitting process from scratch places significant burden on the owner/operator in the form of primary data collecting and reporting.

# Chapter 3: Likely Costs of the Proposed Rule

## 3.1 Introduction

Ecology estimated the expected costs associated with the proposed rule, as compared to the baseline as described in section 2.2 of this document. The baseline is the regulatory circumstances in the absence of the proposed rule. The costs analyzed here are associated with the proposed rule elements listed in section 2.4 of this report.

To the extent possible, Ecology has quantified these impacts, and has otherwise described them qualitatively to include in overall assessment of the costs of the proposed rule.

## 3.2 Growth in the industry

Currently, there are no new permits for Municipal Solid Waste in process. It has been 13<sup>1</sup> years since a new permit has been approved. While it is certainly possible that new permit applications will occur in the future, Ecology is unable to forecast this eventuality with any level of certainty.

## 3.3 Expected costs

Ecology estimated costs likely to result from the proposed rule, associated with:

- Ground Water Reporting.
- Environmental Covenant.
- Post-Closure Care.

### Ground water reporting

Owners/operators are already required to collect ground water information, and laboratories are familiar with the electronic reporting format. The information that is to be reported is already being collected. Therefore the added cost of reporting this information would be minimal.

### Environmental covenant

Under the proposed rules owners or operators would need to file an environmental covenant following the closure of a MSWLF. The cost of an environmental covenant varies by county and includes the appropriate filing fee. A per site estimate of \$100 is used<sup>2</sup>. If the filing requires additional information gathering, it is estimated that costs would increase by up to \$5,000 per landfill<sup>3</sup>. For the 16 currently operating facilities, the aggregate cost would range from \$1,600 to \$81,600.

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<sup>1</sup> LRI in Tacoma was the most recent new landfill site. It was permitted in 1999.

<sup>2</sup> Filing fees average \$62 + \$1 per page. An estimate of roughly 40 pages per covenant was used.

<sup>3</sup> Per Steve Emge, P.E. Parametrics, phone conversation, 4/19/2012. Cost represents estimate of fee a consultant would charge to complete the task.

## Post-closure care

For post-closure care, the added requirement of including an estimate of the time required for care represents an added cost for the owner/operator. If this information is not collected by the owner/operator in-house, the estimated cost of obtaining this information is \$5,000 per facility<sup>4</sup>. This would be a one-time cost and would be required for all 16 current facilities, for an aggregate cost of \$80,000<sup>5</sup>.

The proposed rule would require the closed landfill site to meet a “functionally stable” standard before the owner/operator was no longer responsible for post closure care. This change from a numeric (30-year) approach to a risk-based approach to post-closure care could increase the care period or decrease it. An increase would add costs for the owner/operator and a decrease would subtract costs. Ecology anticipates that under the new requirements, post-closure care would last longer than 20 years and therefore falls outside of the 20-year scope of the current analysis.

### 3.4 Total expected costs

Ecology calculated total expected costs associated with the proposed rule, in present value, over 20 years as shown in the table below.

<b>Cost</b>	<b>Low</b>	<b>High</b>
Ground Water Reporting	-	
Environmental Covenant	\$1,600	\$81,600
Post-Closure Care	\$80,000	\$80,000
<b>TOTAL</b>	<b>\$81,600</b>	<b>\$161,600</b>

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<sup>4</sup> Emge, *ibid.*

<sup>5</sup> This task could be required when the rule takes effect, but likely would occur during the next renewal. Therefore, by not discounting the cost, we are using the highest expected costs.

# Chapter 4: Likely Benefits of the Proposed Rule

## 4.1 Introduction

Ecology analyzed the benefits of the proposed rule, compared to the baseline as described in section 2.2 of this document. The baseline is the regulatory circumstances in the absence of the proposed rule. The cost analyzed here are associated with the proposed rule elements listed in section 2.4 of this document.

To the extent possible, Ecology has quantified these impacts, and has otherwise described them qualitatively to include in overall assessment of the costs of the proposed rule.

## 4.2 Growth in the industry

Currently, there are no new permits for Municipal Solid Waste in process. It has been 13<sup>6</sup> years since a new permit has been approved. While it is certainly possible that new permit applications will occur in the future, Ecology is unable to forecast this eventuality with any level of certainty.

## 4.3 Expected benefits

Ecology estimated benefits likely to result from the proposed rule, associated with:

- Location Restrictions.
- Issuance of RD&D permits
- Design Criteria.
- Ground Water Reporting.
- Post-Closure Care.
- Permit Provisions.

### Location restrictions

By requiring that all future locations for landfills be outside of channel migration zones, the proposed rule will prevent landfills from being damaged by erosion when stream channels change over time.

This represents a potential benefit to future MSWLF projects. However, this will not impact current MSWLFs.

### Issuance of RD&D permits

RD&D permits would allow owner/operators to add water to landfills. This would increase the level of biological activity significantly. This greatly increases the rate at which organic materials degrade, which generates methane. Higher rates of methane generation make landfill gas electric generation cost effective. There are two sources of

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<sup>6</sup> LRI in Tacoma was the most recent new landfill site. It was permitted in 1999.

income from LFG electricity, renewable electricity and carbon credit sales. The actual financial benefit would depend greatly on the size of the landfill and the going rate for renewable energy and carbon credits. While the benefits could be great, there is no way to estimate them with any level of accuracy.

A potentially larger benefit comes from a landfill stabilizing much earlier, reducing the post-closure care period by as much as half. However, this benefit will likely occur beyond the 20 year frame of this analysis for most facilities.

## Design criteria

The proposed rule would potentially allow up to five additional feet of allowable depth for a landfill. As a result MSWLFs could increase the landfill volume, allowing more waste to be collected and increased disposal fees to be collected over the lifetime of the landfill.

Whether this change actually increases potential volume depends on whether the landfill is currently limited by groundwater depth and varies by location. No current MSW landfill, closed or operating, has a hydraulic gradient control system. Therefore, the change will not have any immediate financial impact. The potential benefits will come when new facilities are proposed or when existing landfills expand in size. We cannot predict if or when this benefit will materialize.

## Ground water reporting

Currently, ground water reporting requires the use of statistical methods that are out-of-date. The proposed rule will relieve owner/operators of the burden of some of these methods. This represents a minimal benefit to the owner/operators.

## Post-closure care

The change from a numeric (30-year) approach to a risk-based approach to post-closure care could in some situations, increase the care period, or in other situations decrease it. An increase would add costs for the owner/operator and a decrease would subtract costs. In either situation Ecology assumes that post-closure care would be required for more than 20 years. This impact from this change would fall outside of the 20-year scope of the current analysis.

## Permit provisions

By allowing JHDs to renew permits as opposed to requiring reissuance every 10 years, the proposed rule represents a significant cost savings for owner/operators. Permit renewal represents minimal cost, while reissuance carries a cost of \$50,000 - \$100,000 per permit<sup>7</sup>.

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<sup>7</sup> Emge, *ibid.*

Based on projected re-issuance dates for the 16 currently operating landfills, this change would save owner/operators \$954,000 - \$1,908,000 over the 20-year span of the current analysis<sup>8</sup>.

## 4.4 Total expected benefits

Many of the benefits associated with the proposed rule are minimal, fall outside of the time-frame of the current analysis, accrue to potential entrants into the industry (which are not able to be accurately predicted) or are non-quantifiable. These include:

- Location Restrictions.
- Issuance of RD&D permits
- Design Criteria.
- Ground Water Reporting.
- Post-Closure Care.

Ecology calculated total expected benefits associated with the proposed rule, in present value, over 20 years as shown in the table below.

<b>Benefit</b>	<b>Low</b>	<b>High</b>
Permit Provisions	\$954,000	\$1,908,000
<b>TOTAL</b>	<b>\$954,000</b>	<b>\$1,908,000</b>

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<sup>8</sup> Future values are discounted at an annual rate of 1.58%. Of the 16 currently permitted MSWLFs in Washington, one has yet to be constructed and two are scheduled for closure prior to their next scheduled reissuance and therefore would not benefit from this provision.

# Chapter 5: Cost-Benefit Comparison and Conclusions

## 5.1 Introduction

As discussed in Chapter 1, the Washington Administrative Procedure Act (RCW 34.05.328) requires Ecology to evaluate significant legislative rules to “[d]etermine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs, and the specific directives of the statute being implemented.”

## 5.2 Estimated costs

As described in Chapter 3, Ecology estimated the following costs associated with the proposed rule. These costs are in present value terms, over 20 years, and range from \$81,600 - \$161,600 as shown in Table 1

## 5.3 Estimated benefits

As described in Chapter 4, Ecology estimated the following benefits associated with the proposed rule amendments. These benefits are in present value terms, over 20 years, and range from \$954,000 - \$1,908,000, as shown in Table 2.

## 5.4 Final comments and conclusion

Based on qualitative and quantitative assessment of the likely costs and benefits, Ecology concludes that there is reasonable likelihood that estimated benefits of the proposed rule exceed its costs.

	<b>Low</b>	<b>High</b>
Benefits	\$954,000	\$1,908,000
Costs	\$81,600	\$161,600
<b>TOTAL</b>	<b>\$872,400</b>	<b>\$1,746,400</b>

In addition to the quantifiable benefits of the proposed rule shown in the above table, Ecology also expects the proposed rule to benefit some MSWLFs by allowing higher volumes, expanded locations, or reduced post-closure care, depending on the landfill.

# Chapter 6: Least Burdensome Alternative Analysis

## 6.1 Introduction

RCW 34.05.328(1)(d) requires Ecology to "...[d]etermine, after considering alternative versions of the rule and the analysis required under (b) and (c) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection."

Ecology assessed alternatives to the proposed rule amendments, and determined whether they met the general goals and specific objectives of the authorizing statute. Of those that would meet these objectives, Ecology determined whether the proposed rule amendments were the least burdensome.

## 6.2 Alternatives considered

Currently, Ecology has achieved only partial approval from EPA for the existing MSWLF rule. By incorporating the recent RD&D and other federal amendments into WAC 173-351, Ecology anticipates that the agency would receive full approval of our state program from EPA. For the most part, Ecology would be incorporating the federal rules, virtually identically, into WAC 173-351. For some of the federal regulations this rule adoption would not incorporate some of the federal less stringent optional provisions, and some parts of federal rules modified to conform to the state differences in the existing regulations.

Ecology considered alternative rule contents that would address the above concerns through rulemaking:

- **No action.**
- **Elimination of all unlined landfills in the state:** Ecology considered proposing a rule which would eliminate all unlined landfills.
- **Closure and Post-Closure Care:** Ecology considered proposing a rule with no change to WAC 173-351-500 as well as using a numerical approach to post-closure care.
- **Removal of 10-year permit term limit:** For this rule revision we considered several options to address this issue, including keeping it as-is. One option was to change the 10-year limit to a longer timeframe. Another was to eliminate permit terms and the reissuance procedures altogether.
- **The Proposed Rule.** Ecology considered the rule contents currently being proposed.

Each of these options is described in greater detail below, with a discussion of whether and why it was included in the proposed rule language.

### No action

Ecology determined that taking no action was not appropriate because it would not allow for approval by EPA of the MSWLF rule.

## Elimination of all unlined landfills

Ecology considered proposing a rule which would eliminate all unlined landfills. We currently have at least one unlined landfill in the state. With the proposed rule revision, Washington can continue to allow unlined landfills to remain if the owner/operators would adopt and apply the federal “alternative” design standards (performance standards).

## Closure and post-closure care

Doing nothing would bring up the real possibility of post-closure care financial assurance accounts running dry while the landfill still required care to protect human health and the environment.

The numeric approach was eliminated based on our experience implementing the current rule that required very long post-closure care periods.

## Removal of 10-year permit term limit

The ten-year permit term was originally established solely as a way to provide privately owned landfills sufficient time to fund financial assurance trust accounts. Extending the permit term to some other numerical value, to provide a longer timeframe, would not allow project specific issues to be addressed in a timely manner. Further, eliminating the term altogether would not allow the JHD to address unforeseen issues as they occurred.

## The proposed rule

Ecology anticipates that the proposed rule would result in EPA approval of the entire MSWLF rule. It further would allow current landfills to continue to operate. The risk-based approach also prevents threats and shortens post-closure care to the extent possible while being protective.

# Appendix A – Crosswalk from Current to Proposed Rule

Change	Location	Results
<p>“Corrective action” changed to “remedial action” to align with MTCA terminology.</p> <p>“Effective date of this chapter” changed to November 26, 1993 to avoid confusion when revised rule becomes effective.</p> <p>“Shall” changed to “must”</p> <p>Some long sentences broken to make rule more readable.</p> <p>References to qualified ground water scientist are changed to licensed professional in accordance with Ch. 18.220 RCW.</p>	global change throughout chapter	<p>Clarifications will:</p> <ul style="list-style-type: none"> <li>• Improve readability</li> <li>• Fix errors</li> <li>• Correct citations.</li> </ul>
(1) added “U.S.” to Environmental Protection Agency	WAC 173-351-010 Purpose, applicability,	Clarification
(2)(a) Note modified to update WAC 173-304 to WAC 173-350 reference.	<u>WAC 173-351-010 Purpose, applicability,</u>	Clarification Reference change.
(2)(a)Note: Added “waste”, deleted “limited purpose” Changed -304 to -350 reference and added -350 rule title.	<u>WAC 173-351-010 Purpose, applicability,</u>	Clarifications Deleted “limited purpose” because there are multiple types of landfills.
2(b) and (c): Changed date to when -351 was promulgated (November 26, 1993). Clarified remedial action instead of corrective action.	WAC 173-351-010 Purpose, applicability,	Clarification
“Active life”	WAC 173-351-100 <u>Definitions</u>	Federal Law Deleted “of operation”; changed to eliminate confusion and fixed reference to match 40 CFR Part 258.2.
“Active portion”	WAC 173-351-100 <u>Definitions</u>	Federal Law Fixed reference to match 40 CFR Part 258.2.
“Airport”	<u>WAC 173-351-100</u>	Existing rule language--copied from citation.

	<u>Definitions</u>	
"Areas susceptible to mass movement"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Arid"	<u>WAC 173-351-100</u> <u>Definitions</u>	Eliminated Rule Requirement Arid design standards were deleted from rule.
"Bird hazard"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Channel migration zone"	<u>WAC 173-351-100</u> <u>Definitions</u>	New Rule Definition Definition added to clarify new location restriction in Section 140.
"Cleanup action plan"	<u>WAC 173-351-100</u> <u>Definitions</u>	New Rule Definition Definition added for financial assurance for remedial actions. Defines when requirements apply.
"Contaminate"	<u>WAC 173-351-100</u> <u>Definitions</u>	Deleted Definition The actual term was not used in the rule.
"Contaminant" and "Contaminated or contamination"	<u>WAC 173-351-100</u> <u>Definitions</u>	Clarification Added to serve the purpose of further clarifying what "contaminated" means.
"Demolition"	<u>WAC 173-351-100</u> <u>Definitions</u>	Fixed Error Deleted because is not used in rule.
"Disease vectors"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Displacement"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Existing MSWLF unit"	<u>WAC 173-351-100</u> <u>Definitions</u>	Federal Law Last paragraph eliminated for EPA delegation. This is the "Cathcart clause" that conflicted with the 40 CFR 258 definition.
"Fault"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.

"Flood plain"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Free liquids" and "Liquid waste"	<u>WAC 173-351-100</u> <u>Definitions</u>	Clarification The test method is updated from SW-846 9095 to 9095B.
"Gas condensate"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Holocene"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Inert waste"	<u>WAC 173-351-100</u> <u>Definitions</u>	Clarification Updated to 350 reference.
"Lithified earth materials"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing language--copied from citation.
"Liquid waste"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing language--copied from citation.
"Lower explosive limit"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing language--copied from citation.
"Maximum horizontal acceleration in lithified earth material"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing language--copied from citation.
"Modification" And "Municipal sewage sludge"	<u>WAC 173-351-100</u> <u>Definitions</u>	Clarification Improve readability.
"MSWLF unit"	<u>WAC 173-351-100</u> <u>Definitions</u>	Clarification Updated to 350 reference.
"Natural background"	<u>WAC 173-351-100</u> <u>Definitions</u>	Clarification Added to better define contaminant.
"100 year flood"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.

"Non-arid"	<u>WAC 173-351-100</u> <u>Definitions</u>	Eliminated Rule Requirement Non-arid design standards were deleted from rule in this revision.
"Point of compliance"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--changed to citation. Deleted definition provided regulatory requirements.
"Poor foundation conditions"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Qualified ground water scientist"	<u>WAC 173-351-100</u> <u>Definitions</u>	Clarification Deleted because Chapter 18.220 RCW takes its place throughout rule
"Regulated dangerous waste"	<u>WAC 173-351-100</u> <u>Definitions</u>	Clarification Updates to current Chapter 173-303 WAC and federal 40 CFR Parts 61 & 761
"Scavenging"	<u>WAC 173-351-100</u> <u>Definitions</u>	Clarification Added to define operational requirements of WAC 173-351-220(3)
"Seismic impact zone"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Sole source aquifer"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Structural components"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Unstable area"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Vulnerability"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Wetlands"	<u>WAC 173-351-100</u> <u>Definitions</u>	Existing rule language--copied from citation.
"Woodwaste"	<u>WAC 173-351-100</u> <u>Definitions</u>	Eliminated Rule Requirement Deleted because WAC 173-350 not longer has specific requirements for woodwaste landfills

Several places throughout subsection -130 deleted: "and be issued a solid waste permit by..."	<u>WAC 173-351-130</u> <u>Location</u> <u>restrictions</u>	Clarification Deleted because it could be interpreted to require a jurisdictional health department (JHD) to issue a permit
(2)(b) Airport safety. Distance changed from "five miles" to "six miles".	<u>WAC 173-351-130</u> <u>Location</u> <u>restrictions</u>	 FAA Advisory Circular 150_52C <b>Federal Law</b> To conform to newer FAA requirements.
Several places throughout subsection -140: "and be issued a solid waste permit by the jurisdictional health dept".	<u>WAC 173-351-140</u> <u>Other location</u> <u>restrictions</u>	Clarification Deleted because it could be interpreted to require a JHD to issue a permit
(1)(a) Deleted. The liner separation above ground water is deleted as a location restriction and <u>moved to design criteria</u> .	<u>WAC 173-351-140</u> <u>Other location</u> <u>restrictions</u>	Moved to Design Standard -300 & Changed in -300 The vertical separation of a landfill liner from the uppermost saturated zone is a design, not location element.
New (1)(a) Corrected that all "new" units "and" lateral expansions "may not" be located over a sole source aquifer.	<u>WAC 173-351-140</u> <u>Other location</u> <u>restrictions</u>	Clarification "May" is permissive with the condition following.
(2) Channel migration zones are added into location restrictions.	<u>WAC 173-351-140</u> <u>Other location</u> <u>restrictions</u>	New Requirement Will prevent landfills from damaged by erosion when stream channels change
(3) Added same edits as New (1)(a) above. Changed "and" in (b) and (c) to "or"	<u>WAC 173-351-140</u> <u>Other location</u> <u>restrictions</u>	Clarification
(4) Added, "All landfill facilities must comply with the location restrictions specified in RCW 70.95.060".	<u>WAC 173-351-140</u> <u>Other location</u> <u>restrictions</u>	New Requirement / State Law The statutory location restrictions adopted in 1999 are inserted from RCW 70.95.060.
Subsections (4) – (8) deleted	<u>WAC 173-351-140</u> <u>Other location</u> <u>restrictions</u>	Deleted Requirements Deemed unnecessary and unclear.
(1)(a) The term "dangerous waste" is changed to "prohibited	<u>WAC 173-351-200</u>	Clarification Dangerous waste is very specific whereas the rule

waste".	<u>Operating criteria</u>	is intended to prevent disposal of dangerous waste, improperly managed asbestos waste, and PCB waste regulated under federal rule. This change does not affect current requirements.
(1)(b)(i) Definition of regulated DW, PCB wastes, and prohibited asbestos waste corrected.	<u>WAC 173-351-200</u> <u>Operating criteria</u>	Clarification – WAC 173-303, Federal Air Quality & TSCA
(2)(b) Alternative materials requirements rephrased.	<u>WAC 173-351-200</u> <u>Operating criteria</u>	Clarification Improve readability, no change in requirements.
(4)(b) Explosive gasses. The "control" word is added as an additional requirement.	<u>WAC 173-351-200</u> <u>Operating criteria</u>	Clarification Clarifying owners or operators control landfill gasses, same as (4)(a)..
(4)(b)(i)(E) The design of the landfill is added as a consideration for developing gas monitoring program.	<u>WAC 173-351-200</u> <u>Operating criteria</u>	Clarification Landfill design is an important consideration for landfill gas migration.
(4)(b)(i) Note. Changed "shall" to "must". Added "the department" (Ecology) to approval.	<u>WAC 173-351-200</u> <u>Operating criteria</u>	Clarification Ecology has jurisdiction to approve variances from Ch. 173-160 WAC but still requires JHD's approval.
(7)(a) Added "except as allowed under WAC 173-351-710, owners".	<u>WAC 173-351-200</u> <u>Operating criteria</u>	Federal Law Run-on/run-off control systems reference to RD&D allowance, 40 CFR 258.4
(9)(a) Added "liquid" waste restriction  (9)(b) Added "approval during the permitting process of WAC 173-351-700 prior to placing liquid in the MSWLF unit."	<u>WAC 173-351-200</u> <u>Operating criteria</u>	Federal Law Adds reference to RD&D. This corrects existing contradictory language Aligns better with 40 CFR Part 258.28. Besides being contradictory, the existing requirements were less stringent than the federal rule by allowing water other than leachate and gas condensate to be added.
(10)(a)(ii) and (iv) changed "hazardous" to "prohibited" and "corrective" to "remedial".	<u>WAC 173-351-200</u> <u>Operating criteria</u>	Clarification In line with existing language previously changed. See (1)(a) changes above.
(11) Outdated reference to pre-groundwater effective date requirements for annual reports deleted.	<u>WAC 173-351-200</u> <u>Operating criteria</u>	Clarification / Correction No longer needed – past date.
(11)(ix) & (x) Financial assurance information added to annual reports.	<u>WAC 173-351-200</u> <u>Operating criteria</u>	New Rule Requirement / Updated with WAC 173-350 The current rule requires owner/operators to perform updates but not file with JHD or Ecology. Updated to match existing –WAC 173-350

		requirements.
Throughout subsection -210 changed "shall" to "must" and added "department".	<u>WAC 173-351-210</u> <u>Plan of operations</u>	Clarification
(7) New subsection added	<u>WAC 173-351-210</u> <u>Plan of operations</u>	New Rule Requirement The plan of operation needs to include elements for conformance with operating requirements.
Throughout subsection -220 made minor clarifying edits to improve readability.	<u>WAC 173-351-220</u> <u>Additional</u> <u>operating criteria</u>	Clarification Minor clarification to existing requirements. No substantive changes.
There are significant changes to this entire section and are based on federal regulations, verbatim.  Eliminate equivalent design.  Change to standard design or alternative design.  Changed to a performance standard.	<u>WAC 173-351-300</u> <u>Design criteria</u>	New Rule Requirements / Federal Law The current requirements are a standard design (geomembrane with 2' compacted clay) or an "equivalent" design that apply to non-arid locations, and a performance standard that applies to arid locations. The proposed requirements align with 40 CFR Part 258.40 with a composite liner (identical to current "standard design") or an "alternative" design meeting performance standards that apply to all locations. The approach for the alternative design is very similar to the existing arid design standard. The equivalent design and arid subsections are eliminated.
Proposed (2)(b) alternative design (from federal regs, verbatim)	<u>WAC 173-351-300</u> <u>Design criteria</u>	New Rule Requirement / Federal Law To control landfill gas to the federal design requirements. Ecology's concurrence with proposed alternative design approvals is part of the language to ensure we can meet our responsibilities as an authorized state under the federal program.
New (7) The current liner separation from ground water standards in section 140(1)(a) are moved here.	<u>WAC 173-351-300</u> <u>Design criteria</u>	New Rule Requirement The requirements were changed so that a hydraulic gradient control system only needs to prevent contact with the liner system and not maintain a five foot separation.
Table 1. – contaminant concentrations updated  Changed table.  Adds Washington's ground water quality standards, Ch. 173-200 WAC and requirement from state rule.	<u>WAC 173-351-300</u> <u>Design criteria</u>	New Rule Requirement / State Rule Changed to meet Table 1 limits in WAC 173-200-040 and current drinking water standards.
Changed "corrective" to "remedial" in title of subsection and moved	<u>WAC 173-351-400</u>	Clarification

<p>"units".  (2) Updated with existing state law. Deleted old text and added new text from the law.</p>	<p><u>Ground water monitoring systems and remedial action</u></p>	<p>Existing State Law Requirement: Updated to Ch. 18.220 RCW.</p>
<p>(5) Changed "contamination" to "corruption of samples and contamination of ground water"  (8) Updated with existing state law. Deleted old text and added new text from the state law.</p>	<p><u>WAC 173-351-405 Performance standards for ground water monitoring system designs</u></p>	<p>Clarification-needed to match newly revised "contamination" definition, see definitions above. Existing State Law Requirement. Updated to Ch. 18.220 RCW.</p>
<p>(1)(f) "Decontamination" changed to "cleansing"</p>	<p><u>WAC 173-351-410 Ground water sampling and analysis requirements</u></p>	<p>Clarification needed to match revised "contamination" definition, see definitions above.</p>
<p>(2) Deleted "for organic constituents"</p>	<p><u>WAC 173-351-410 Ground water sampling and analysis requirements</u></p>	<p>New Rule Requirement / Federal Law Requirement  No ground water samples are filtered with change to total metals.</p>
<p>(3)(b)</p> <ul style="list-style-type: none"> <li>• Updated GIS vertical datum</li> <li>• Reference to WAC 332-130-060 id deleted</li> <li>•</li> </ul> <p>(4) added specific sections WAC 173-351-430, 440, or 450  (4) changed "must" and "remedial"</p>	<p><u>WAC 173-351-410 Ground water sampling and analysis requirements</u></p>	<p>Clarification</p> <ul style="list-style-type: none"> <li>• Updated GIS to conform with Ecology IT Standard, revised 10/01/2009.</li> <li>• ID deleted because it addresses horizontal, not vertical control.</li> </ul> <p>  NAVD88Policy</p> <p>Citation update</p> <p>Global changes</p>
<p>(1) Deleted (1) text "The annual report shall must be included..." and replaced with "Each owner or operator must prepare...."</p>	<p><u>WAC 173-351-415 Ground water reporting</u></p>	<p>Clarification</p>
<p>(2) Added new text "or alternate frequency approved in accordance with WAC 173-351-450... The ground water report must include completed forms</p>	<p><u>WAC 173-351-415 Ground water reporting</u></p>	<p>New Rule Requirement  Ecology has developed groundwater report forms to make it easier for facility operators and consultants to provide the required ground water information. An allowance has been provided for</p>

by the department..."		less than quarterly monitoring which is already provided in the rule under WAC 173-351-450.
(2)(b) Added "a brief summary of statistical results and/or any statistical trends and all statistical calculations".	<u>WAC 173-351-415</u> <u>Ground water reporting</u>	Clarification The intent for reporting statistical results is clarified.
(2)(c) Deleted "MCL's" and added "the criteria in chapter 173-200 WAC, Water quality standards for ground waters in the state of Washington.	<u>WAC 173-351-415</u> <u>Ground water reporting</u>	Clarification Clarifying what is above MCL's means.
(3) New subsection added.	<u>WAC 173-351-415</u> <u>Ground water reporting</u>	New Rule Requirement Added so that ground water results are submitted in electronic format for entry into Ecology EIM database and statistical software such as Sanitas.
(1) Deleted "using" and replaced with "for".	<u>WAC 173-351-420</u> <u>Statistical methods for</u>	Clarification Improve readability.
(2) Eliminated specific statistical test methods (tolerance interval, ANOVA, control charts, etc.)	<u>WAC 173-351-420</u> <u>Statistical methods for ground water monitoring</u>	Eliminated Requirement These are no longer considered the best methods. Owners or operators may use any appropriate statistical method that meets the unchanged performance standards. We will advise JHD's and owner/operators regarding current EPA guidance.
All minor, plain talk edits: (2)(a) & (b) & (c) (3) (4)(c) (5)	<u>WAC 173-351-430</u> <u>Detection monitoring program</u>	Clarifications Several edits without substantive changes.
(5)(a) Minor, clarifying edits. & Added clarifying requirement "A ten percent difference threshold is used..." "A five percent difference is used if..."	<u>WAC 173-351-430</u> <u>Detection monitoring program</u>	Clarification & New Rule Requirement. This addition puts existing policy into rule.
(4)(d) Deleted all.	<u>WAC 173-351-430</u> <u>Detection monitoring program</u>	Eliminated Requirement It conflicted with (4)(b) and 40 CFR Part 258.54(c)(2) which requires implementation within 90 days, not submittal of plan for approval within 90 days.

(2) Deleted "quarterly thereafter" and added "annually"; added "(background and down gradient)"; clarified "must be collected"	<u>WAC 173-351-440</u> <u>Assessment</u> <u>monitoring</u> <u>program</u>	New Rule Requirement / Federal Law Corrected to align with 40 CFR Part 258.55(b) and original intent. Appendix III sampling is applied to all wells (background and down gradient)  To determine if contaminants originate from a source other than the MSWLF unit or if volatile organic compounds are transported by landfill gas.
(3)(b) minor edits (4)(a)-(b) minor edits (4)(c) deleted citation	<u>WAC 173-351-440</u> <u>Assessment</u> <u>monitoring</u> <u>program</u>	Clarification
(6)(d) Added "remedial actions in accordance..."	<u>WAC 173-351-440</u> <u>Assessment</u> <u>monitoring</u> <u>program</u>	New Rule Requirement / Federal Law Requirement to continue assessment monitoring during remedial action added.  Needed to conform to 40 CFR Part 258.56(b).
(1) minor edits (2) minor edits	<u>WAC 173-351-450</u> <u>Alternative ground</u> <u>water monitoring</u>	Clarification / Reference Update  Improve readability; several plain talk changes and reference updates.
(3)(a) Added Appendix "I and II for deletions or changes to detection..." Added that "all" facilities monitoring leachate must analyze for normal ground water monitoring constituents.	<u>WAC 173-351-450</u> <u>Alternative ground</u> <u>water monitoring</u>	New Rule Requirement Instead of using existing Appendix IV, which has been deleted, the change will provide the information needed to make decisions for approving alternate ground water monitoring programs.
(4) minor edits	<u>WAC 173-351-450</u> <u>Alternative ground</u> <u>water monitoring</u>	Clarification
Clarification made throughout subsection -460 to clarify jurisdictional health department's (JHD's) role.	<u>WAC 173-351-460</u> <u>Role of the</u> <u>jurisdictional</u> <u>health department</u> <u>in remedial action</u>	New Rule Requirement / State Rule (MTCA, WAC 173-340) The language was amended to clarify JHD's role in remedial actions. The existing language could be interpreted to mean Ecology would be required to allow for JHD participation in every meeting, letter, and e-mail. This is overly burdensome and would prevent Ecology from performing its duties under MTCA in a timely fashion.
Changed "corrective" to "remedial".  Deleted note.	<u>WAC 173-351-465</u> <u>Role of the</u> <u>department of</u>	Clarification The note duplicates language in MTCA and conflicts with TCP policies because the level of

	<u>ecology in remedial action</u>	support was undefined.
(4) Added "verified".	<u>WAC 173-351-480</u> <u>Ground water modeling</u>	Clarification
(1)(a) Added "and 173-351-300(7)".	<u>WAC 173-351-490</u> <u>The hydrogeologic report contents</u>	Clarification
(2)(b) Added requirement "The borehole program must meet the following standards."  (2)(b)(iii) Added "with the written concurrence of.."	<u>WAC 173-351-490</u> <u>The hydrogeologic report contents</u>	New Rule Requirement Ecology believes it is necessary to approve alternatives to borehole programs because so much depends on a quality characterization of the geology and hydrogeology of a site.
(2)(f) Updated GIS vertical datum  (j) Added "from the.." existing facility and deleted extra text to improve readability.	<u>WAC 173-351-490</u> <u>The hydrogeologic report contents</u>	Clarification (j) Changed to conform to Ecology IT Standard, revised 10/01/2009.
(2)(l) Added "all" devices and changed placement in text of "and well construction diagrams".	<u>WAC 173-351-490</u> <u>The hydrogeologic report contents</u>	Clarification
(1)(a) Non-arid is deleted; the standards will apply statewide.	<u>WAC 173-351-500</u> <u>Closure and post-closure care</u>	New Rule Requirement / Federal Law Ecology's concurrence with proposed alternative cover design approvals is part of the language to ensure we can meet our responsibilities as an authorized state under the federal program.
(1)(b) Arid closure standard is deleted.	<u>WAC 173-351-500</u> <u>Closure and post-closure care</u>	Eliminated Rule Requirement / Federal Law To conform to design standards in WAC 173-351-300 and EPA's approach in Part 258.60: The change is a prescriptive design standard with alternatives allowed.
(1)(h) The current text requiring notification on the deed is replaced with the requirement to file an environmental covenant in accordance with Chapter 64.70 RCW, Uniform Environmental Covenants Act	<u>WAC 173-351-500</u> <u>Closure and post-closure care</u>	New Rule Requirement  (1)(h) Replaced with the requirement to file an environmental covenant in accordance with Chapter 64.70 RCW, Uniform Environmental Covenants Act. The Uniform Environmental Covenants Act was adopted in 2007 and established a process to provide clear standards associated to property to protect human health and the environment.

(1)(g) Added "grant the department and jurisdictional health department the right to enter the property...including the right to take samples"	<u>WAC 173-351-500 Closure and post-closure care</u>	New Rule Requirement Allows for greater oversight by the department and the jurisdictional health department during and after the post-closure care period.
(2)(a) Language is added to require post-closure care until the landfill becomes functionally stable and will not pose a threat to human health or the environment without further care.	<u>WAC 173-351-500 Closure and post-closure care</u>	New Rule Requirement Further clarifies post-closure care period and to determine when care can be safely discontinued. The standards are designed to be based on potential risk to human and environmental receptors as opposed to quantitative criteria.
(2)(b)(iii) Added (iii) text" The jurisdictional health department (JHD) and owner or operator will consider at least the following.." Added the criteria for post-closure care.	<u>WAC 173-351-500 Closure and post-closure care</u>	New Rule Requirement Criteria added for the JHD to consider when establishing the post-closure care period. The standard, derived from 40 CFR Part 258.61(a) and (b) is 30 years with the ability to increase or decrease the time while protecting human health and the environment. This language clarifies what is needed to protect human health and the environment.
(2)(c) minor edits, citation correction  (2)(c)(ii) A description of monitoring performed and an estimate of the time required for care is added to post-closure plan	<u>WAC 173-351-500 Closure and post-closure care</u>	Clarification New Rule Requirement (2)(c)(ii) Provides the jurisdictional health department information needed to establish the post-closure period and methods used to determine when post-closure care is no longer needed. The post-closure care period directly impacts the post-closure financial assurance required under 600(3).
(2)(c)(iv) Added "and activity or use limitations placed on the real property by the environmental covenant..."	<u>WAC 173-351-500 Closure and post-closure care</u>	New Rule Requirement The activity and use limitations placed on the facility by the environmental covenant are included in the post-closure plan. This allows for predicting potential threats posed by the landfill to be based on expected risks given constraints placed on the facility.
(2)(c)(iv) Control systems are added, including systems such as stormwater control systems.	<u>WAC 173-351-500 Closure and post-closure care</u>	New Rule Requirement Control systems are included in the components that must be protected during post-closure care. These include systems such as stormwater control systems.
(2)(d) Deleted the old transition post-closure plan requirement	<u>WAC 173-351-500 Closure and post-closure care</u>	Eliminated Rule Requirement / Clarification The old transition post-closure plan requirement is deleted because its effective date is long past.
New (2)(d) language.	<u>WAC 173-351-500</u>	New Rule Requirement The jurisdictional health department will notify the

	<u>Closure and post-closure care</u>	financial assurance trustee to ensure funds are not released prematurely.
(2)(a) Added "under a contract subject to chapter 39.12 RCW, Prevailing wages..." and "submit" and "for approval by the jurisdictional health department".	<u>WAC 173-351-600</u> <u>Financial assurance criteria</u>	New Rule Requirement All cost estimates include the requirement to include consideration of contracts issued under the prevailing wage law. All local governments must contract using prevailing wages. Further, if a corporation fails to meet its closure, post-closure, or remedial action obligations, the burden will fall to the JHD or Ecology which will be subject to prevailing wage requirements. All financial assurance mechanisms must be approved by the JHD for closure and post-closure care (under permit) and by Ecology for remedial actions (under Ecology's jurisdiction).
(2)(a)(i)-(iv) minor edits	<u>WAC 173-351-600</u> <u>Financial assurance criteria</u>	Clarification
(2)(a)(v) Added new paragraph requirement, "During the active life of the MSWLF unit, the owner or operator must review the closure cost..."	<u>WAC 173-351-600</u> <u>Financial assurance criteria</u>	New Rule Requirement All annual cost estimate review findings must be reported to JHD or Ecology for approval.
(3)(a) Added "under a contract subject to chapter 39.12 RCW..." and "submit" ... "for approval by the jurisdictional health department"	<u>WAC 173-351-600</u> <u>Financial assurance criteria</u>	New Rule Requirement See (2)(a)
(3)(a)(v) – New requirement (4)(a)(iv) – New requirement	<u>WAC 173-351-600</u> <u>Financial assurance criteria</u>	New Rule Requirement See(2)(a)(v) - same
(4)(a) Added "under a contract subject to chapter 39.12 RCW..." and "submit" ... "for approval by the jurisdictional health department"	<u>WAC 173-351-600</u> <u>Financial assurance criteria</u>	New Rule Requirement See (2)(a)
(4)(b) – Added "costs of remedial actions identified in the cleanup action plan" and "Financial assurance is not required for interim actions when ..."	<u>WAC 173-351-600</u> <u>Financial assurance criteria</u>	Clarification Identifies when the requirement does and does not apply.
(5) "Owners and operators..."	<u>WAC 173-351-600</u>	Clarification – plain talk

	<u>Financial assurance criteria</u>	
(5)(a)(iii)	<u>WAC 173-351-600 Financial assurance criteria</u>	New Rule Requirements / Options (owner / operator may choose) Expanded options for local governments to use to meet financial assurance requirement for remedial actions.
(5)(b)(ii) & (iii)	<u>WAC 173-351-600 Financial assurance criteria</u>	New Rule Requirements / Options (owner / operator may choose) The allowable mechanisms for financial assurance are significantly expanded in the rule to align with court ruling and existing policy. The current rule only allowed trust funds for corporations but surety bonds and letters of credit have been acceptable methods to fund a trust account. The changes clarify existing conditions and conform to RCW 70.95.215.
(5)(c)	<u>WAC 173-351-600 Financial assurance criteria</u>	Clarification – readability Text moved from (5)(d)
(5)(d)	<u>WAC 173-351-600 Financial assurance criteria</u>	Clarification – readability Text moved from (5)(f)
(5)(e)	<u>WAC 173-351-600 Financial assurance criteria</u>	Clarification – readability Text moved from (5)(g)
(5)(f)	<u>WAC 173-351-600 Financial assurance criteria</u>	New Rule Requirement Owner/operators must file audit reports with the health department and Ecology
(6)(a)(i) Added “for approval by the jurisdictional health department..” and “for closure and post-closure financial assurance...”	<u>WAC 173-351-600 Financial assurance criteria</u>	Clarification
(6)(a)(ii)-(viii) clarifying edits throughout subsection. Added “Owners and operators of MSWLF units must use the financial mechanisms...”	<u>WAC 173-351-600 Financial assurance criteria</u>	Clarification – plain talk. Must conform with RCW 70.95.215.

(6)(b) & (c)	<u>WAC 173-351-600</u> <u>Financial</u> <u>assurance criteria</u>	New Rule Requirements / Options (owner / operator may choose) Must conform to RCW 70.95.215. The allowable mechanisms for financial assurance are significantly expanded in the rule to align with court ruling and existing policy. The current rule only allowed reserve accounts and trust funds but surety bonds, and letters of credit have been acceptable methods to fund a trust account. The changes clarify existing conditions and conform to RCW 70.95215.
(1) – (4) Clarifying edits (5) Deleted	<u>WAC 173-351-700</u> <u>Permitting</u> <u>requirements</u>	Clarification (5) Deleted text was addressed in old WAC 173-351-720(1)(i) and revised WAC 173-351-720(5)
Entire new section -710	<u>WAC 173-351-710</u> <u>Research,</u> <u>development, and</u> <u>demonstration</u> <u>permits</u>	New Requirements / Federal Law This new section was one of the main reasons for opening the rule. It implements 40 CFR Part 258.4, allowing introduction of water or other liquid wastes.
(1) Added “and reissuance”	<u>WAC 173-351-720</u> <u>Permit application</u> <u>procedures</u>	Clarification
(1)(b)(iii) Introduction deleted	<u>WAC 173-351-720</u> <u>Permit application</u> <u>procedures</u>	Eliminated Rule Requirement / Clarification The requirement is addressed in renewal and modified permit procedures and transition permit applications are no longer applicable.
(1)(b)(ii)(E) Deleted “within the state or within a geographical area”	<u>WAC 173-351-720</u> <u>Permit application</u> <u>procedures</u>	Clarification
(1)(h) Added “No permit issued pursuant to this chapter will be valid unless..”	<u>WAC 173-351-720</u> <u>Permit application</u> <u>procedures</u>	New Rule Requirement / State Law Requirement Language inserted to align with the requirement for Ecology to review permits in RCW 70.95.185.
old (1)(i), new (5) Permit renewal procedures are moved from initial procedures to its own subsection	<u>WAC 173-351-720</u> <u>Permit application</u> <u>procedures</u>	Clarification Moved from initial procedures to its own subsection for clarification.
(4)(a) Moved subsection	<u>WAC 173-351-720</u>	Clarification The text regarding permit application requirements

	<u>Permit application procedures</u>	for phased construction is moved to contents of permit application in new WAC 173-351-730(1)(a)(iii). The text regarding what the permit includes for phased construction is moved to WAC 173-351-750(8) design capacity and construction.
(4)(b) The text regarding phased construction is deleted: "If a facility is to be constructed..."	<u>WAC 173-351-720 Permit application procedures</u>	Clarification It is already addressed in WAC 173-351-750(4) – (6).
old (1)(i), new (5) Permit renewal procedures are moved from initial procedures to its own subsection	<u>WAC 173-351-720 Permit application procedures</u>	(see 3 rows above) Clarification Moved from initial procedures to its own subsection for clarification.
(5)(b)	<u>WAC 173-351-720 Permit application procedures</u>	New Rule Requirement/State Law Requirement Expands permit renewal duration from current one year to five years adopting a change made to 70.95.190(1) in 1998.
(6)(a) Added the timeframe for submitting permit modifications is increased from 30 to 45. 6(b) Added procedures to eliminate the existing conflict of following the procedures in subsection (1) for initial permits (45 day Ecology review & 90 day JHD approve/deny). Shortened application timeframe for modifications.	<u>WAC 173-351-720 Permit application procedures</u>	New Rule Requirements The timeframe for submitting permit modifications is increased from 30 to 45 days to allow for Ecology review. The subsection is expanded with procedures to eliminate the existing conflict of following the procedures in subsection (1) for initial permits (45 day Ecology review & 90 day JHD approve/deny) with the shortened application timeframe for modifications. This assumes modifications can be reviewed quicker than initial permit applications.
(6)(d) Added for clarity.	<u>WAC 173-351-720 Permit application procedures</u>	Clarification This comes from existing definition of "modification".
(7) Deleted "Except for permits during transition under subsection (2) of this section..." Added "The jurisdictional health department will follow the procedures of subsection 1..."	<u>WAC 173-351-720 Permit application procedures</u>	Eliminated Requirement - Deleted language because it is no longer needed. Clarification - Clarified procedures for jurisdictional health department.
(1)(a)(iii) Text from existing 720(4)(a) but expanded to include the "active life of the facility" instead of "ten years".	<u>WAC 173-351-730 Contents of applications</u>	New Rule Requirement The change in time results from deletion on the ten-year term limit for permits and replaced with active life of the facility.

(1)(a)(iv) Added "Applications for new MSWLF units or lateral expansions must include documentation..."	<u>WAC 173-351-730</u> <u>Contents of applications</u>	New Rule Requirement For public safety and involvement, facility owner or operators must provide documentation that they have notified nearby property owners that the landfill may impact their ability to construct water supply wells in accordance with WAC 173-160.
(1)(b)(viii)(A)-(D) Added new language to address leachate.	<u>WAC 173-351-730</u> <u>Contents of applications</u>	Clarification Facility must simply have a legal way to handle leachate.
(1)(b)(ix) & (x), owner/operator needs to supply information in the permit application.	<u>WAC 173-351-730</u> <u>Contents of applications</u>	Clarification Language added to clarify the need to supply information in the permit application.
(1)(b)(xii) allow JHD to request additional information	<u>WAC 173-351-730</u> <u>Contents of applications</u>	New Rule Requirement Language added to allow JHD to request additional information.
(2) Minor edits-plain talk and added citation	<u>WAC 173-351-730</u> <u>Contents of applications</u>	Clarification
(3)(a)(v) Added "Any other information as required by the jurisdictional health department."	<u>WAC 173-351-730</u> <u>Contents of applications</u>	New Rule Requirement Language added to allow JHD to request additional information.
(3)(b)(i) & (ii) Deleted "at a minimum" and "closure cost or post closure costs"	<u>WAC 173-351-730</u> <u>Contents of applications</u>	Clarification Changes to cost estimates are deleted from the renewal permit application because they are required to be reported annually in Section 600
(3)(b)(iii) text deleted	<u>WAC 173-351-730</u> <u>Contents of applications</u>	Clarification JHD and Ecology should know conformance with annual reporting requirements.
(3)(b)(v) New requirement that allows JHD to request additional information in the application.	<u>WAC 173-351-730</u> <u>Contents of applications</u>	New Rule Requirement Allows JHD to request additional information.

(4) Clarifying edits – plain talk	<u>WAC 173-351-730</u> <u>Contents of applications</u>	Clarification
(5)(a)(iii)(A) Changes in response to FAA laws.	<u>WAC 173-351-730</u> <u>Contents of applications</u>	Clarification – Update with Federal Law FAA laws.
(5)(a)(iii)(C) Updated GIS vertical datum. Reference to WAC 332-130-060 id deleted.	<u>WAC 173-351-730</u> <u>Contents of applications</u>	Clarification Updated GIS vertical datum to conform with Ecology IT Standard, revised 10/01/2009. Reference to WAC 332-130-060 id deleted because it addresses horizontal, not vertical control.
Note: Changed “1991” for NAD 83 because the datum has had several more recent versions.	<u>WAC 173-351-730</u> <u>Contents of applications</u>	Clarification Reference in following “note” to 1991 in NAD 83 deleted because the datum has had several more recent versions.
(5)(c)(iii)(D) added “gas well materials and construction methods”.	<u>WAC 173-351-730</u> <u>Contents of applications</u>	New Rule Requirement Reflects current practice.
(5)(d)(iv) Added “An estimate of the time required following closure of each MSWLF...”	<u>WAC 173-351-730</u> <u>Contents of applications</u>	New Rule Requirement  (5)(d)(v) – (viii) Language inserted to provide the JHD the information to make post-closure period determinations under new 500(b)(iii).
(4)(a) & (b) Added “The owner or operator has established a financial assurance mechanism...”	<u>WAC 173-351-740</u> <u>Permit issuance criteria</u>	(4) Language inserted to ensure JHD has required financial assurance documents to meet requirements.
(1) Plain talk – minor edits	<u>WAC 173-351-750</u> <u>Permit provisions</u>	Clarification
(3) Deleted ten-year limit on permit duration Added “at least every five years”	<u>WAC 173-351-750</u> <u>Permit provisions</u>	Eliminated Rule Requirement The only reason it existed in the current rule was to provide a timeframe for defining the pay-in period for funding trust accounts under new(6)(a)(ii). The ten year limit on permit duration required regular burdensome reissuance procedures and did not add to environmental protection. The ten-year limit does not make sense for MSWLFs where a facility may operate over fifty years and perform post-

		closure for thirty plus years, especially when very few actually used cash in a trust fund for financial assurance. This deletion allows the JHD to determine the permit duration at its discretion. State Law Requirement This subsection was also modified to incorporate five-year renewal periods added to RCW 70.95.190(1) in 1998.
(8) Added “and construction”, “specify” and “unit and the specific time frames for construction of the first MSWLF...”	<u>WAC 173-351-750</u> <u>Permit provisions</u>	Clarification Inserted language moved from WAC 173-351-720(4)(a). The name is changed to reflect the added text.
Minor clarifying edits throughout -760.	<u>WAC 173-351-760</u> <u>Appeals</u>	No substantive changes.
Appendix I – Corrected #43 CAS for 2-hexanone	<u>WAC 173-351-990</u> <u>Appendices</u>	Clarification Appendix I, #43 CAS for 2-hexanone corrected.
Appendix I, II, and III, all metals except nickel and mercury are changed from dissolved to total metals.	<u>WAC 173-351-990</u> <u>Appendices</u>	New Rule Requirement / Federal Law & State Law Requirements Changed to conform with 40 CFR Part 258 Appendix I and II and to the requirements of Chapter 173-200 WAC.
Appendix II, turbidity is added to the list of indicator parameters	<u>WAC 173-351-990</u> <u>Appendices</u>	New Rule Requirement Added because of the change to total metals.
Appendix III, References to method numbers is deleted. Notes regarding specific analytical methods are also deleted.	<u>WAC 173-351-990</u> <u>Appendices</u>	Eliminated Rule Requirement / Clarification As suggested by comments received, methods change too frequently to be included in the rule.
Appendix III, PQLs are deleted from table. Notes regarding PQLs are also deleted.	<u>WAC 173-351-990</u> <u>Appendices</u>	Eliminated Rule Requirement / Clarification Methods are continually being improved and PQLs change over time. Notes regarding PQLs are also deleted.
Appendix IV, parameters for leachate analysis is deleted.	<u>WAC 173-351-990</u> <u>Appendices</u>	Eliminated Rule Requirement / Clarification The proposed rule will direct leachate to be tested the same as ground water.