



DEPARTMENT OF
ECOLOGY
State of Washington

**MTCA Cleanup Rulemaking
Chapter 173-340 WAC
Preliminary Draft 2**

No Tracked Changes

September 8, 2022

Purpose of this document:

This document includes **Preliminary Draft 2** of Ecology's proposed changes to selected Parts and Sections of Chapter 173-340 WAC, Model Toxics Control Act (MTCA) Cleanup Regulations. This document **does not track changes** to either the current rule or the first preliminary draft.

This document is provided for review and consideration by the Stakeholder and Tribal Advisory Group (STAG). The document should be read in conjunction with a **separate briefing document** that provides an overview of rule changes and a list of questions that Ecology would like STAG members to consider when reviewing the rule draft to facilitate discussions and written comments.

For more information about the cleanup rulemaking:

Visit Ecology's website at <http://www.ecy.wa.gov/programs/tcp/regs/wac173360/1602inv.html>.

For more information about the Stakeholder and Tribal Advisory Group:

Visit Ecology's website at https://www.ezview.wa.gov/site/alias_1988/37514/overview.aspx.

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Accommodation requests:

To request ADA accommodation including materials in a format for the visually impaired, call Ecology's Toxics Cleanup Program at 360-407-7170. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

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Introduction

What is included in this document?

This document includes **Preliminary Draft 2** of proposed changes to the following Parts and Sections of Chapter 173-340 WAC, Model Toxics Control Act (MTCA) Cleanup Regulations:

Part or Section	Previously reviewed by STAG?
Part 1 – Overall cleanup process	NO
Part 2 – Definitions and usage	YES, except for some definitions
Part 3 – Site reports and cleanup	YES, except Sections 355, 357, 380, & 390
Part 6 – Public participation and tribal engagement	NO
Section 450 – Releases from regulated UST systems	YES
Section 510 – Administrative options for remedial actions	NO
Section 815 – Cultural resources protection (new)	NO
Section 830 – Sampling and analysis procedures	NO
Conforming changes in other sections	NO
Corrections in Part 7	NO

This document **does not track changes** to either the current rule or Preliminary Draft 1 of the proposed rule, which was previously reviewed by the Stakeholder and Tribal Advisory Group (STAG).

How can I navigate the document?

You can navigate the document using the Table of Contents in the document or using the Navigation Pane in Microsoft Word. To use the Navigation Pane, select the “View” menu and then click on “Navigation Pane” under “Show.” Under Navigation, click on “Headings.”

Part 1 – Overall Cleanup Process

WAC 173-340-100 Purpose.

This chapter is promulgated under chapter [70A.305](#) RCW, the Model Toxics Control Act. It establishes administrative processes and standards to identify, investigate, and clean up sites where hazardous substances have come to be located. It defines the role of Ecology and encourages public and tribal involvement in decision making at these sites.

The goal of this chapter is to implement chapter [70A.305](#) RCW, the Model Toxics Control Act. This chapter provides a workable process to accomplish effective and expeditious cleanups in a manner that protects human health and the environment, including vulnerable populations and overburdened communities. This chapter is primarily intended to address releases of hazardous substances caused by past activities although its provisions may be applied to potential and ongoing releases of hazardous substances from current activities.

Note: All materials incorporated by reference in this chapter are available for inspection at the Department of Ecology's Toxics Cleanup Program, 300 Desmond Drive, Lacey, Washington, 98503.

WAC 173-340-110 Applicability.

- (1) This chapter applies to all sites where there has been a release or threatened release of a hazardous substance that may pose a threat to human health or the environment. Under this chapter, Ecology may require or take those actions necessary to investigate and clean up these releases.
- (2) Ecology retains all its authority to address a release or threatened release under other applicable laws or regulations. The cleanup process and procedures under this chapter and under other laws may be combined. Ecology may initiate a remedial action under this chapter and may upon further analysis determine that another law is more appropriate, or vice versa.
- (3) If a hazardous substance remains at a site after actions have been completed under other applicable laws or regulations, Ecology may apply this chapter to protect human health or the environment.

WAC 173-340-120 Overview of cleanup process.

This section provides an overview of the cleanup process that typically occurs at a site following the discovery of a release or threatened release of a hazardous substance to the environment. See WAC 173-340-510 for an overview of the administrative options for investigating and cleaning up a site. If there are any inconsistencies between this section and any specifically referenced sections, the referenced section governs.

- (1) Release reporting.** Within ninety days of discovering a hazardous substance release or threatened release that may pose a threat to human health or the environment, an owner or operator must report the release to Ecology as described in WAC 173-340-300. Other persons are encouraged to report such releases. Some releases are exempt from the release reporting requirements of this chapter, including those previously reported to Ecology under the state's hazardous waste, underground storage tank, or water quality laws. The term "hazardous substance" includes a broad range of substances as defined in WAC 173-340-200.
- (2) Initial investigation.** Within ninety days of learning of a hazardous substance release, Ecology conducts an initial investigation under WAC 173-340-310 to confirm whether a release occurred that poses a threat and to determine whether further remedial action is necessary to confirm or address that threat. Ecology may extend an initial investigation when independent remedial actions are completed within ninety days of release discovery. Ecology notifies owners and operators in writing of its determination. For sites where remedial action is necessary, Ecology also notifies the public in the *Contaminated Site Register* and provides information about the site on Ecology's website under WAC 173-340-600.
- (3) Site hazard assessment and ranking.** Based on the results of the initial investigation, Ecology assesses and ranks the threats to human health and the environment posed by the site under WAC 173-340-320. Ecology may update the site's hazard assessment and rankings during the cleanup process when new information becomes available or conditions change. Ecology uses the results to support decisions to add or remove sites from the contaminated sites list, prioritize remedial action and funding among and within sites, track cleanup progress, and communicate threats to the public.
- (4) Listing.** Ecology lists a site based on the results of the initial investigation and the site hazard assessment and ranking.

 - (a) Contaminated sites list.** If further remedial action is necessary, Ecology adds the site to the contaminated sites list under WAC 173-340-330. The list also identifies the site's remedial action status. Ecology updates the status during the cleanup process to reflect current conditions. The list is publicly available on Ecology's website.
 - (b) No further action sites list.** If no further remedial action is necessary, Ecology adds the site to the no further action sites list under WAC 173-340-335. The list identifies whether institutional controls or periodic reviews remain necessary at the site. The list is publicly available on Ecology's website.
- (5) Interim actions.** Under certain conditions it may be necessary or appropriate to conduct an early, interim action at a site before conducting a cleanup action.

- (a) WAC 173-340-430 describes when interim actions are typically appropriate at a site and the requirements for such actions.
 - (b) WAC 173-340-450 describes specific interim actions that UST system owners and operators must perform immediately or shortly after confirming a release from a regulated UST system to reduce the threats posed by the release, prevent any further release, and characterize the nature and extent of the release. As specified in chapter [173-360A](#) WAC, such releases must be cleaned up in accordance with this chapter.
- (6) **Remedial investigation of site conditions.** After a detailed work plan is prepared, a remedial investigation is conducted at the site under WAC 173-340-350 to identify the sources of contamination; to characterize the nature, extent, and magnitude of contamination; and to assess the current or potential threats posed by the contamination to human health and the environment. The results of the remedial investigation are used to establish cleanup standards and to develop and evaluate cleanup action alternatives in a feasibility study.
- (7) **Feasibility study of cleanup action alternatives.** Based on the results of the remedial investigation, cleanup action alternatives for addressing the threats posed by the site are developed and evaluated in a feasibility study under WAC 173-340-351. The alternatives are evaluated against the requirements and expectations for cleanup actions in WAC 173-340-360 and 173-340-370. The results of the feasibility study are used to select the cleanup action for a site. A feasibility study is not required to select an applicable model remedy developed by Ecology under WAC 173-340-390.
- (8) **Cleanup action plan.** Based on the results of the remedial investigation/feasibility study, a cleanup action is selected and a cleanup action plan is prepared under WAC 173-340-380. The cleanup action plan documents the selected cleanup action and specifies the cleanup standards and other requirements the cleanup action must meet. Cleanup standards are established under Part 7 of this chapter and include the concentrations the cleanup action must meet (cleanup levels), the location where those concentrations must be met (points of compliance), and other regulatory requirements that apply to the cleanup action or site.
- (9) **Cleanup.** After a cleanup action is selected, the cleanup is conducted under WAC 173-340-400 and 173-340-410. Cleanup includes design, construction, operation and maintenance, and monitoring of the cleanup action.
 - (a) **Design.** Before starting construction, plans are developed to detail the cleanup action. This include engineering designs, construction plans and specifications, operation and maintenance plans, and compliance monitoring plans. Before or during this design phase, any permits or approvals needed to construct the cleanup action are identified and resolved.
 - (b) **Construction.** Construction of the cleanup action is conducted in accordance with the plans and specifications prepared during the design phase. Upon completion of construction, as built reports are prepared to document all aspects of construction and compliance with plans and specifications. During and upon completion of construction, Ecology may inspect the site and provide construction oversight.

- (c) **Operation and maintenance.** After construction is complete, some cleanup actions need to be operated and maintained for a period of time to achieve cleanup standards. For example, a treatment system may be constructed and used to clean up contaminated groundwater. Operation and maintenance of such cleanup actions is conducted in accordance with a plan developed during the design phase.
- (d) **Monitoring.** During the construction and the operation and maintenance of the cleanup action, the following types of compliance monitoring are conducted. Compliance monitoring is conducted in accordance with a plan developed during the design phase.

 - (i) Protection monitoring is conducted to confirm that human health and the environment are adequately protected.
 - (ii) Performance monitoring is conducted to confirm that the cleanup action is achieving or has attained cleanup standards and any other applicable performance standards, such as remediation levels or permit requirements.
- (10) **Cleanup completion.** Ecology determines whether cleanup of the site is complete based on the criteria in WAC 173-340-330(5)(b). Typically, a cleanup is complete if no further remedial action is necessary to achieve cleanup standards at the site. For non-permanent cleanup actions, such as those involving containment of contamination, post-cleanup controls and monitoring may be necessary as part of the cleanup action to maintain and periodically review compliance with cleanup standards.
- (11) **Removal from contaminated sites list.** After determining the cleanup of the site is complete, Ecology removes the site from the contaminated sites list under WAC 173-340-330 and adds the site to the no further action sites list under WAC 173-340-335. The no further action sites list identifies whether institutional controls or periodic reviews remain necessary at the site.
- (12) **Post-cleanup controls and monitoring.** For non-permanent cleanup actions, after the cleanup is completed and the site is delisted, one or more of the following post-cleanup remedial actions may be needed to control or monitor contamination remaining at the site.

 - (a) **Engineered controls.** Engineered controls are containment or treatment systems that prevent or limit movement of, or exposure to, contamination. For example, materials may be placed over contaminated soils to limit contact with contamination. For a cleanup action to remain protective, engineered controls must be operated and maintained in accordance with the plan required under WAC 173-340-400.
 - (b) **Institutional controls.** Institutional controls prohibit or limit activities or uses of real property that may interfere with the integrity of engineered controls or result in exposure to contamination remaining at the site. For example, a property may be restricted to industrial land use at sites where cleanup standards are based on such use. Institutional controls may also obligate a person to operate, maintain, or monitor engineered controls to ensure the integrity of the cleanup action. Typically, institutional controls are implemented by recording a restrictive covenant on the property. For a cleanup action to remain protective, institutional controls must be maintained and enforced. See WAC 173-340-440.

- (c) **Confirmation monitoring.** Confirmation monitoring is a type of compliance monitoring used to confirm the long-term effectiveness of a cleanup action after the cleanup is completed. See WAC 173-340-410. For example, confirmation monitoring may be used to confirm that engineered controls are operating properly and effectively limiting the movement of contamination remaining at the site. For a cleanup action to remain protective, confirmation monitoring must be conducted in accordance with the plan required under WAC 173-340-400. Ecology relies on the monitoring data during periodic reviews of post-cleanup site conditions.
 - (d) **Financial assurances.** Financial assurances are assurances made to Ecology by a person that sufficient financial resources are available to provide for the long-term operation, maintenance, and monitoring of a cleanup action relying on engineered or institutional controls, and for any needed corrective measures. Ecology may require financial assurances under WAC 173-340-440(11).
 - (e) **Periodic reviews.** Ecology conducts periodic reviews of post-cleanup site conditions at least once every five years to determine whether they remain protective of human health and the environment. If Ecology determines that conditions are not protective and that substantial changes to the cleanup action are necessary, Ecology may relist the site on the contaminated sites list and revise the cleanup action plan. See WAC 173-340-420.
- (13) **Public notice and participation and tribal engagement.**
- (a) **Site-specific information and alerts.** For all sites on the contaminated sites list and the no further action sites list, Ecology will:

 - (i) Make key site information publicly available on Ecology’s website under WAC 173-340-600(5), including the site’s listing, remedial action status, hazard rankings, and remedial action plans and reports;
 - (ii) If requested, notify a person electronically under WAC 173-340-600(6) when the site information specified on Ecology’s website is added or changed; and
 - (iii) Provide notice of proposed actions available for public comment in the *Contaminated Site Register*.
 - (b) **Ecology-conducted and Ecology-supervised remedial actions.** For Ecology-conducted and Ecology-supervised remedial actions, Ecology provides the public with notice and opportunity to comment and invites tribal engagement on most steps in the cleanup process. For such sites, Ecology prepares or requires site-specific public participation and tribal engagement plans. These and other requirements are described in WAC 173-340-600(8) through (19) and 173-340-620.
 - (c) **Independent remedial actions.** For independent remedial actions, Ecology provides the public with notice of any reports of such actions received by Ecology, the results of any Ecology review of such actions, the results of any periodic review of the site, and any

institutional controls at the site. These and other requirements are described in WAC 173-340-600(20).

WAC 173-340-130 Administrative principles.

Ecology will conduct or require remedial actions, or provide technical assistance for independent remedial actions, consistent with the provisions of this section.

- (1) Sharing information.** Ecology’s policy is to make information about releases or threatened releases available to owners, operators, or other persons with potential liability for a site in order to encourage them to conduct prompt remedial action. Ecology’s policy is also to make the same information available to interested members of the general public so they can follow the progress of site cleanup in the state.
- (2) Providing technical assistance.** All persons are encouraged to contact Ecology and seek assistance on the general administrative and technical requirements of the state cleanup law. Under Ecology’s voluntary cleanup program, persons planning or conducting independent remedial action may also request technical assistance on how to investigate and clean up a site and written opinions on whether a planned or completed remedial action meets the substantive requirements of the state cleanup law. Such technical assistance is advisory only and is not binding on Ecology. Such technical assistance does not constitute, and may not be represented by a person as, an approval of a remedial action. See RCW [70A.305.170](#)(1) and WAC [173-340-515](#)(5). Ecology will only provide a binding commitment or approval under an order or decree.
- (3) Collecting adequate information.** Ecology intends that adequate information be gathered at a site to enable decisions on appropriate actions. Ecology also intends that decisions be made and cleanups proceed expeditiously once adequate information is obtained. Studies can be performed and submittals made at varying levels of detail appropriate to the conditions at the site. Also, steps in the cleanup process may be combined to facilitate quicker cleanups, where appropriate. Flexibility in the scope of investigations and in combining steps may be particularly appropriate for routine cleanup actions. Once adequate information has been obtained, Ecology will make decisions within the framework provided under the state cleanup law and in site-specific orders or decrees.
- (4) Preparing documents.** Except for the initial investigation and site hazard assessment and ranking, any of the studies, reports, or plans used in the cleanup process can be prepared by either Ecology or the potentially liable person. Ecology retains all authority to review and verify the documents submitted and to make decisions based on the documents and other relevant information.
- (5) Encouraging and facilitating public participation.** For Ecology-conducted and Ecology-supervised remedial actions, Ecology seeks to encourage public participation and facilitate equitable participation in all steps of the cleanup process under WAC 173-340-600. Ecology will encourage a level of participation appropriate to the threats posed by a site and the level of the public’s interest in the site. When assessing public participation needs at a site, Ecology will consider the interests of vulnerable populations, overburdened communities, and non-federally recognized tribes.
- (6) Engaging and collaborating with Indian tribes.**

- (a) For Ecology-conducted and Ecology-supervised remedial actions, Ecology will seek to engage affected Indian tribes under WAC 173-340-620 by providing timely information, effective communication, continuous opportunities for collaboration and, when necessary, government-to-government consultation, as appropriate for each site.
 - (b) To facilitate collaboration, it is important that Indian tribes provide specific comments, including the identification of other applicable state and federal laws and any additional information or mitigating measures that are necessary or desirable to satisfy their concerns.
- (7) **Coordinating with agencies.**
 - (a) For Ecology-conducted and Ecology-supervised remedial actions, Ecology will ensure appropriate local, state, and federal agencies are kept informed and, as appropriate, involved in the development and implementation of remedial actions. Ecology may require a potentially liable person to undertake this responsibility. If the potentially liable person demonstrates that they are unable to obtain adequate involvement by a particular government agency to allow the remedial action to proceed, Ecology will request the involvement of the agency.
 - (b) The nature and degree of coordination and consultation must be commensurate with the other agencies' interests and needs at the site. Interested agencies must be included in the lists for public notices under WAC 173-340-600. To facilitate coordination, it is important that agencies provide specific comments, including the identification of other applicable state and federal laws and any additional information or mitigating measures that are necessary or desirable to satisfy their concerns.
 - (c) In order to provide for expeditious cleanup actions, all federal, state, and local agencies, are encouraged to coordinate with Ecology when providing notices, holding meetings and hearings, and preparing documents. Whenever reasonable, Ecology will coordinate and combine its activities with other agencies to minimize the duplication of notices, hearings and preparation of documents, unless otherwise prohibited.
- (8) **Integrating State Environmental Policy Act.** See chapter [197-11](#) WAC for the State Environmental Policy Act requirements pertaining to the implementation of the state cleanup law.
- (9) **Ecology decisions.** Ecology retains all authority to determine compliance with state cleanup law requirements, including:
 - (a) Whether a remedial action is necessary under state cleanup law;
 - (b) Whether a remedial action meets the requirements in state cleanup law; and
 - (c) Whether a remedial action plan or report meets the requirements in state cleanup law.
- (10) **Appealing Ecology decisions.** Unless otherwise indicated, all Ecology decisions made under this chapter are remedial decisions and may be appealed only as provided for in RCW [70A.305.070](#).

~~WAC 173-340-140~~ — ~~Deadlines.~~

Part 2 – Definitions and Usage

WAC 173-340-200 Definitions.

For the purpose of this chapter, the following definitions apply unless the context clearly requires otherwise:

“Acute toxicity” means the ability of a hazardous substance to cause injury or death to an organism as a result of a short-term exposure to a hazardous substance.

“Agreed order” means an order issued by Ecology under WAC 173-340-530 with which the potentially liable person receiving the order agrees to comply. An agreed order may be used to require or approve any cleanup or other remedial actions, but it is not a settlement under RCW [70A.305.040](#)(4) and does not contain a covenant not to sue, or provide protection from claims for contribution, or provide eligibility for public funding of remedial actions under RCW [70A.305.190](#)(4)(a)(v) and (vi).

“Aliphatic hydrocarbons” or “aliphatics” means organic compounds that are characterized by a straight, branched, or cyclic (nonbenzene ring) arrangement of carbon atoms and that do not contain halogens (such as chlorine). See also “aromatic hydrocarbons.”

“All practicable methods of treatment” means all technologies or methods currently available and demonstrated to work under similar site circumstances or through pilot studies, and applicable to the site at reasonable cost. These include “all known available and reasonable methods of treatment” (AKART) for discharges or potential discharges to waters of the state, and “best available control technologies” (BACT) for releases of hazardous substances into the air resulting from cleanup actions.

“Applicable state and federal laws” means all legally applicable requirements specified in WAC 173-340-710(3) and those requirements that Ecology determines, based on the criteria in WAC 173-340-710(4), are relevant and appropriate requirements.

“Area background” means the concentration of a hazardous substance consistently present in the environment in the vicinity of a site as the result of human activities unrelated to releases from that site. See also “natural background.”

“Aromatic hydrocarbons” or “aromatics” means organic compounds that are characterized by one or more benzene rings, with or without aliphatic hydrocarbon substitutions of hydrogen atoms on the rings, and that do not contain halogens (such as chlorine). See also “aliphatic hydrocarbons.”

“Averaging time” means the time over which the exposure is averaged. For noncarcinogens, the averaging time typically equals the exposure duration. For carcinogens, the averaging time equals the life expectancy of a person.

“Bioconcentration factor” means the ratio of the concentration of a hazardous substance in the tissue of an aquatic organism divided by the hazardous substance concentration in the ambient water in which the organism resides.

“Carcinogen” means any substance or agent that produces or tends to produce cancer in humans. For implementation of this chapter, the term carcinogen applies to substances on the United States

Environmental Protection Agency lists of A (known human) and B (probable human) carcinogens, and any substance that causes a significant increased incidence of benign or malignant tumors in a single, well conducted animal bioassay, consistent with the weight of evidence approach specified in the United States Environmental Protection Agency's Guidelines for Carcinogen Risk Assessment as set forth in 51 FR 33992 et seq.

“Carcinogenic potency factor” or “CPF” means the upper 95th percentile confidence limit of the slope of the dose-response curve and is expressed in units of (mg/kg-day)⁻¹. When derived from human epidemiological data, the carcinogenic potency factor may be a maximum likelihood estimate.

“Chronic reference dose” means an estimate (with an uncertainty spanning an order of magnitude or more) of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of adverse effects during a lifetime.

“Chronic toxicity” means the ability of a hazardous substance to cause injury or death to an organism resulting from repeated or constant exposure to the hazardous substance over an extended period of time.

“Cleanup” means the implementation of a cleanup action or interim action.

“Cleanup action” means any remedial action, except interim actions, taken at a site to eliminate, render less toxic, stabilize, contain, immobilize, isolate, treat, destroy, or remove a hazardous substance that complies with WAC 173-340-350 through 173-340-390.

“Cleanup action alternative” means one or more treatment technology, containment action, removal action, engineered control, institutional control or other type of remedial action (**“cleanup action components”**) that, individually or, in combination, achieves a cleanup action at a site.

“Cleanup action plan” means the document prepared under WAC 173-340-380 that documents the selected cleanup action and specifies the cleanup standards and other requirements the cleanup action must meet.

“Cleanup level” means the concentration of a hazardous substance in soil, water, air, or sediment that is determined to be protective of human health and the environment under specified exposure conditions.

“Cleanup standards” means the standards adopted under RCW [70A.305.030\(2\)\(e\)](#). Establishing cleanup standards requires specification of the following:

- (a) Hazardous substance concentrations that protect human health and the environment (“cleanup levels”);
- (b) The location on the site where those cleanup levels must be attained (“points of compliance”); and
- (c) Additional regulatory requirements that apply to a cleanup action because of the type of action and/or the location of the site. These requirements are specified in applicable

state and federal laws and are generally established in conjunction with the selection of a specific cleanup action.

“Cohen's method” means the maximum likelihood estimate of the mean and standard deviation accounting for data below the method detection limit or practical quantitation limit using the method described in the following publications:

- (a) Cohen, A.C., 1959. "Simplified estimators for the normal distribution when samples are singly censored or truncated." *Technometrics*. Volume 1, pages 217-237.
- (b) Cohen, A.C., 1961. "Tables for maximum likelihood estimates: Singly truncated and singly censored samples." *Technometrics*. Volume 3, pages 535-541.

“Compliance monitoring” means a remedial action that consists of the monitoring described in WAC 173-340-410, including protection monitoring, performance monitoring, and confirmation monitoring.

“Conceptual site model” means a conceptual understanding of a site that identifies known or suspected:

- (a) Hazardous substance sources and release mechanisms;
- (b) Hazardous substance types and concentrations;
- (c) Hazardous substance transport, including preferential pathways;
- (d) Contaminated environmental media, including the general extent and distribution of contamination within the media;
- (e) Current and potential human and ecological receptors and exposure pathways (complete and incomplete); and
- (f) Physical and habitat features, including current and potential future land and water uses.

This model is typically developed during the scoping of a remedial investigation and further refined as additional information is collected about the site during the remedial investigation. The model is a tool used to assist in making decisions at a site.

“Conducting land use planning under chapter [36.70A RCW](#),” as used in the definition of "industrial properties," means having adopted a comprehensive plan and development regulations for the site under chapter [36.70A RCW](#) (Growth Management Act).

“Confirmation monitoring” means a type of compliance monitoring described in WAC 173-340-410.

“Containment” means a container, vessel, barrier, or structure, whether natural or constructed, that confines a hazardous substance within a defined boundary and prevents or minimizes its release into the environment.

“Contaminant” means any hazardous substance that does not occur naturally or occurs at greater than natural background levels.

“Contaminated site” means a site for which Ecology or PLIA has determined further remedial action is necessary under the state cleanup law to:

- (a) Confirm whether there is a threat to human health or the environment posed by a release or threatened release; or
- (b) Address the threat posed by a release or threatened release, based on the criteria in WAC 173-340-330(5)(b).

A contaminated site is referred to as hazardous waste site in chapter [70A.305](#) RCW.

“Contaminated sites list” means a list of contaminated sites maintained by Ecology under WAC 173-340-330. For each listed site, the list also identifies the site’s current remedial action status. This list is referred to as the hazardous sites list in chapter [70A.305](#) RCW.

“Curie” means the measure of radioactivity defined as that quantity of radioactive material which decays at the rate of 3.70×10^{10} transformations per second. This decay rate is nearly equivalent to that exhibited by 1 gram of radium in equilibrium with its disintegration products.

“Day” means calendar day; however, any document due on the weekend or a holiday may be submitted on the first working day after the weekend or holiday.

“Decree” means a consent decree issued under WAC 173-340-520. "Consent decree" is synonymous with decree.

“Degradation by-products” or “decomposition by-products” means the secondary product of biological or chemical processes that break down chemicals into other chemicals. The decomposition by-products may be more or less toxic than the parent compound.

“Developmental reference dose” means an estimate (with an uncertainty of an order of magnitude or more) of an exposure level for the human population, including sensitive subgroups, that is likely to be without an appreciable risk of developmental effects.

“Direct contact” means exposure to hazardous substances through ingestion and/or dermal contact.

“Director” means the director of the department of ecology or the director's designee.

“Disposal” means the discharging, discarding, or abandoning of hazardous substances or the treatment, decontamination, or recycling of such substances once they have been discarded or abandoned. This includes the discharge, discard, or abandonment of any hazardous substances into or on any land, air, or water.

“Drinking water fraction” means the fraction of drinking water that is obtained or has the potential to be obtained from the site.

“Ecology” or “department” means the department of ecology.

“Ecology-conducted remedial action” means a remedial action conducted by Ecology.

“Ecology-supervised remedial action” means a remedial action conducted by a potentially liable person or prospective purchaser and supervised by Ecology under an order or decree.

“Engineered control” means a containment or treatment system that is designed and constructed to prevent or limit the movement of, or the exposure to, a hazardous substance. An engineered control is a type of remedial action. Examples of engineered controls include:

- (a) A layer of clean soil, asphalt or concrete paving, or other materials placed over contaminated soils to limit contact with contamination;
- (b) A groundwater flow barrier such as a bentonite slurry trench;
- (c) A groundwater gradient control system such as a French drain or a pump and treat system; and
- (d) A vapor control system.

“Environment” means any plant, animal, natural resource, surface water (including underlying sediments), groundwater, drinking water supply, land surface (including tidelands and shorelands) or subsurface strata, or ambient air within the state of Washington or under the jurisdiction of the state of Washington.

“Equivalent carbon number” or “EC” means a value assigned to a fraction of a petroleum mixture, empirically derived from the boiling point of the fraction normalized to the boiling point of n-alkanes or the retention time of n-alkanes in a boiling point gas chromatography column.

“Exposure” means subjection of an organism to the action, influence, or effect of a hazardous substance (chemical agent) or physical agent.

“Exposure duration” means the period of exposure to a hazardous substance.

“Exposure frequency” means the portion of the exposure duration that an individual is exposed to a hazardous substance, expressed as a fraction. For example, if a person is exposed 250 days (five days per week for 50 work weeks) over a year (365 days), the exposure frequency would be equal to: $(5 \times 50)/365 = 0.7$.

“Exposure parameters” means those parameters used to derive an estimate of the exposure to a hazardous substance.

“Exposure pathway” means the path a hazardous substance takes or could take from a source to an exposed organism. An exposure pathway describes the mechanism by which an individual or population is exposed or has the potential to be exposed to hazardous substances at or originating from a site. Each exposure pathway includes an actual or potential source or release from a source, an exposure point, and an exposure route. If the exposure point differs from the source of the hazardous substance, the exposure pathway also includes a transport/exposure medium.

“Facility” means (a) any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, vessel, or aircraft, or (b) any site or area where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, or placed, or otherwise come to be located.

“Feasibility study” means a remedial action conducted under WAC 173-340-351 that consists of developing and evaluating cleanup action alternatives to enable selection of a cleanup action.

“Federal cleanup law” means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ([42 U.S.C. 9601 et seq.](#)).

“Financial assurance” means a remedial action that consists of an assurance provided to Ecology under WAC 173-340-440(11) that sufficient financial resources are available to provide for the long-term effectiveness of engineered or institutional controls.

“Fish diet fraction” means the percentage of the total fish and/or shellfish in an individual's diet that is obtained or has the potential to be obtained from the site.

“Food crop” means any domestic plant that is produced for the purpose of, or may be used in whole or in part for, consumption by people or livestock. This includes nursery, root, or seedstock to be used for the production of food crops.

“Free product” means a nonaqueous phase liquid that is present in the soil, bedrock, groundwater or surface water as a distinct separate layer. Under the right conditions, if sufficient free product is present, free product is capable of migrating independent of the direction of flow of the groundwater or surface water.

“Gastrointestinal absorption fraction” means the fraction of a substance transported across the gastrointestinal lining and taken up systemically into the body.

“Groundwater” means water in a saturated zone or stratum beneath the surface of land or below a surface water.

“Hazard index” means the sum of two or more hazard quotients for multiple hazardous substances and/or multiple exposure pathways.

“Hazardous substance” means:

- (a) Any dangerous or extremely hazardous waste as defined in RCW [70A.300.010](#)(1) and (7), or any dangerous or extremely dangerous waste as designated by rule under chapter [70A.300](#) RCW;
- (b) Any hazardous substance as defined in RCW [70A.300.010](#)(10) or any hazardous substance as defined by rule under chapter [70A.300](#) RCW;
- (c) Any substance that, on the effective date of this section, is a hazardous substance under section 101(14) of the federal cleanup law, [42 U.S.C. Sec. 9601\(14\)](#);
- (d) Petroleum or petroleum products; and
- (e) Any substance or category of substances, including solid waste decomposition products, determined by the director by rule to present a threat to human health or the environment if released into the environment.

The term hazardous substance does not include any of the following when contained in an underground storage tank from which there is not a release: Crude oil or any fraction thereof or petroleum, if the tank is in compliance with all applicable federal, state, and local law.

“Hazard quotient” or “HQ” means the ratio of the dose of a single hazardous substance over a specified time period to a reference dose for that hazardous substance derived for a similar exposure period.

“Health and safety plan” means a plan prepared under WAC 173-340-810.

“Health effects assessment summary tables” or “HEAST” means a database developed by the United States Environmental Protection Agency that provides a summary of information on the toxicity of hazardous substances.

“Henry's law constant” means the ratio of a hazardous substance's concentration in the air to its concentration in water. Henry's law constant can vary significantly with temperature for some hazardous substances. The dimensionless form of this constant is used in the default equations in this chapter.

“Highest beneficial use” means the beneficial use of a resource generally requiring the highest quality in the resource. For example, for many hazardous substances, providing protection for the beneficial use of drinking water will generally also provide protection for a great variety of other existing and future beneficial uses of groundwater.

“Inadvertent discovery plan” means a plan prepared under WAC 173-340-815 that describes procedures for responding to a discovery of archaeological materials or human remains in accordance with applicable state and federal laws.

“Independent remedial action” means a remedial action conducted without Ecology oversight or approval and not under an order or decree.

“Indian tribe” means the term as defined in RCW [43.376.010](#)(1).

“Indicator hazardous substances” means the subset of hazardous substances present at a site selected under WAC 173-340-708 for monitoring and analysis during any phase of remedial action for the purpose of characterizing the site or establishing cleanup requirements for that site.

“Industrial properties” means properties that are or have been characterized by, or are to be committed to, traditional industrial uses such as processing or manufacturing of materials, marine terminal and transportation areas and facilities, fabrication, assembly, treatment, or distribution of manufactured products, or storage of bulk materials, that are either:

- (a) Zoned for industrial use by a city or county conducting land use planning under chapter [36.70A](#) RCW (Growth Management Act); or
- (b) For counties not planning under chapter [36.70A](#) RCW (Growth Management Act) and the cities within them, zoned for industrial use and adjacent to properties currently used or designated for industrial purposes.

See WAC 173-340-745 for additional criteria to determine if a land use not specifically listed in this definition would meet the requirement of "traditional industrial use" and for evaluating if a land use zoning category meets the requirement of being "zoned for industrial use."

"Inhalation absorption fraction" means the percent of a hazardous substance (expressed as a fraction) that is absorbed through the respiratory system.

"Inhalation correction factor" means a multiplier that is used to adjust exposure estimates based on ingestion of drinking water to take into account exposure to hazardous substances that are volatilized and inhaled during use of the water.

"Initial investigation" means a remedial action that consists of an investigation conducted under WAC 173-340-310.

"Institutional control" means measures undertaken to limits or prohibits activities that may interfere with the integrity of an interim action or a cleanup action or result in exposure to hazardous substances at the site. An institutional control is a type of remedial action. For examples of institutional controls, see WAC 173-340-440(1).

"Integrated risk information system" or "IRIS" means a database developed by the United States Environmental Protection Agency that provides a summary of information on hazard identification and dose-response assessment for specific hazardous substances.

"Interim action" means a remedial action conducted under WAC 173-340-430.

"Interspecies scaling factor" means the conversion factor used to take into account differences between animals and humans.

"Land's method" means the method for calculating an upper confidence limit for the mean of a lognormal distribution, described in the following publications:

- (a) Land, C.E., 1971. "Confidence intervals for linear functions of the normal mean and variance." *Annals of Mathematics and Statistics*. Volume 42, pages 1187-1205.
- (b) Land, C.E., 1975. "Tables of confidence limits for linear functions of the normal mean and variance." In: *Selected Tables in Mathematical Statistics*, Volume III, pages 385-419. American Mathematical Society, Providence, Rhode Island.

"Legally applicable requirements" means those cleanup standards, standards of control, and other human health and environmental protection requirements, criteria, or limitations adopted under state or federal law that specifically address a hazardous substance, cleanup action, location, or other circumstances at the site.

"Lowest observed adverse effect level" or "LOAEL" means the lowest concentration of a hazardous substance at which there is a statistically or biologically significant increase in the frequency or severity of an adverse effect between an exposed population and a control group.

"Maximum contaminant level" or "MCL" means the maximum concentration of a contaminant established by either the Washington state board of health or the United States Environmental

Protection Agency under the Safe Drinking Water Act (42 U.S.C. 300f et seq.) and published in chapter [246-290](#) WAC or 40 C.F.R. Part 141.

“Maximum contaminant level goal” or “MCLG” means the maximum concentration of a contaminant established by either the Washington state board of health or the United States Environmental Protection Agency under the Safe Drinking Water Act (42 U.S.C. 300f et seq.) and published in chapter [246-290](#) WAC or 40 C.F.R. Part 141 for which no known or anticipated adverse effects on human health occur, including an adequate margin of safety.

“Method detection limit” or “MDL” means the minimum concentration of a compound that can be measured and reported with ninety-nine percent (99%) confidence that the value is greater than zero.

“Millirem” or “mrem” means the measure of the dose of any radiation to body tissue in terms of its estimated biological effect relative to a dose received from an exposure to one roentgen (R) of X-rays. One millirem equals 0.001 rem.

“Mixed funding” means any funding provided to a potentially liable person from the model toxics control capital account under WAC 173-340-560.

“Model remedy” means a set of technologies, procedures, and monitoring protocols identified by Ecology for use in routine types of cleanup projects at facilities that have common features and lower risk to human health and the environment.

“Model Toxics Control Act” or “act” means chapter [70A.305](#) RCW, first passed by the voters in the November 1988 general election as Initiative 97 and as since amended by the legislature.

“National priorities list” or “NPL” means the list of sites designated as a national priority by the United States Environmental Protection Agency under Section 105(a)(8)(B) of the federal cleanup law, [42 U.S.C. 9605\(a\)\(8\)\(B\)](#).

“Natural attenuation” means a variety of physical, chemical or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of hazardous substances in the environment. These in situ processes include: Natural biodegradation; dispersion; dilution; sorption; volatilization; and chemical or biological stabilization, transformation, or destruction of hazardous substances. See WAC 173-340-370(7) for a description of the expected role of natural attenuation in site cleanup. A cleanup action that includes natural attenuation and conforms to the expectation in WAC 173-340-370(7) can be considered an active remedial measure.

“Natural background” means the concentration of a hazardous substance consistently present in the environment that has not been influenced by localized human activities. For example, several metals and radionuclides naturally occur in the bedrock, sediments, and soils of Washington state due solely to the geologic processes that formed these materials. The concentration of these hazardous substances would be considered natural background. Also, low concentrations of some particularly persistent organic compounds such as polychlorinated biphenyls (PCBs) can be found in surficial soils and sediment throughout much of the state due to global distribution of these hazardous substances. These low concentrations would be considered natural

background. Similarly, concentrations of various radionuclides that are present at low concentrations throughout the state due to global distribution of fallout from bomb testing and nuclear accidents would be considered natural background. Compare “area background.”

“**Natural biodegradation**” means in situ biological processes such as aerobic respiration, anaerobic respiration, and cometabolism, that occur without human intervention and that break down hazardous substances into other compounds or elements. The process is typically a multiple step process and may or may not result in organic compounds being completely broken down or mineralized to carbon dioxide and water.

“**Natural person**” means any unincorporated individual or group of individuals. The term “individual” is synonymous with “natural person.”

“**Nonaqueous phase liquid**” or “**NAPL**” means a hazardous substance that is present in the soil, bedrock, groundwater, or surface water as a liquid not dissolved in water. The term includes both light nonaqueous phase liquid (LNAPL) and dense nonaqueous phase liquid (DNAPL).

“**No further action sites list**” means a list of sites for which Ecology or PLIA has determined no further remedial action is necessary under state cleanup law to meet the criteria in WAC 173-340-330(5)(b). For each listed site, the list also identifies whether institutional controls or periodic reviews remain necessary at the site. Ecology maintains the list under WAC 173-340-335.

“**No observed adverse effect level**” or “**NOAEL**” means the exposure level at which there are no statistically or biologically significant increases in frequency or severity of adverse effects between the exposed population and its appropriate control. Some effects may be produced at this level, but they are not considered to be adverse, nor precursors to specific adverse effects.

“**Nonpotable**” means not a current or potential source of drinking water. See WAC 173-340-720 and 173-340-730 for criteria for determining if groundwater or surface water is a current or potential source of drinking water.

“**Null hypothesis**” means an assumption about hazardous substance concentrations at a site when evaluating compliance with cleanup levels established under this chapter. The null hypothesis is that the site is contaminated at concentrations that exceed cleanup levels. This does not apply to cleanup levels based on background concentrations where other appropriate statistical methods supported by a power analysis would be more appropriate to use.

“**Oral RFD conversion factor**” means the conversion factor used to adjust an oral reference dose (which is typically based on an administered dose) to a dermal reference dose (which is based on an absorbed dose).

“**Order**” means an enforcement order issued under WAC 173-340-540 or an agreed order issued under WAC 173-340-530.

“**Overburdened community**” means the term as defined in RCW [70A.02.010](#)(11).

“**Owner or operator**” means any person that meets the definition of this term in RCW [70A.305.020](#)(22).

“PAHs (carcinogenic)” or “cPAHs” means those polycyclic aromatic hydrocarbons substances, PAHs, identified as A (known human) or B (probable human) carcinogens by the United States Environmental Protection Agency. These include benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

“Performance monitoring” means a type of compliance monitoring described in WAC 173-340-410.

“Periodic review” means a remedial action that consists of a review conducted by Ecology under WAC 173-340-420.

“Permanent solution” or “permanent cleanup action” means a cleanup action in which cleanup standards of Part 7 of this chapter can be met without further action being required at the site being cleaned up or any other site involved with the cleanup action, other than the approved disposal of any residue from the treatment of hazardous substances.

“Person” means an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity, state government agency, unit of local government, federal government agency, or Indian tribe.

“Picocurie” or “pCi” means 10^{-12} curie.

“PLIA” means the pollution liability insurance agency.

“Point of compliance” means the point or points where cleanup levels established in accordance with WAC 173-340-720 through 173-340-760 must be attained. This term includes both standard and conditional points of compliance. A conditional point of compliance for particular environmental media is only available as provided in WAC 173-340-720 through 173-340-760.

“Polychlorinated biphenyls” or “PCB mixtures” means those aromatic compounds containing two benzene nuclei with two or more substituted chlorine atoms. For the purposes of this chapter, PCB includes those congeners which are identified using the appropriate analytical methods specified by Ecology under WAC 173-340-830.

“Polycyclic aromatic hydrocarbons” or “PAH” means those hydrocarbon molecules composed of two or more fused benzene rings. For the purpose of this chapter, PAH includes those compounds which are identified and quantified using the appropriate analytical methods specified by Ecology under WAC 173-340-830. The specific compounds generally included are acenaphthene, acenaphthylene, fluorene, naphthalene, anthracene, fluoranthene, phenanthrene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, pyrene, chrysene, benzo[a]pyrene, dibenzo[a,h]anthracene, indeno[1,2,3-cd]pyrene, and benzo[ghi]perylene.

“Potentially liable person” means any person who Ecology finds, based on credible evidence, to be liable under RCW [70A.305.040](#).

“Practicable” means capable of being designed, constructed, and implemented in a reliable and effective manner including consideration of cost. An alternative is not practicable if its incremental costs are disproportionate to its incremental degree of benefits, compared to

another alternative. Whether a cleanup action uses permanent solutions to the maximum extent practicable is determined using the procedures in WAC 173-340-360(6).

“Practical quantitation limit” or “PQL” means the lowest concentration that can be reliably measured within specified limits of precision, accuracy, representativeness, completeness, and comparability during routine laboratory operating conditions, using Ecology approved methods.

“Probabilistic risk assessment” means a mathematical technique for assessing the variability and uncertainty in risk calculations. This is done by using distributions for model input parameters, rather than point values, where sufficient data exists to justify the distribution. These distributions are then used to compute various simulations using tools such as Monte Carlo analysis to examine the probability that a given outcome will result (such as a level of risk being exceeded). When using probabilistic techniques under this chapter for human health risk assessment, distributions may not be used to represent dose response relationships (reference dose, reference concentration, cancer potency factor).

“Prospective purchaser” means a person who is not currently liable for remedial action at a site and who proposes to purchase, redevelop, or reuse the site.

“Protection monitoring” means a type of compliance monitoring described in WAC 173-340-410.

“Public notice” means the notice and opportunity to comment required under WAC 173-340-600(2).

“Public participation plan” means a plan prepared under WAC 173-340-600 to encourage coordinated and effective public involvement tailored to the public's needs at a particular site.

“Rad” means that quantity of ionizing radiation that results in the absorption of 100 ergs of energy per gram of irradiated material, regardless of the source of radiation.

“Radionuclide” means a type of atom that spontaneously undergoes radioactive decay. Radionuclides are hazardous substances under the act.

“Reasonable maximum exposure” means the highest exposure that can be reasonably expected to occur for a human or other living organisms, including a vulnerable population or an overburdened community, at a site under current and potential future site use.

“Reference dose” or “RFD” means a benchmark dose, derived from the NOAEL or LOAEL for a hazardous substance by consistent application of uncertainty factors used to estimate acceptable daily intake doses and an additional modifying factor, which is based on professional judgment when considering all available data about a substance, expressed in units of milligrams per kilogram body weight per day. This includes chronic reference doses, subchronic reference doses, and developmental reference doses.

“Regulated substance” means the term as defined in chapter [173-360A](#) WAC. All regulated substances are hazardous substances, as defined in this chapter.

“Release” means any intentional or unintentional entry of any hazardous substance into the environment, including but not limited to the abandonment or disposal of containers of hazardous substances.

“Relevant and appropriate requirements” means those cleanup standards, standards of control, and other human health and environmental requirements, criteria, or limitations established under state and federal law that, while not legally applicable to the hazardous substance, cleanup action, location, or other circumstance at a site, Ecology determines address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site. The criteria specified in WAC 173-340-710(4) are used to determine if a requirement is relevant and appropriate.

“Rem” means the unit of radiation dose equivalent that is the dosage in rads multiplied by a factor representing the different biological effects of various types of radiation.

“Remedial investigation” means a remedial action conducted under WAC 173-340-350 that consists of collecting and evaluating sufficient information about a site, including the distribution of hazardous substances and the threat they pose to human health and the environment, to enable:

- (a) Cleanup standards to be established under Part 7 of this chapter; and
- (b) Cleanup action alternatives to be developed and evaluated in a feasibility study under WAC 173-340-351.

“Remedial investigation/feasibility study” means a remedial action that consists of both a remedial investigation and a feasibility study.

“Remediation level (REL)” means a concentration (or other method of identification) of a hazardous substance in soil, water, air, or sediment used to identify where a particular cleanup action component is required as part of a cleanup action at a site. Other methods of identification include physical appearance or location. A cleanup action selected in accordance with WAC 173-340-350 through 173-340-390 that includes remediation levels constitutes a cleanup action which is protective of human health and the environment. See WAC 173-340-355 for a description of the purpose of remediation levels and the requirements and procedures for developing a cleanup action alternative that includes remediation levels.

“Remedy” or **“remedial action”** means any action or expenditure consistent with the purposes of chapter [70A.305](#) RCW to identify, eliminate, or minimize any threat posed by hazardous substances to human health or the environment including any investigative and monitoring activities with respect to any release or threatened release of a hazardous substance and any health assessments or health effects studies conducted in order to determine the risk or potential risk to human health.

“Restoration time frame” means the period of time needed to achieve the required cleanup levels at the points of compliance established for the site.

“Risk” means the probability that a hazardous substance, when released into the environment, will cause an adverse effect in exposed humans or other living organisms.

“Routine cleanup action” means a remedial action meeting all of the following criteria:

- Cleanup standards for each hazardous substance addressed by the cleanup are obvious and undisputed, and allow for an adequate margin of safety for protection of human health and the environment;
- It involves an obvious and limited choice among cleanup action alternatives and uses an alternative that is reliable, has proven capable of accomplishing cleanup standards, and with which Ecology has experience;
- The cleanup action does not require preparation of an environmental impact statement; and
- The site qualifies under WAC 173-340-7491 for an exclusion from conducting a simplified or site-specific terrestrial ecological evaluation, or if the site qualifies for a simplified ecological evaluation, the evaluation is ended under WAC 173-340-7492(2) or the values in Table 749-2 are used.

Routine cleanup actions consist of, or are comparable to, one or more of the following remedial actions:

- Cleanup of above-ground structures;
- Cleanup of below-ground structures;
- Cleanup of contaminated soils where the action would restore the site to cleanup levels; or
- Cleanup of solid wastes, including containers.

“Sampling and analysis plan” means a plan prepared under WAC 173-340-820.

“Saturated zone” means the area below the water table in which all interstices are filled with water.

“Schools” means preschools, elementary schools, middle schools, high schools, and similar facilities, both public and private, used primarily for the instruction of minors.

“Sediment” means the term as defined in WAC [173-204-505](#).

“Sensitive environment” means an area of particular environmental value, where a release could pose a greater threat than in other areas including: Wetlands; critical habitat for endangered or threatened species; national or state wildlife refuge; critical habitat, breeding or feeding area for fish or shellfish; wild or scenic river; rookery; riparian area; big game winter range.

“Site” means the same as "facility."

“Site hazard assessment and ranking” means a remedial action that consists of an assessment and ranking conducted under WAC 173-340-320.

“Soil” means a mixture of organic and inorganic solids, air, water, and biota that exists on the earth's surface above bedrock, including materials of anthropogenic sources such as slag, sludge, etc.

“Soil biota” means invertebrate multicellular animals that live in the soil or in close contact with the soil.

“State cleanup law” means the Model Toxics Control Act, chapter [70A.305](#) RCW, and the cleanup regulations adopted under that Act, chapters [173-340](#) and [173-204](#) WAC.

“Subchronic reference dose” means an estimate (with an uncertainty of an order of magnitude or more) of a daily exposure level for the human population, including sensitive subgroups, that is likely to be without appreciable risk of adverse effects during a portion of a lifetime.

“Surface water” means lakes, rivers, ponds, streams, inland waters, salt waters, and all other surface waters and water courses within the state of Washington or under the jurisdiction of the state of Washington.

“Technically possible” means capable of being designed, constructed, and implemented in a reliable and effective manner, regardless of cost.

“Terrestrial ecological receptors” means plants and animals that live primarily or entirely on land.

“Threatened or endangered species” means species listed as threatened or endangered under the federal Endangered Species Act 16 U.S.C. Section 1533, or classified as threatened or endangered by the state fish and wildlife commission under WAC [220-200-100](#) or [220-610-010](#).

“Total excess cancer risk” means the upper bound on the estimated excess cancer risk associated with exposure to multiple hazardous substances and multiple exposure pathways.

“Total petroleum hydrocarbons” or **“TPH”** means any fraction of crude oil that is contained in plant condensate, crankcase motor oil, gasoline, aviation fuels, kerosene, diesel motor fuel, benzol, fuel oil, and other products derived from the refining of crude oil. For the purposes of this chapter, TPH generally means those fractions of the above products that are the total of all hydrocarbons quantified by analytical methods NWTPH-Gx; NWTPH-Dx; volatile petroleum hydrocarbons (VPH) for volatile aliphatic and volatile aromatic petroleum fractions; and extractable petroleum hydrocarbons (EPH) for nonvolatile aliphatic and nonvolatile aromatic petroleum fractions, as appropriate, or other test methods approved by Ecology.

“Tribal lands” means the term as defined in RCW [70A.02.010](#)(13).

“Type I error” means the error made when it is concluded that an area of a site is below cleanup levels when it actually exceeds cleanup levels. This is the rejection of a true null hypothesis.

“Underground storage tank” or **“UST”** means the term as defined in chapter [173-360A](#) WAC.

“Unrestricted site use conditions” means restrictions on the use of the site or natural resources affected by releases of hazardous substances from the site are not required to ensure continued protection of human health and the environment.

“Upper bound on the estimated excess cancer risk of one in one hundred thousand” means the upper ninety-fifth percent confidence limit on the estimated risk of one additional cancer above the background cancer rate per one hundred thousand individuals.

“Upper bound on the estimated excess cancer risk of one in one million” means the upper ninety-fifth percent confidence limit on the estimated risk of one additional cancer above the background cancer rate per one million individuals.

“UST system” means the term as defined in chapter [173-360A](#) WAC.

“UST system operator” means the same as “operator” in chapter [173-360A](#) WAC.

“UST system owner” means the same as “owner” in chapter [173-360A](#) WAC.

“Volatile organic compound” means those carbon-based compounds listed in United States Environmental Protection Agency methods 502.2, 524.2, 551, 601, 602, 603, 624, 1624C, 1666, 1671, 8011, 8015B, 8021B, 8031, 8032A, 8033, 8260B, and those with similar vapor pressures or boiling points. For petroleum, volatile means aliphatic and aromatic constituents up to and including EC12, plus naphthalene, 1-methylnaphthalene and 2-methylnaphthalene.

“Vulnerable population” means the term as defined in RCW [70A.02.010](#)(14).

“Wastewater facility” means all structures and equipment required to collect, transport, treat, reclaim, or dispose of domestic, industrial, or combined domestic/industrial wastewaters.

“Wetlands” means the term as defined in WAC [173-201A-020](#).

“Wildlife” means any nonhuman vertebrate animal other than fish.

“Zoned for (a specified) use” means the use is allowed as a permitted or conditional use under the local jurisdiction's land use zoning ordinances. A land use that is inconsistent with the current zoning but allowed to continue as a nonconforming use or through a comparable designation is not considered to be zoned for that use.

WAC 173-340-210 Usage.

For the purposes of this chapter, the following apply:

- (1) Unless the context clearly requires otherwise, the use of the singular includes the plural and conversely.
- (2) The terms **“applicable,” “appropriate,” “relevant,” “unless otherwise directed by Ecology” and similar terms implying discretion** mean as determined by Ecology, with the burden of proof on other persons to demonstrate that the requirements are or are not necessary.
- (3) **“Approved”** means for Ecology-conducted or Ecology-supervised remedial actions.
- (4) **“Conduct”** means to perform or undertake whether directly or through an agent or contractor, unless this chapter expressly provides otherwise.
- (5) **“Include”** means included but not limited to.
- (6) **“May” or “should”** means the provision is optional and permissive, and does not impose a requirement.
- (7) **“Shall,” “must,” or “will”** means the provision is mandatory.
- (8) **“Threat”** means threat or potential threat.
- (9) **“Under”** means pursuant to, subject to, required by, established by, in accordance with, and similar expressions of legislative or administrative authorization or direction.

Part 3 – Site Reports and Cleanup Decisions

WAC 173-340-300 Site discovery and reporting.

- (1) Purpose.** This section sets forth the requirements for reporting a release or threatened release of a hazardous substance to the environment that may pose a threat to human health or the environment.
- (2) Applicability and timing.** Except as provided under (a) of this subsection, within ninety days of discovering a release or threatened release of a hazardous substance to the environment that may pose a threat to human health or the environment, an owner or operator must report the release to Ecology. All other persons are encouraged to report such a release to Ecology.
 - (a) Exemptions.** An owner or operator does not need to report the following releases under this section:
 - (i)** A release previously reported to Ecology in fulfillment of a reporting requirement in this chapter or in another law or regulation, including a release previously reported to Ecology under chapter [173-360A](#) WAC;
 - (ii)** A release from a heating oil tank previously reported to PLIA under WAC [374-45-030](#);
 - (iii)** A release previously reported to the United States Environmental Protection Agency under CERCLA, Section 103(c) (42 U.S.C. Sec. 9603(c));
 - (iv)** A release previously reported to the state division of emergency management under RCW [90.56.280](#);
 - (v)** Application of pesticides and fertilizers for their intended purposes and according to label instructions;
 - (vi)** Lawful and nonnegligent use of hazardous substances by a natural person for personal or domestic purposes;
 - (vii)** A release in accordance with a permit that authorizes the release;
 - (viii)** Except for a release specified under (b)(iii) of this subsection, a release to the air;
 - (ix)** A release discovered in a public water system regulated by the department of health; or
 - (x)** A release to a permitted wastewater facility.

An exemption from the reporting requirements in this section does not imply a release from liability under this chapter.

- (b) Examples.** An owner or operator should use best professional judgment in deciding whether a release or threatened release of a hazardous substance to the environment may pose a threat to human health or the environment. The following, which is not an exhaustive list, are examples of situations that an owner or operator should generally report under this section:

- (i) Contamination in a water supply well;
- (ii) Contaminated seeps, sediment, or surface water;
- (iii) Vapors in a building, utility vault, or other structure that appear to be entering the structure from nearby contaminated soil or groundwater;
- (iv) Non-aqueous phase liquid, such as a petroleum product or chlorinated solvent, on the surface of the ground or in the groundwater (free product);
- (v) Any contaminated soil or unpermitted disposal of waste materials that would be classified as a hazardous waste under federal or state law;
- (vi) Any abandoned containers such as drums or tanks, above ground or buried, still containing more than trace residuals of hazardous substances;
- (vii) Sites where unpermitted industrial waste disposal has occurred;
- (viii) Sites where hazardous substances have leaked or been dumped on the ground; and
- (ix) Leaking underground petroleum storage tanks not already reported under chapter 173-360A WAC.

(3) Content of release report. An owner or operator must include the following information in the release report, to the extent known:

- (a) The identity and location of the hazardous substance;
- (b) The circumstances of the hazardous substance release and its discovery; and
- (c) Any planned, ongoing, or completed independent remedial actions to investigate or clean up the release.
 - (i) See WAC 173-340-515(4) and 173-340-450 for additional reporting requirements for independent remedial actions.
 - (ii) See WAC 173-340-310(5) for Ecology’s authority to defer completing an initial investigation of a release to review independent remedial actions completed within ninety days of release discovery.

(4) Other release reporting requirements. Nothing in this section eliminates any obligations to comply with reporting requirements in other laws or permits, including but not limited to the following:

- (a) **Releases from regulated UST systems.** Under chapter [173-360A](#) WAC, UST system owners and operators and regulated service providers must report a confirmed release of a regulated substance from an UST system to Ecology within twenty-four hours. As specified in subsection (2)(a)(i) of this section, a release previously reported to Ecology under chapter [173-360A](#) WAC is exempt from the release reporting requirements in this section. However, the release must still be investigated and cleaned up in accordance

with this chapter. WAC 173-340-450 specifies interim actions that UST system owners and operators must perform immediately or shortly after confirming a release to reduce the threats posed by the release, prevent any further release, and characterize the nature and extent of the release;

- (b) Releases from heating oil tanks.** Under chapter [374-45](#) WAC, owners and operators of a heating oil tank and owners of the property where the tank is located must report a suspected or confirmed release from the tank to PLIA within ninety days. As specified in subsection (2)(a)(ii) of this section, a release previously reported to Ecology under chapter [374-45](#) WAC is exempt from the release reporting requirements in this section. However, the release must still be investigated and cleaned up in accordance with this chapter.
- (5) Reservation of rights.** Nothing in this section precludes Ecology from taking any actions it deems appropriate to identify contaminated sites consistent with chapter [70A.305](#) RCW.

WAC 173-340-310 Initial investigation.

- (1) Purpose.** The purpose of an initial investigation is to determine:
 - (a)** Whether there has been a release or threatened release of a hazardous substance to the environment;
 - (b)** Whether the release or threatened release may pose a threat to human health or the environment;
 - (c)** Whether the population threatened may be a vulnerable population or an overburdened community;
 - (d)** Whether further remedial action is necessary under state cleanup law to confirm whether there has been a release or threatened release that poses a threat to human health or the environment;
 - (e)** Whether further remedial action is necessary under state cleanup law to address the threat to human health and the environment posed by the release or threatened release. This determination is based on the criteria in WAC 173-340-330(5)(b);
 - (f)** Whether an emergency remedial action or an interim action is necessary under state cleanup law to address the threat, and whether persons in the potentially affected vicinity need to be notified of such action;
 - (g)** Whether action under another state or federal law is appropriate; and
 - (h)** The current owners and operators of the site.
- (2) Applicability.** Ecology will complete an initial investigation unless:
 - (a)** The release is exempt from reporting under WAC 173-340-300(2)(a);
 - (b)** The circumstances associated with the release or threatened release are known to Ecology and have previously been or currently are being evaluated by Ecology or another government agency; or
 - (c)** Ecology does not have a reasonable basis to believe that there has been a release or threatened release of a hazardous substance that may pose a threat to human health or the environment.
- (3) Performance.** To make the determinations specified in subsection (1) of this section, Ecology will review readily available information and may collect, or advise other persons to collect, additional information.
- (4) Reliance on others.** Ecology may rely on another government agency or a contractor to Ecology to conduct an initial investigation on its behalf, provided:
 - (a)** The agency or contractor is not suspected of having contributed to the release or threatened release; and
 - (b)** The agency or contractor has no conflict of interest.

(5) Timing.

- (a)** Except as provided under (b) of this subsection, Ecology will complete an initial investigation within ninety days of discovering a release or threatened release or receiving a release report under WAC 173-340-300.
- (b)** If an independent remedial investigation, interim action, or cleanup action is completed within ninety days of the discovery of a release or threatened release, Ecology will complete an initial investigation by the earlier of the following:
 - (i)** Ninety days after receiving the independent remedial action report required under WAC 173-340-515(4);
 - (ii)** One-hundred and eighty days after discovering a release or threatened release or receiving a release report.

(6) Determinations and next steps. Within thirty days of completing the initial investigation, Ecology will make one of the following determinations and take the applicable steps:

- (a)** No release or threatened release occurred. In this case, Ecology will notify the owner and operator in writing of its determination;
- (b)** A release or threatened release occurred, but does not pose a threat to human health or the environment that requires remedial action under state cleanup law. This determination must be based on factors other than performance of remedial action. In this case, Ecology will notify the owner and operator in writing of its determination;
- (c)** A release or threatened release occurred that posed a threat to human health or the environment, but no further remedial action is necessary under state cleanup law to address that threat based on the criteria in WAC 173-340-330(5)(b). In this case, Ecology will take the following steps:
 - (i)** Perform a site hazard assessment and ranking in accordance with WAC 173-340-320;
 - (ii)** List the site on Ecology's no further action sites list in accordance with WAC 173-340-335(2);
 - (iii)** Make any initial investigation report publicly available on Ecology's website;
 - (iv)** Notify the owner and operator in writing of Ecology's determination; and
 - (v)** Notify the public of Ecology's determination in the *Contaminated Site Register* under WAC 173-340-600(7). The notice must include instructions on how to sign up for electronic alerts about the site under WAC 173-340-600(6);
- (d)** A release or threatened release may have occurred that poses a threat to human health or the environment, and further remedial action is necessary under state cleanup law to confirm the threat. In this case, Ecology will take the steps specified under (e) of this subsection;

- (e)** A release or threatened release occurred that poses a threat to human health or the environment, and further remedial action is necessary under state cleanup law to address threat based on the criteria in WAC 173-340-330(5)(b). In this case, Ecology will take the following steps:

 - (i)** Perform a site hazard assessment and ranking in accordance with WAC 173-340-320;
 - (ii)** List the site on the contaminated sites list in accordance with WAC 173-340-330(2);
 - (iii)** Make any initial investigation report publicly available on Ecology’s website;
 - (iv)** Notify the owner and operator, and any person who Ecology has preliminarily determined to be liable under WAC 173-340-500(1), in writing of Ecology’s determination. The notice may be combined with the potentially liable person status letter in WAC 173-340-500. The notice must include:

 - (A)** The basis for Ecology's determination;
 - (B)** The site’s hazard rankings;
 - (C)** Information on the cleanup process provided for in this chapter;
 - (D)** A statement that it is Ecology's policy to work cooperatively with persons to accomplish prompt and effective cleanups;
 - (E)** A statement that the notice is not a determination of liability and that cooperating with Ecology in planning or conducting a remedial action is not an admission of guilt or liability;
 - (F)** An Ecology website where information about the site is publicly available, and instructions on how to sign up for electronic alerts about the site under WAC 173-340-600(6); and
 - (G)** An Ecology staff or office to contact about the contents of the notice;
 - (v)** Notify the public of Ecology’s determination in the *Contaminated Site Register* under WAC 173-340-600(7). The notice must include instructions on how to sign up for electronic alerts about the site under WAC 173-340-600(6);
 - (vi)** Notify persons within the potentially affected vicinity of the threat, if Ecology determines that an emergency remedial action or an interim action is necessary under state cleanup law and that such notice is needed.

 - (A)** Ecology may require the owner or operator to provide the notice on Ecology’s behalf. If required in writing by Ecology, the owner or operator must provide the notice.
 - (B)** Ecology will determine the method and nature of the notice on a case-by-case basis using the methods specified in WAC 173-340-600.

- (f) A release or threatened release occurred that poses a threat to human health or the environment, but action under another state or federal law is appropriate. The steps Ecology will take depend on the other authority identified by Ecology.
 - (i) For all sites where Ecology determines action is appropriate under another state or federal law, Ecology will:
 - (A) Refer the site to the applicable government agency or program; and
 - (B) Notify the owner and operator in writing of its determination.
 - (ii) For sites where Ecology determines action is appropriate under the federal cleanup law, the federal solid waste disposal act (42 U.S.C. 6901 et seq.), the state hazardous waste management act (chapter 70A.300 RCW), the state solid waste management act (chapter 70A.205 RCW), or the state pollution liability protection act (chapter 70A.330 RCW), Ecology will also:
 - (A) Perform a site hazard assessment and ranking in accordance with WAC 173-340-320;
 - (B) List the site on Ecology’s contaminated sites list in accordance with WAC 173-340-330(2);
 - (C) Make any initial investigation report publicly available on Ecology’s website; and
 - (D) Notify the public of Ecology’s determination in the *Contaminated Site Register* under WAC 173-340-600(7). The notice must include instructions on how to sign up for electronic alerts about the site under WAC 173-340-600(6).
- (7) **Reservation of rights.** Nothing in this section precludes Ecology from taking or requiring appropriate remedial action at any time.

WAC 173-340-320 Site hazard assessment and ranking.

- (1) Purpose.** The site hazard assessment and ranking process provides a method for Ecology to assess and rank threats to human health and the environment posed by a site based on information readily available at the time of assessment. The site hazard assessment and ranking process satisfies the requirements of RCW [70A.305.030\(2\)\(b\)](#), and is not a substitute for a remedial investigation. Ecology uses site hazard assessments and rankings to:

 - (a)** Support decisions to add or remove sites from the contaminated sites list under WAC 173-340-330 or the no further action sites list under WAC 173-340-335;
 - (b)** Prioritize remedial actions and allocate agency resources among and within sites under WAC 173-340-340;
 - (c)** Reflect changes in threats posed by a site based on new information or changes in site conditions; and
 - (d)** Inform the legislature and the public about the threats posed by contaminated sites.
- (2) Development.** Ecology will establish and maintain a site hazard assessment and ranking process.

 - (a) Standards.** A site hazard assessment and ranking process must enable Ecology to use readily available information to:

 - (i)** Assess and rank the potential exposure of human and environmental receptors to confirmed or suspected releases of hazardous substances through each environmental medium;
 - (ii)** Assess and rank the severity of such exposures to human health and the environment;
 - (iii)** Identify whether the population exposed may be a vulnerable population or an overburdened community; and
 - (iv)** Report the assessor’s level of confidence in the information used for the assessment.
 - (b) Public participation.** When establishing a site hazard assessment and ranking process or any substantive change to the process, Ecology will provide the public with notice and an opportunity to comment. The public comment period must be at least thirty days.
- (3) Implementation.**

 - (a) Applicability and timing.**

 - (i)** Ecology will perform a site hazard assessment and ranking before adding or removing a site from the contaminated sites list under WAC 173-340-330 or the no further action sites list under WAC 173-340-335.

WAC 173-340-330 Contaminated sites list.

- (1) Purpose.** The purpose of the contaminated sites list is to identify:

 - (a)** All sites for which Ecology or PLIA has determined further remedial action is necessary under state cleanup law to:

 - (i)** Confirm whether there is a threat to human health or the environment posed by a release or threatened release; or
 - (ii)** Address the threat posed by a release or threatened release, based on the criteria in subsection (5)(b) of this section; and
 - (b)** For each listed site, the site’s current remedial action status.
- (2) Adding a site to the list.** After an initial investigation under WAC 173-340-310 or [374-45-040](#), Ecology will add a site to the contaminated sites list if Ecology or PLIA determines further remedial action is necessary under state cleanup law to:

 - (a)** Confirm whether there is a threat to human health or the environment posed by a release or threatened release; or
 - (b)** Address the threat posed by a release or threatened release, based on the criteria in subsection (5)(b) of this section.
- (3) Tracking the remedial action status of a site.** For each site on the contaminated sites list, Ecology will track and include on the list the site’s remedial action status. Ecology may change the remedial action status of a site to reflect current conditions.
- (4) Splitting or combining sites on the list.** Ecology may split or combine sites on the contaminated sites list consistent with its authority under chapter [70A.305](#) RCW.
- (5) Criteria for removing a site from the list.** Ecology will remove a site from the contaminated sites list if, and only if, Ecology or PLIA determines that:

 - (a)** The listing of the site is erroneous; or
 - (b)** The site meets the following criteria:

 - (i)** For sites where the selected cleanup action is permanent:

 - (A)** All cleanup standards have been achieved; and
 - (B)** All necessary remedial actions under state cleanup law have been completed;
 - (ii)** For sites where the selected cleanup action is not permanent and does not include containment:

 - (A)** All cleanup standards have been achieved; and
 - (B)** All necessary remedial actions under state cleanup law, except confirmation monitoring and periodic reviews, have been completed; or

satisfaction that no further remedial action is necessary at the site to meet the criteria in subsection (5)(b) of this section.

- (b) Response.** Ecology will review the petition. However, the timing of Ecology’s review is at its discretion and as resources permit. Unless Ecology determines the listing is erroneous, Ecology may collect from the petitioner all costs incurred by Ecology in reviewing the petition and, as applicable, providing for public participation under subsection (6) of this subsection. Ecology may require a deposit in advance of reviewing the petition.
- (7) Public participation when removing a site from the list.** For Ecology-conducted and Ecology-supervised remedial actions, Ecology will provide public notice in accordance with WAC 173-340-600(17) before removing a site from the contaminated sites list.
- (8) Re-listing of sites.** Ecology may re-list a site on the contaminated sites list that it previously removed from the list if Ecology or PLIA determines further remedial action is necessary at the site to meet the criteria in subsection (5)(b) of this section.
- (9) Notification.**

 - (a)** Ecology will make the contaminated sites list and the current list of remedial action status categories publicly available on Ecology’s website.
 - (b)** Ecology will make a site’s current remedial action status publicly available on Ecology’s website under WAC 173-340-600(5).
 - (c)** If requested, Ecology will notify a person electronically under WAC 173-340-600(6) upon:

 - (i)** Any change in a site’s remedial action status;
 - (ii)** Splitting or combining a site on the contaminated sites list; or
 - (iii)** Removing or re-listing a site on the contaminated sites list.
- (10) Liability.** Placement of a site on the contaminated sites list does not, by itself, imply that persons associated with the site are liable under chapter [70A.305](#) RCW.

WAC 173-340-335 No further action sites list.

- (1) Purpose.** The purpose of the no further action sites list is to identify:
 - (a)** All sites where Ecology or PLIA has determined no further remedial action is necessary under state cleanup law to meet the criteria in WAC 173-340-330(5)(b); and
 - (b)** For each listed site, whether institutional controls or periodic reviews remain necessary at the site.
- (2) Adding a site to the list.** Ecology will add a site to the no further action sites list if, and only if:
 - (a)** After completing an initial investigation, Ecology or PLIA determines that no further remedial action is necessary under state cleanup law to meet the criteria in WAC 173-340-330(5)(b); or
 - (b)** Ecology removes the site from the contaminated sites list based on the criteria in WAC 173-340-330(5)(b).
- (3) Tracking institutional controls and periodic reviews.** For each site on the no further action sites list, Ecology will identify on the list whether the site requires:
 - (a)** Institutional controls under WAC 173-340-440; or
 - (b)** Periodic reviews under WAC 173-340-420.
- (4) Removing a site from the list.** If Ecology re-lists a site on the contaminated sites list under WAC 173-340-330(8), Ecology will remove the site from the no further action sites list.
- (5) Notification.**
 - (a)** Ecology will make the no further action sites list publicly available on Ecology’s website.
 - (b)** If requested, Ecology will notify a person electronically under WAC 173-340-600(6) upon adding or removing a site on the no further action sites list.

WAC 173-340-340 Program planning and assessment.

- (1) Strategic plan.** Ecology will develop and periodically update a comprehensive and integrated strategic plan for cleaning up contaminated sites. The strategic plan must prioritize vulnerable populations and overburdened communities impacted by contaminated sites and consider the resource allocation factors in subsection (2) of this section. The strategic plan must include:

 - (a)** Goals and strategies for all core program functions and major initiatives;
 - (b)** Metrics to track and measure progress in accomplishing the goals and implementing the strategies; and
 - (c)** Staffing and capital funds needed to accomplish the goals and implement the strategies.
- (2) Resource allocation.** In fulfilling the objectives of this chapter, Ecology will allocate staffing and capital funds based on the following factors:

 - (a)** The threats posed by a contaminated site to human health and the environment;
 - (b)** Whether the population threatened by a contaminated site is a vulnerable population or an overburdened community;
 - (c)** The land reuse potential and planning for a contaminated site; and
 - (d)** Other factors specified by the legislature or Ecology.
- (3) Performance assessment.** Ecology will periodically assess its progress in accomplishing its goals and implementing its strategies for cleaning up contaminated sites, including its progress in cleaning up sites impacting vulnerable populations and overburdened communities, using the metrics established under subsection (1)(b) of this section.
- (4) Notification.**

 - (a)** Ecology will make the strategic plans and performance assessments required under subsections (1) and (3) publicly available on Ecology’s website.
 - (b)** Ecology will provide notice in the *Contaminated Site Register* of the following:

 - (i)** Any update to the strategic plans or performance assessments required under subsections (1) and (3) of this section; and
 - (ii)** Any additional resource allocation factors specified by Ecology under subsection (2)(d) of this section.

WAC 173-340-350 Remedial investigation.

- (1) Purpose.** The purpose of a remedial investigation is to adequately characterize a contaminated site, including the distribution of hazardous substances and the threat they pose to human health and the environment, to enable:

 - (a)** Cleanup standards to be established under Part 7 of this chapter; and
 - (b)** Cleanup action alternatives to be developed and evaluated in a feasibility study under WAC 173-340-351.

- (2) Applicability.**

 - (a) Whether required.** A remedial investigation of a contaminated site must be conducted regardless of which administrative option in WAC 173-340-510 is used to conduct remedial action at the site.
 - (b) Requirements.** A remedial investigation must comply with the requirements in this section and, as applicable, the following:

 - (i)** For sites where there is a release or threatened release to sediment, the requirements in WAC 173-204-550.
 - (ii)** For sites on the federal National Priorities List, the applicable requirements under the federal cleanup law.

- (3) Timing and phasing.**

 - (a)** Except as otherwise directed by Ecology, a remedial investigation/feasibility study must be completed before cleanup standards are established and a cleanup action is selected. An emergency remedial action or an interim action may be conducted before a remedial investigation/feasibility study is completed.
 - (b)** A remedial investigation/feasibility study may be conducted, or required by Ecology to be conducted, for the entire site or for separate parts of a site, such as a sediment cleanup unit as defined in WAC 173-204-505.
 - (c)** A remedial investigation/feasibility study may be conducted, or required by Ecology to be conducted, as a single step or as separate steps in the cleanup process.
 - (d)** A remedial investigation may be conducted, or required by Ecology to be conducted, in phases. For example, additional remedial investigation may be necessary to fill data gaps identified in earlier investigations or to determine the applicability of a model remedy at a site.

- (4) Administrative options and requirements.** A remedial investigation may be conducted under any of the administrative options for remedial action described in WAC 173-340-510. Reporting and public participation requirements depend on the administrative option used to conduct remedial action.

- (a) Ecology-conducted or Ecology-supervised remedial actions.** For an Ecology-conducted or Ecology-supervised remedial investigation, Ecology will provide or require:

 - (i)** A remedial investigation work plan that complies with the requirements in subsection (5)(b) of this section and WAC 173-340-840. For Ecology-supervised remedial actions, Ecology may require submittal of a work plan for its review and approval;
 - (ii)** A remedial investigation report that complies with the requirements in subsection (5)(g) of this section and WAC 173-340-840. For Ecology-supervised remedial actions, Ecology may require submittal of a report for its review and approval; and
 - (iii)** Public notice of a remedial investigation report in accordance with WAC 173-340-600(13).
- (b) Independent remedial actions.**

 - (i)** An independent remedial investigation must be reported to Ecology in accordance with WAC 173-340-515.
 - (ii)** Ecology must notify the public of an independent remedial investigation report in accordance with WAC 173-340-600(20).
- (5) Steps.** Except as otherwise directed by Ecology, a remedial investigation must be conducted in accordance with the following steps.

 - (a) Step 1: Identify scope.** Identify the scope of the remedial investigation. The scope depends on many factors, including the nature and extent of contamination, the exposure pathways of concern, the human and ecological receptors potentially impacted by the contamination, the characteristics of the site, the type of cleanup action alternatives likely to be evaluated, and information previously obtained about the site. To determine the scope, do the following:

 - (i)** Identify what information is needed about the site to comply with the requirements in (c) of this subsection and chapter 197-11 WAC, the State Environmental Policy Act rules (see WAC 197-11-250);
 - (ii)** Assemble and evaluate relevant information collected during any prior remedial actions at the site, such as an initial investigation or an interim action. Previously collected information may be relied upon in the investigation to avoid duplication; and
 - (iii)** Identify what additional information needs to be collected during the investigation.
 - (b) Step 2: Develop work plan.** Develop a remedial investigation work plan to collect and evaluate the information identified in Step 1. If required by Ecology under subsection (4)(a)(i) of this section, submit the work plan for Ecology’s review and approval.

- (i) **Content.** Except as otherwise directed by Ecology, include the following in the work plan:

 - (A) The scope of the investigation identified in Step 1, including a summary of available information about the site and data gaps needing to be addressed by the investigation;
 - (B) A preliminary conceptual site model, as defined in WAC 173-340-200;
 - (C) A target concentration for each hazardous substance in each contaminated environmental medium identified in the preliminary conceptual site model under (b)(i)(B) of this subsection;
 - (D) A sampling and analysis plan meeting the requirements in WAC 173-340-820, including the analytical methods that enable detection of the target concentrations identified in (b)(i)(C) of this subsection;
 - (E) A health and safety plan meeting the requirements in WAC 173-340-810;
 - (F) An inadvertent discovery plan meeting the requirements in WAC 173-340-815;
 - (G) Cleanup action alternatives likely to be considered in the feasibility study, based on available information;
 - (H) Any studies needed to develop or evaluate cleanup action alternatives in the feasibility study, such as treatability or pilot studies;
 - (I) A proposed schedule for completing the remedial investigation/feasibility study and, if required, submittal of a report for Ecology review and approval; and
 - (J) Any other information required by Ecology.
- (ii) **Flexibility.** The work plan should remain flexible and be streamlined when possible to avoid collection and evaluation of unnecessary information. While it may be appropriate to phase investigations at some sites, Ecology encourages expedited investigations. For example, using field screening methods to guide investigations and fast turnaround laboratory analyses to provide real-time feedback may be appropriate at some sites. However, in all cases, sufficient information must be collected and evaluated to meet the purposes in subsection (1) of this section.
- (c) **Step 3: Conduct investigation.** Conduct the remedial investigation in accordance with the work plan developed in Step 2.
- (d) **Step 4: Complete conceptual site model.** Based on the results of the remedial investigation conducted in Step 3 and any previously obtained information about the

site, complete the development of a conceptual site model, as defined in WAC 173-340-200.

- (e) **Step 5: Develop proposed cleanup levels.** Based on the conceptual site model completed in Step 4, develop a proposed cleanup level for each hazardous substance within each affected environmental medium at the site in accordance with Part 7 of this chapter.
- (f) **Step 6: Determine whether feasibility study is necessary.** Based on the results of the remedial investigation conducted in Step 3 and any previously obtained information about the site, determine whether a feasibility study is necessary under WAC 173-340-351(2)(a), including:
 - (i) Whether prior remedial actions conducted at the site constitute a permanent cleanup action; and
 - (ii) Whether a model remedy may be used as a cleanup action or a cleanup action component at the site.
- (g) **Step 7: Report results.** Report the results of the remedial investigation in accordance with subsection (4) of this section. Include the following information in the report:
 - (i) General information about the site, including:
 - (A) Project title;
 - (B) Name, address, and phone number of project coordinator;
 - (C) Legal description and dimensions of the site;
 - (D) Current owners and operators; and
 - (E) Chronological listing of past owners and operators and operational history;
 - (ii) Maps, figures, or diagrams illustrating relevant existing and historic site features, including:
 - (A) Sources of releases;
 - (B) Property boundaries;
 - (C) Proposed site boundaries, as defined by where hazardous substances exceed the proposed cleanup levels identified in (d)(iv) of this subsection;
 - (D) Surface topography;
 - (E) Surface and subsurface structures;
 - (F) Surface water, wetlands, and undeveloped areas; and
 - (G) Utility lines and well locations;

- (iii) The conceptual site model completed in Step 4;
 - (iv) The proposed cleanup levels developed in Step 5, including:
 - (A) The basis for the proposed cleanup levels; and
 - (B) Any regulatory classifications for, or laws applicable to, each environmental medium (see WAC 173-340-710);
 - (v) A comparison of the proposed cleanup levels developed in Step 5 to the hazardous substance concentrations in each environmental medium;
 - (vi) If a feasibility study is determined in Step 6 not to be necessary under subsection (7)(b) of this section, sufficient documentation to demonstrate the basis of the determination;
 - (vii) The information collected in Step 3, and any information obtained from prior remedial actions relied on during the investigation. Previously obtained information may be summarized and referenced to avoid unnecessary duplication;
 - (viii) Documentation of the proper management and disposal of any waste materials generated as a result of the remedial investigations in accordance with applicable state and federal laws; and
 - (viii) Any other information required by Ecology.
- (6) **Investigations.** A remedial investigation must collect and evaluate sufficient information about a site and the surrounding area to meet the purposes in subsection (1) of this section, including the following as applicable to the site.
- (a) **Hazardous substance sources.** Confirmed and suspected releases must be investigated to define the location, quantity, areal and vertical extent, concentration within, and sources of hazardous substances. Where relevant, information on the physical and chemical characteristics and the biological effects of hazardous substances must be collected.
 - (b) **Soils.** Soils must be investigated to adequately characterize:
 - (i) The areal and vertical distribution and concentrations of hazardous substances in soils; and
 - (ii) The properties of surface and subsurface soils that are likely to influence the type and rate of hazardous substance migration or to affect the ability to implement cleanup action alternatives.
 - (c) **Groundwater, geology, and hydrogeology.** Groundwater and the geology and hydrogeology must be investigated to adequately characterize:
 - (i) The areal and vertical distribution and concentrations of hazardous substances in the groundwater;

threat to human health. If the measured indoor air concentrations are higher than applicable cleanup levels, Ecology may require an emergency action or an interim action to mitigate the threat to human health.

- (f) **Climate.** Sufficient information, based on best available science, must be collected on current and projected local and regional climatological characteristics to determine which could affect the migration of hazardous substances or the resilience of cleanup action alternatives. Relevant characteristics can include temperature extremes, sea level, seasonal patterns of rainfall, the magnitude and frequency of extreme storm events (such as flooding), the potential for landslides, prevailing wind direction and velocity, variations in barometric pressure, and the potential for wildfires.
- (g) **Land and resource use.** Sufficient information must be collected on the present and proposed land and resource uses, comprehensive plan, and zoning for the site and potentially affected areas to determine the exposure or potential exposure of human and ecological receptors, including vulnerable populations and overburdened communities, to hazardous substances at the site.
- (h) **Human receptors.** Sufficient information must be collected on human receptors, including vulnerable populations and overburdened communities, that are reasonably likely to be exposed or potentially exposed to hazardous substances based on the land and resource uses identified in (g) of this subsection to determine the impact or potential impact of such exposure.
- (i) **Natural resources and ecological receptors.** Sufficient information must be collected on natural resources and ecological receptors that are reasonably likely to be exposed or potentially exposed to hazardous substances based on the land and resource uses identified in (g) of this subsection to determine the impact or potential impact of such exposure. This includes any information needed to conduct a sediment evaluation under chapter 173-204 WAC and any information needed to conduct a terrestrial ecological evaluation or establish an exclusion under WAC 173-340-7490 through 173-340-7494.
- (i) Where appropriate, a terrestrial ecological evaluation may be conducted so as to avoid duplicative studies of soil contamination that will be remediated to address other concerns, such as protection of human health or aquatic ecological receptors. This may be accomplished by evaluating residual threats to the environment after cleanup action alternatives for human health or aquatic ecological protection have been developed. If this approach is used, the remedial investigation may be phased. This approach may not be appropriate at a site where a hazardous substance is primarily an ecological concern and will not obviously be addressed by the cleanup action for the protection of human health, such as zinc; or at a site where the development of a human health based cleanup action is expected to be a lengthy process, and postponing the terrestrial ecological evaluation would cause further harm to the environment.

- (ii) If a simplified or site-specific terrestrial ecological evaluation is not required under WAC 173-340-7491, the basis for the determination must be included in the remedial investigation report.
- (j) **Feasibility of cleanup action alternatives.** Sufficient information must be collected to develop and evaluate cleanup action alternatives in the feasibility study under WAC 173-340-351, such as treatability or pilot studies.
- (k) **Applicability of model remedies.** Sufficient information must be collected to determine whether a model remedy established by Ecology may be used as a cleanup action or a cleanup action component at the site under WAC 173-340-390.

WAC 173-340-351 Feasibility study.

- (1) Purpose.** The purpose of the feasibility study is to develop and evaluate cleanup action alternatives to enable the selection of a cleanup action that meets the requirements in WAC 173-340-360 and conforms, as appropriate, to the expectations in WAC 173-340-370.
- (2) Applicability.**
 - (a) Whether required.** A feasibility study of cleanup action alternatives must be conducted, regardless of which administrative option in WAC 173-340-510 is used to conduct remedial action, except in the following circumstances.
 - (i) Permanent cleanup action completed.** A feasibility study is not required if prior remedial actions at the site constitute a permanent cleanup action and meet the criteria in WAC 173-340-330(5)(b)(i). To qualify for this exemption, sufficient information must be collected and reported to Ecology to demonstrate that the site meets the criteria (see WAC 173-340-350(5)(f) and (5)(g)(v)).
 - (ii) Model remedy selected.** A feasibility study is not required to select a model remedy as the cleanup action or as a component of the cleanup action for a site (see WAC 173-340-390). However, a feasibility study is still required to select any remaining cleanup action components for the site. To qualify for this exemption or partial exemption, sufficient information must be collected and reported to Ecology to demonstrate that the site meets the conditions established by Ecology for using the model remedy (see WAC 173-340-350(6)(k), (5)(f), and (5)(g)(v)).
 - (b) Requirements.** A feasibility study must comply with the requirements in this section and, as applicable, the following:
 - (i)** For sites where there is a release or threatened release to sediment, the requirements in WAC 173-204-550; and
 - (ii)** For sites on the federal National Priorities List, the applicable requirements under the federal cleanup law.
- (3) Timing and phasing.**
 - (a)** Except as otherwise directed by Ecology, a remedial investigation/feasibility study must be completed before cleanup standards are established and a cleanup action is selected. An emergency remedial action or an interim action may be conducted before a remedial investigation/feasibility study is completed.
 - (b)** A remedial investigation/feasibility study may be conducted, or required by Ecology to be conducted, for the entire site or for separate parts of a site, such as a sediment cleanup unit as defined in WAC 173-204-505.

- (b) Step 2: Identify alternatives.** Identify cleanup action alternatives for evaluation in the study. The alternatives must achieve the goals identified in Step 1 and comply with the requirements in WAC 173-340-360. Include:

 - (i)** A reasonable number and type of alternatives, taking into account:

 - (A)** The characteristics and complexity of the site, including current site conditions and physical constraints; and
 - (B)** The threats posed by the site to human health and the environment, including vulnerable populations and overburdened communities;
 - (ii)** At least one permanent cleanup action alternative;
 - (iii)** For each environmental medium, at least one alternative with a standard point of compliance (see Part 7 of this chapter);
 - (iv)** As appropriate, alternatives with a conditional point of compliance for one or more environmental media (see Part 7 of this chapter); and
 - (v)** As appropriate, alternatives relying on a combination of cleanup action components for an environmental medium (such as treatment of some soil contamination and containment of the remainder). The alternatives must specify remediation levels for each component (see WAC 173-340-355).
- (c) Step 3: Screen alternatives and components.** Based on a preliminary analysis, eliminate from further evaluation the following cleanup action alternatives or components identified in Step 2:

 - (i)** Alternatives that clearly do not meet the requirements for a cleanup action in WAC 173-340-360, including alternatives for which costs are clearly disproportionate to benefits under WAC 173-340-360(5);
 - (ii)** Alternatives or components that are not technically possible at the site.
- (d) Step 4: Evaluate remaining alternatives.** Conduct a detailed evaluation of each remaining cleanup action alternative to determine whether it meets the requirements in WAC 173-340-360 and conforms to the expectations in WAC 173-340-370. If necessary, conduct additional remedial investigations under WAC 173-340-350 to complete the evaluation, including any investigations needed to complete a terrestrial ecological evaluation;
- (e) Step 5: Select preferred alternative.** Based on the detailed evaluation in Step 4, select a preferred cleanup action alternative that meets the requirements in WAC 173-340-360 and conforms, as appropriate, to the expectations in WAC 173-340-370.
- (f) Step 6: Report results.** Report the results of the feasibility study in accordance with subsection (4) of this section. Include the following information in the report:

- (i) If the remedial investigation report is not combined with the feasibility study report, a summary of remedial investigation results, including:

 - (A) The conceptual site model used to develop and evaluate cleanup action alternatives;
 - (B) The proposed cleanup level for each hazardous substance within each affected environmental medium at the site, and the basis for the cleanup level; and
 - (C) Maps, cross-sections, and calculations illustrating the location, estimated amount, and concentration distribution of hazardous substances above the proposed cleanup levels for each affected environmental medium at the site;
- (ii) Results of any additional investigations conducted after completing the remedial investigation report;
- (iii) Results of any treatability or pilot studies needed to develop or evaluate cleanup action alternatives;
- (iv) The cleanup goals identified in Step 1 of the feasibility study;
- (v) The cleanup action alternatives identified in Step 2 of the feasibility study. For each alternative, include:

 - (A) The cleanup action components relied on to clean up each affected environmental medium;
 - (B) For alternatives relying on a combination of cleanup action components to clean up an environmental medium, the proposed remediation levels and the basis for those levels;
 - (C) The proposed point of compliance for each hazardous substance within each affected environmental medium at the site, and the basis for any conditional points of compliance (see Part 7 of this chapter);
 - (D) The location and estimated amount of each hazardous substance to be removed or treated by the alternative and the estimated time frame in which removal or treatment will occur; and
 - (E) The location, estimated amount, and projected concentration distribution of each hazardous substance remaining above proposed cleanup levels after implementing the alternative;
- (vi) The cleanup action alternatives eliminated from further evaluation during the screening process in Step 3 of the feasibility study, and the basis for elimination;
- (vii) Documentation of the detailed evaluation process in Step 4 of the feasibility study, including how impacts on vulnerable populations and overburdened

communities were considered in the evaluation, and the basis for eliminating any alternative from further evaluation;

- (viii)** The preferred cleanup action alternative selected in Step 5 of the feasibility study, including:
 - (A)** The basis for selecting the alternative and for any non-conformance to the expectations in WAC 173-340-370;
 - (B)** Any local, state, or federal laws applicable to the alternative, including any known permits or approval conditions (see WAC 173-340-710);
 - (C)** As appropriate, proposed indicator hazardous substances for the alternative (see WAC 173-340-703); and
 - (D)** Sufficient information about the alternative to enable Ecology to conduct the evaluations and make the determinations required under chapter [43.21C](#) RCW, the State Environmental Policy Act, and chapter 197-11 WAC, the State Environmental Policy Act Rules;
- (ix)** Documentation of the proper management and disposal of any waste materials generated as a result of the feasibility study in accordance with applicable state and federal laws; and
- (x)** Any other information required by Ecology.

WAC 173-340-355 Development of cleanup action alternatives that include remediation levels.

- (1) Purpose.** A cleanup action often relies on a combination of cleanup action components to remediate an environmental medium. For example, to remediate soil, a cleanup action may rely on treatment of some soil contamination and containment of the remainder. The purpose of a remediation level is to specify when the various components are used as part of a cleanup action.
- (2) Applicability.** Remediation levels must be established as part of a cleanup action if the cleanup action relies on a combination of cleanup action components to remediate an environmental medium.
- (3) Types.** Remediation levels may be based on a concentration (e.g., all soil above concentration X will be treated), or other method of identification, such as the physical appearance or location of the contamination (e.g., all of the green sludge will be removed from the northwest quadrant of the site).
- (4) Development.** Remediation levels must be developed and evaluated as part of a cleanup action alternative during the feasibility study conducted under WAC 173-340-351. Quantitative or qualitative methods may be used to develop remediation levels. The methods may include a human health or ecological risk assessment. The methods may also consider fate and transport issues. The methods may be simple or complex, as appropriate to the site. Where a quantitative risk assessment is used, see WAC 173-340-357.
- (5) Relationship to cleanup levels and cleanup standards.** Remediation levels are not the same as cleanup levels or cleanup standards.

 - (a)** A cleanup level defines the concentration of a hazardous substance above which a contaminated environmental medium (such as soil) must be remediated in some manner (such as treatment, containment, or institutional controls). A remediation level, on the other hand, defines the concentration (or other method of identification) of a hazardous substance in an environmental medium at which a particular cleanup action component (such as soil treatment versus containment) will be used. Remediation levels, by definition, exceed cleanup levels.
 - (b)** Cleanup levels must be established for every site. Remediation levels, on the other hand, must be established only if a cleanup action relies on a combination of cleanup action components to remediate an environmental medium.
 - (c)** Cleanup actions, including those relying on a combination of cleanup action components to remediate an environmental medium, must meet each of the requirements in WAC 173-340-360, including compliance with cleanup standards. If a remedial action does not comply with cleanup standards, the remedial action is an interim action, not a cleanup action.
- (6) Examples.** The following examples of cleanup actions that use remediation levels are for illustrative purposes only. All cleanup action alternatives in a feasibility study, including those

using remediation levels, must be evaluated to determine whether they meet each of the requirements in WAC 173-340-360.

- (a) **Example of a site meeting soil cleanup levels at the point of compliance.** Assume the soil cleanup level for a hazardous substance at a site is 20 ppm. This means any soil exceeding 20 ppm at the applicable point of compliance must be remediated. Further assume the cleanup action consists of treating soil above 100 ppm and removing to an offsite landfill soil between 100 and 20 ppm. In this case, 100 ppm is a remediation level that defines which soil will be treated and which soil will be removed from the site. The cleanup action may be determined to comply with the cleanup standard because the 20 ppm soil cleanup level is met at the applicable point of compliance.
- (b) **Example of a site not meeting soil cleanup levels at the point of compliance.** Assume the soil cleanup level for a hazardous substance at a site is 20 ppm. This means any soil exceeding 20 ppm at the applicable point of compliance must be remediated. Further assume the cleanup action consists of treating soil above 100 ppm and containing soil between 100 and 20 ppm. The 100 ppm concentration is a remediation level that defines which soil will be treated and which soil will be contained at the site. Even though contamination above the 20 ppm cleanup level remains at the site, if the cleanup action meets the requirements specified in WAC 173-340-740(6)(f) for soil containment actions, the cleanup action may be determined to comply with cleanup standards.
- (c) **Example of site meeting groundwater cleanup levels at the point of compliance.** Assume the groundwater cleanup level for a hazardous substance at a site is 500 ug/l and a conditional point of compliance is established at the property boundary. This means any groundwater exceeding 500 ug/l at the point of compliance must be remediated. Further assume the cleanup action consists of: Removing the source of the groundwater contamination (e.g., removing a leaking tank and associated soil contamination above the water table); extracting free product and any groundwater exceeding a concentration of 2,000 ug/l; and utilizing natural attenuation to restore the groundwater to 500 ug/l before it arrives at the property boundary. The 2,000 ug/l concentration is a remediation level that defines which groundwater will be actively treated and which groundwater will be naturally attenuated at the site. As long as the groundwater meets the 500 ug/l cleanup level at the conditional point of compliance, the cleanup action may be determined to comply with cleanup standards.
- (d) **Example of a site not meeting groundwater cleanup levels at the point of compliance.** Assume the groundwater cleanup level at a site is 5 ug/l and a conditional point of compliance is established at the property boundary. This means any groundwater exceeding 5 ug/l at the point of compliance must be remediated. Further assume the remedial action selected for the site consists of: Vapor extraction of the soil to nondetectable concentrations (to prevent further groundwater contamination); extraction and treatment of groundwater with concentrations in excess of 100 ug/l; and installation of an air stripping system to treat groundwater at a water supply well beyond the property boundary to less than 5 ug/l. Further assume the groundwater

cleanup level will not be met at the conditional point of compliance (the property boundary). The concentration of 100 ug/l is a remediation level that defines which groundwater will be treated on site. In this example, the remedial action is an interim action, not a cleanup action, because it does not comply with cleanup standards (that is, it does not achieve the 5 ug/l cleanup level at the conditional point of compliance).

WAC 173-340-357 Quantitative risk assessment of cleanup action alternatives.

- (1) Purpose.** A cleanup action must protect human health and the environment, including vulnerable populations and overburdened communities (see WAC 173-340-360(3)(a)(i)). A quantitative site-specific risk assessment may be used to help determine whether cleanup action alternatives, including those relying on engineered or institutional controls to limit exposure to contamination remaining at a site, protect human health and the environment. Other methods may be used in addition to, or instead of, a quantitative site-specific risk assessment to determine whether a cleanup action alternative is protective.
- (2) Human health risk assessment.** A quantitative site-specific human health risk assessment may be used to help determine whether cleanup action alternatives, including those relying on engineered or institutional controls to limit exposure, protect human health. This subsection defines the framework for assessing cleanup action alternatives relying on engineered or institutional controls to limit exposure. References to Method C in this subsection apply to an environmental medium only if the medium for which a remediation level is being established qualifies for a Method C cleanup level under WAC 173-340-706.

 - (a) Reasonable maximum exposure.** Standard reasonable maximum exposures and corresponding Method B and C equations in WAC 173-340-720 through 173-340-750 may be modified as provided under WAC 173-340-708(3)(d). For example, land uses other than residential and industrial may be used as the basis for an alternative reasonable maximum exposure scenario for the purpose of assessing the protectiveness of a cleanup action alternative that relies on engineered or institutional controls (such as containment) to limit exposure to contaminated soil.
 - (b) Exposure parameters.** Exposure parameters for the standard Method B and C equations in WAC 173-340-720 through 173-340-750 may be modified as provided in WAC 173-340-708(10).
 - (c) Acceptable risk level.** The acceptable risk level used to establish a remediation level for a hazardous substance must be the same as that used to establish the cleanup level for the substance.
 - (d) Soil to groundwater pathway.** The methods specified in WAC 173-340-747 to develop soil concentrations that are protective of groundwater beneficial uses may also be used to help assess whether a cleanup action alternative that relies on engineered or institutional controls (such as soil containment) will protect groundwater.
 - (e) Burden of proof, new science, and quality of information.** Any modification of the default assumptions in the standard Method B and C equations, including modification of the standard reasonable maximum exposures and exposure parameters, or any modification of default assumptions or methods specified in WAC 173-340-747 requires compliance with WAC 173-340-702(14), (15) and (16).
 - (f) Commercial gas station scenario.** At active commercial gas stations, where there are retail sales of gasoline or diesel, one of the following may be done to demonstrate when a cap is protective of the soil ingestion and dermal pathways:

WAC 173-340-360 Cleanup action requirements.

- (1) Purpose.** This section specifies requirements for cleanup actions and the procedures for determining whether a cleanup action alternative meets those requirements.
- (2) Applicability.** A cleanup action at a contaminated site must comply with the requirements in this section, regardless of which administrative option in WAC 173-340-510 is used to conduct remedial action at the site.
 - (a) Sediment sites and sediment cleanup units.** For sites where there is a release or threatened release to sediment, a cleanup action must also comply with the requirements in WAC 173-204-570.
 - (b) National Priority List sites.** For sites on the federal National Priorities List, a cleanup action must also comply with applicable requirements under the federal cleanup law.
- (3) Requirements.** A cleanup action must meet all of the requirements in this subsection. When a cleanup action includes more than one cleanup action component, the overall cleanup action must meet the requirements. Ecology recognizes that some of the requirements contain flexibility and require the use of professional judgment in determining how to apply them at a particular site.
 - (a) General requirements.** A cleanup action must:
 - (i)** Protect human health and the environment, including vulnerable populations and overburdened communities;
 - (ii)** Comply with cleanup standards (see Part 7 of this chapter);
 - (iii)** Comply with applicable state and federal laws (see WAC 173-340-710);
 - (iv)** Prevent or minimize present and future releases and migration of hazardous substances in the environment;
 - (v)** Provide resilience to climate change impacts that have a high likelihood of occurring and severely compromising its long-term effectiveness;
 - (vi)** Provide for compliance monitoring (see WAC 173-340-410 and Part 7 of this chapter);
 - (vii)** Not rely primarily on institutional controls and monitoring at a site, or portion thereof, if it is technically possible to implement a more permanent cleanup action;
 - (viii)** Not rely primarily on dilution and dispersion unless the incremental costs of any active remedial measures over the costs of dilution and dispersion grossly exceed the incremental degree of benefits of active remedial measures over the benefits of dilution and dispersion. Determine the benefits and costs using the criteria in subsection (5)(d) of this section;

- (ix) Provide for a reasonable restoration time frame (see subsection (4) of this section); and
 - (x) Use permanent solutions to the maximum extent practicable (see subsection (5) of this section).
 - (b) **Action-specific requirements.** As applicable, a cleanup action must:
 - (i) Use remediation levels in accordance with WAC 173-340-355;
 - (ii) Use institutional controls in accordance with WAC 173-340-440;
 - (iii) Provide financial assurances in accordance with WAC 173-340-440(11); and
 - (iv) Provide for periodic reviews in accordance with WAC 173-340-420(2).
 - (c) **Media-specific requirements.**
 - (i) A soil cleanup action must treat, remove, or contain contaminated soils located on properties:
 - (A) Where a school or child care center is located;
 - (B) That qualify as a residential area based on current use; or
 - (C) That qualify as a potential future residential area based on zoning, statutory and regulatory restrictions, comprehensive plans, historical use, adjacent land uses, and other relevant factors.
 - (ii) A groundwater cleanup action must be permanent (achieve groundwater cleanup levels at the standard point of compliance without further remedial action being required) if:
 - (A) Such an action is practicable; or
 - (B) Ecology determines such an action is in the public interest.
 - (iii) A non-permanent groundwater cleanup action must:
 - (A) Treat or remove the source of groundwater contamination at sites where there are liquid wastes, areas contaminated with high concentrations of hazardous substances, highly mobile hazardous substances, or hazardous substances that cannot be reliably contained. This includes removal of free product consisting of petroleum and other light nonaqueous phase liquid (LNAPL) from the groundwater using normally accepted engineering practices. Source containment may be appropriate when the free product consists of a dense nonaqueous phase liquid (DNAPL) that cannot be recovered after reasonable efforts have been made;
 - (B) Contain contaminated groundwater to the maximum extent practicable to prevent lateral and vertical expansion of the groundwater volume

- (ii) Practicability of achieving a shorter restoration time frame. A restoration time frame is not reasonable if an active remedial measure with a shorter restoration time frame is practicable;
 - (iii) Long-term effectiveness of the alternative. A longer restoration time frame may be reasonable if the alternative has a greater degree of long-term effectiveness than one that primarily relies on on-site or off-site disposal, isolation, or containment;
 - (iv) Current use of the site, surrounding areas, and associated resources that are, or may be, affected by releases from the site;
 - (v) Potential future use of the site, surrounding areas, and associated resources that are, or may be, affected by releases from the site;
 - (vi) Availability of alternative water supplies;
 - (vii) Likely effectiveness and reliability of institutional controls;
 - (viii) Ability to control and monitor migration of hazardous substances from the site;
 - (ix) Toxicity of the hazardous substances at the site;
 - (x) Natural processes that reduce concentrations of hazardous substances and have been documented to occur at the site or under similar site conditions; and
 - (xi) For Ecology-conducted or Ecology-supervised remedial actions, public concerns identified under WAC 173-340-600(13) and (14) and Indian tribes' rights and interests in their tribal lands identified under WAC 173-340-620.
- (d) **Cleanup levels below area background concentrations.** At sites where area background concentrations, as defined in WAC 173-340-200, would result in recontamination of the site to levels that exceed cleanup levels:
- (i) The remedial action must achieve area background concentrations within a reasonable restoration time frame, as determined under (c) of this subsection;
 - (ii) Cleaning up the site below area background concentrations may be delayed until the off-site sources of hazardous substances are controlled; and
 - (iii) The remedial action is an interim action until cleanup levels are attained.
- (e) **Cleanup levels below technically possible concentrations.** At sites where cleanup levels determined under Method C in WAC 173-340-706 are below concentrations that are technically possible to achieve:
- (i) The remedial action must achieve concentrations that are technically possible to achieve within a reasonable restoration time frame, as determined under (c) of this subsection; and
 - (ii) The remedial action is an interim action until cleanup levels are attained.

- (5) **Determining whether a cleanup action uses permanent solutions to the maximum extent practicable.**
- (a) **Purpose.** This subsection specifies the requirements and procedures for determining whether a cleanup action uses permanent solutions to the maximum extent practicable, as required under RCW [70A.305.030](#)(1) and subsection (3)(a)(x) of this section. A permanent cleanup action or permanent solution is defined in WAC 173-340-200.
- (b) **Applicability.** The evaluation required under this subsection must be conducted unless a permanent cleanup action alternative or a model remedy is selected as the cleanup action. The evaluation must be conducted regardless of which administrative option in WAC 173-340-510 is used to conduct the cleanup action.
- (c) **Procedure.** To determine which cleanup action alternative included in the feasibility study uses permanent solutions to the maximum extent practicable, do the following:
- (i) **Step 1:** Determine the benefits and costs of each cleanup action alternative using the criteria in (d) of this subsection.
- (A) The estimation and comparison of benefits and costs may be quantitative, but will often be qualitative and require the use of best professional judgment.
- (B) On a site-specific basis, Ecology may weight the criteria in (d) of this subsection and favor or disfavor qualitative benefit and cost estimates in the analysis.
- (C) For Ecology-conducted or Ecology-supervised remedial actions, when determining or weighting the benefits in (d) of this subsection, Ecology must consider:
- (i) Public concerns identified under WAC 173-340-600(13) and (14); and
- (ii) Indian tribes' rights and interests in their tribal lands identified under WAC 173-340-620.
- (ii) **Step 2:** Rank the cleanup action alternatives by degree of permanence. To determine the relative permanence of an alternative, consider the definition of a permanent cleanup action in WAC 173-340-200 and the criteria in (d)(ii) of this subsection.
- (iii) **Step 3:** Identify the initial baseline alternative for use in the disproportionate cost analysis in Step 4.
- (A) If the feasibility study includes only one permanent cleanup action alternative, use that alternative as the initial baseline.
- (B) If the feasibility study includes more than one permanent cleanup action alternative, determine which permanent cleanup action

alternative is the most cost-effective (that is, the alternative with the lowest cost per degree of benefit) and use it as the initial baseline. Eliminate from further evaluation the less cost-effective permanent cleanup action alternatives.

(C) If all permanent cleanup action alternatives are eliminated from evaluation in the feasibility study during the screening process in WAC 173-340-350(7)(c)(iii), use the most permanent cleanup action alternative identified in Step 2 as the initial baseline.

(iv) **Step 4:** Conduct a disproportionate cost analysis of the ranked list of cleanup action alternatives identified in Step 2. Use the cleanup action alternative identified in Step 3 as the initial baseline for the analysis.

(A) **Analysis.** To conduct the analysis, do the following:

(I) First, compare the costs and benefits of the baseline alternative with the costs and benefits of the next most permanent alternative; and

(II) Second, determine whether the incremental costs of the baseline alternative over the next most permanent alternative are disproportionate to the incremental degree of benefits of the baseline alternative over the next most permanent alternative.

(B) **Decision.** Based on the results of the analysis, do the following:

(I) If the incremental costs are not disproportionate to the incremental degree of benefits, the baseline alternative uses permanent solutions to the maximum extent practicable and the analysis under this subsection is complete.

(II) If the benefits of the two alternatives are the same or similar, the lower cost alternative uses permanent solutions to the maximum extent practicable and the analysis under this subsection is complete.

(III) If the incremental costs are disproportionate to the incremental degree of benefits, eliminate the baseline alternative from further analysis and make the next most permanent alternative the baseline for further analysis. Repeat Step 4. However, if the new baseline is the least permanent alternative on the ranked list of alternatives identified in Step 2, that alternative uses permanent solutions to the maximum extent practicable and the analysis under this subsection is complete.

- (d) **Criteria.** When conducting a disproportionate cost analysis under this subsection, use the following criteria to evaluate and compare the costs and benefits of each cleanup action alternative:
- (i) **Protectiveness.** The degree to which the alternative protects human health and the environment, including vulnerable populations and overburdened communities. When assessing protectiveness, consider at least the following:
 - (A) The degree to which the alternative reduces existing risks;
 - (B) The time required for the alternative to reduce risks at the site and attain cleanup standards;
 - (C) The on-site and offsite risks remaining after implementing the alternative; and
 - (D) Improvement of the overall environmental quality;
 - (ii) **Permanence.** The degree to which the alternative permanently reduces the toxicity, mobility, or mass of, or exposure to, hazardous substances, including:
 - (A) The adequacy of the alternative in destroying the hazardous substances;
 - (B) The reduction or elimination of hazardous substance releases and sources of releases;
 - (C) The degree of irreversibility of waste treatment process; and
 - (D) The characteristics and quantity of treatment residuals generated;
 - (iii) **Effectiveness over the long term.** The degree to which the alternative is likely to be effective over the long term, including for vulnerable populations and overburdened communities.
 - (A) **Factors.** When assessing the long-term effectiveness of the alternative, consider at least the following:
 - (I) The degree of certainty that the alternative will be successful;
 - (II) The reliability of the alternative during the period of time hazardous substances are expected to remain on-site at concentrations that exceed cleanup levels;
 - (III) The resilience of the alternative to climate change impacts;
 - (IV) The magnitude of residual risk with the alternative in place; and
 - (V) The effectiveness of controls required to manage treatment residues or remaining wastes.
 - (B) **Hierarchy.** Except as provided for sediment sites and cleanup units in WAC [173-204-570](#)(4), when assessing the relative degree of long-term

effectiveness of cleanup action components, the following types of components may be used as a guide, in descending order:

- (I) Reuse or recycling;
 - (II) Destruction or detoxification;
 - (III) Immobilization or solidification;
 - (IV) On-site or offsite disposal in an engineered, lined and monitored facility;
 - (V) On-site isolation or containment with attendant engineering controls; and
 - (VI) Institutional controls and monitoring;
- (iv) **Management of implementation risks.** The risks to human health and the environment, including vulnerable populations and overburdened communities, associated with the alternative during construction and implementation, and the effectiveness of the alternative to manage such risks;
- (v) **Technical and administrative implementability.** The ability to implement the alternative, including consideration of:
- (A) The technical difficulty of designing, constructing, and otherwise implementing the alternative in a reliable and effective manner, regardless of cost;
 - (B) The availability of necessary offsite facilities, services, and materials;
 - (C) Administrative and regulatory requirements;
 - (D) Scheduling, size, and complexity;
 - (E) Monitoring requirements;
 - (F) Access for construction operations and monitoring; and
 - (G) Integration with existing facility operations and other current or potential remedial actions; and
- (vi) **Costs.** The costs of remedial actions necessary to implement the alternative, including:
- (A) **Construction costs**, such as pre-construction engineering design and permitting, physical construction (including labor, equipment, materials, and contingencies), waste management and disposal, compliance monitoring during construction (including sampling and analysis), construction management, establishment of institutional controls, regulatory oversight, and quality assurance and quality control; and

- (B) Post-construction costs**, such as operation and maintenance activities necessary to maintain the effectiveness of a constructed cleanup action component, waste management and disposal, replacement or repair of equipment (including labor, equipment, and materials), permit renewal, compliance monitoring (including sampling and analysis), maintaining institutional controls, financial assurances, periodic reviews, post-construction management, and regulatory oversight.
- (I) Design life.** Estimate the design life of cleanup action components, including engineered controls. If the period of time in which a component is needed exceeds the design life of the component, include the cost of replacing or repairing the component in the cost estimate.
- (II) Future costs.** Future costs may be discounted using present worth analysis. When discounting future costs, do the following:
- Estimate future costs using an appropriate construction cost index; and
 - Discount future costs using the current U.S. Treasury nominal interest rate for bonds of comparable maturity to the period of analysis. If project costs exceed thirty years, use the current U.S. Treasury thirty-year nominal interest rate.

WAC 173-340-370 Cleanup action expectations.

Ecology has the following expectations for cleanup actions. The expectations represent the likely results of the cleanup action selection process described in WAC 173-340-350 through 173-340-390. Ecology recognizes that conformance with the expectations may not be appropriate at some sites. Selecting a cleanup action conforming to the expectations is not a substitute for conducting a feasibility study. The expectations must be considered when evaluating cleanup action alternatives in the feasibility study. Any non-conformance of the preferred cleanup action alternative to the expectations must be documented and explained in the feasibility study report.

- (1)** Ecology expects that treatment technologies will be emphasized at sites containing liquid wastes, areas contaminated with high concentrations of hazardous substances, highly mobile materials, and/or discrete areas of hazardous substances that lend themselves to treatment.
- (2)** To minimize the need for long-term management of contaminated materials, Ecology expects that all hazardous substances will be destroyed, detoxified, and/or removed to concentrations below cleanup levels throughout sites containing small volumes of hazardous substances.
- (3)** Ecology recognizes the need to use engineering controls, such as containment, for sites or portions of sites that contain large volumes of materials with relatively low levels of hazardous substances where treatment is impracticable.
- (4)** To minimize the potential for migration of hazardous substances, Ecology expects that active measures will be taken to prevent precipitation and subsequent runoff from coming into contact with contaminated soils and waste materials. When such measures are impracticable, such as during active cleanup, Ecology expects that site runoff will be contained and treated prior to release from the site.
- (5)** Ecology expects that when hazardous substances remain on-site at concentrations exceeding cleanup levels, those hazardous substances will be consolidated to the maximum extent practicable where needed to minimize the potential for direct contact and migration of hazardous substances.
- (6)** Ecology expects that active measures will be taken to prevent/minimize releases to surface water or sediment via surface runoff and groundwater discharges in excess of cleanup levels. Ecology expects that dilution will not be the sole method for demonstrating compliance with cleanup standards in these instances.
- (7)** Ecology expects that natural attenuation of hazardous substances may be appropriate at sites where:
 - (a)** Source control (including removal and/or treatment of hazardous substances) has been conducted to the maximum extent practicable;
 - (b)** Leaving contaminants on-site during the restoration time frame does not pose an unacceptable threat to human health or the environment;
 - (c)** There is evidence that natural biodegradation or chemical degradation is occurring and will continue to occur at a reasonable rate at the site; and

- (d)** Appropriate monitoring requirements are conducted to ensure that the natural attenuation process is taking place and that human health and the environment are protected.
- (8)** Ecology expects that cleanup actions conducted under this chapter will not result in a significantly greater long-term threat to human health and the environment from hazardous substances, either at the site being cleaned up or at another site involved with the cleanup action, than other cleanup action alternatives.

WAC 173-340-380 Cleanup action plan.

- (1) Purpose.** The purpose of a cleanup action plan is to document the selected cleanup action and to specify the cleanup standards and other requirements the cleanup action must meet.
- (2) Applicability.**
 - (a) Whether required.** A cleanup action must be selected and a cleanup action plan must be developed regardless of which administrative option in WAC 173-340-510 is used to conduct remedial action at the site.
 - (b) Requirements.** A cleanup action plan must comply with the requirements in this section. For sites where there is a release or threatened release to sediment, a cleanup action plan must also comply with the requirements in WAC [173-204-575](#).
- (3) Timing.** Except as otherwise directed by Ecology, a remedial investigation/feasibility study must be completed before cleanup standards are established and a cleanup action is selected. An emergency remedial action or an interim action may be conducted before a cleanup action is selected.
- (4) Administrative options and requirements.** A cleanup action may be selected and a cleanup action plan may be developed under any of the administrative options for remedial action described in WAC 173-340-510. Reporting and public participation requirements depend on the administrative option used to conduct remedial action.
 - (a) Ecology-conducted or Ecology-supervised remedial actions.** For an Ecology-conducted or Ecology-supervised cleanup action, Ecology will:
 - (i)** Select the cleanup action and establish the cleanup standards and other requirements that the cleanup action must meet;
 - (ii)** Issue a draft cleanup action plan that includes the information required in subsection (5) of this section. For routine actions, Ecology may include the draft cleanup action plan in an order or decree instead of in a separate document;
 - (iii)** Provide or require public notice of the draft cleanup action plan in accordance with WAC 173-340-600(14);
 - (iv)** After review and consideration of public comments, issue a final cleanup action plan. For routine actions, Ecology may include the final cleanup action plan in an order or decree instead of in a separate document;
 - (v)** Provide notice of the final cleanup action plan in accordance with WAC 173-340-600(14); and
 - (vi)** If Ecology subsequently determines, following implementation of the selected cleanup action, that the cleanup standards or, where applicable, remediation levels established in the cleanup action plan cannot be achieved, Ecology will provide notice of the determination in accordance with WAC 173-340-600(15).

- (b)** The state concurs with the cleanup action; and
- (c)** The public was provided an opportunity to comment on the cleanup action.

WAC 173-340-390 Model remedies.

- (1) Purpose.** The purpose of model remedies is to streamline and accelerate the selection of a cleanup action for routine types of cleanup projects at sites with common features and lower risk to human health and the environment.
- (2) Development of model remedies.** Ecology may establish model remedies for common categories of sites, types of hazardous substances, types of media, and geographic areas. When establishing a model remedy, Ecology will:

 - (a)** Identify the applicability of the model remedy for use at a site, the site characterization required under WAC 173-340-350 to select the model remedy, and the compliance monitoring required under WAC 173-340-410 to implement the model remedy;
 - (b)** Describe how the model remedy meets the cleanup standards established under Part 7 of this chapter and the requirements for cleanup actions in WAC 173-340-360; and
 - (c)** Provide the public with notice and an opportunity to comment on the proposed model remedy and the conditions under which it may be used at a site. The public comment period must be at least thirty days.
- (3) Soliciting proposals.** When developing model remedies, Ecology will solicit and consider proposals from qualified persons. The proposals must, in addition to describing the model remedy, provide the information required under subsection (2)(a) and (b) of this section.
- (4) Selection.** A model remedy may be selected as a cleanup action, or as a component of a cleanup action, at a site without conducting a feasibility study under WAC 173-340-351, provided that:

 - (a)** The site meets the conditions for using the model remedy identified by Ecology under subsection (2)(a) of this section; and
 - (b)** For Ecology-conducted and Ecology-supervised remedial actions, Ecology provides or requires public notice of the proposed use of the model remedy in the draft cleanup action plan under WAC 173-340-380.

Part 6 – Public Participation and Tribal Engagement

WAC 173-340-600 Public notification and participation.

- (1) Purpose.** Public participation is an integral part of Ecology’s responsibilities under chapter 70A.305 RCW, the Model Toxics Control Act. Ecology’s goal is to provide the public with timely information and meaningful opportunities for participation that are commensurate with each site. Ecology will meet this goal through a public participation program that includes:

 - (a)** Site-specific information on Ecology’s website;
 - (b)** A *Contaminated Site Register* and, if requested, site-specific electronic alerts of changes to site information; and
 - (c)** For Ecology-conducted and Ecology-supervised remedial actions, early planning and development of site-specific public participation plans, public notice of proposed actions, and public meetings or hearings.
- (2) Public notice.** Whenever public notice of a proposed action is required under this chapter, Ecology will provide or require at least the following notice and opportunity to comment.

 - (a) Notification methods.**

 - (i) Website.** Ecology will make the proposed action publicly available on Ecology’s website under subsection (5) of this section;
 - (ii) Electronic alert.** If requested, Ecology will alert a person electronically of the proposed action’s availability under subsection (6) of this section;
 - (iii) Contaminated Site Register.** Ecology will provide notice of the proposed action’s availability in the *Contaminated Site Register* under subsection (7) of this section.
 - (iv) Persons requesting notice.** Written notice must be sent to persons who have made a timely request of Ecology. A request for notice is timely if received before or during the public comment period for the current phase of remedial action at the site. However, the receipt of a request for notice does not require Ecology to extend the comment period associated with the notice. Ecology may use an electronic alert under subsection (6) of this section to satisfy this requirement.
 - (v) Persons residing within potentially affected vicinity.** Written notice must be sent to persons residing within the potentially affected vicinity of the proposed action. The potentially affected vicinity includes all property within and contiguous to the site and any other area that Ecology determines to be directly affected by the proposed action.
 - (vi) Appropriate news media.** Written notice of the proposed action must be sent to any news media that Ecology determines to be appropriate. Ecology may consider how a news medium compares with the newspaper of largest

circulation in terms of: Audience reached; timeliness; adequacy in conveying the particular information in the notice; cost; or other relevant factors.

(vii) Newspaper publication. If required under chapter 70A.305 RCW or by Ecology, written notice of the proposed action must be published in the newspaper of largest circulation in the city or county of the proposed action, by one or more of the following methods: Display ad; legal notice; or any other appropriate format, as determined by Ecology.

(b) Comment opportunity.

(i) Comment periods. A public notice must indicate the public comment period on the proposed action. Unless otherwise specified in this chapter, the public comment period must be at least thirty days. Ecology may extend the public comment period, as appropriate.

(ii) Public meetings. During any comment period announced by a public notice issued under this chapter, if ten or more persons request a public meeting on the subject of the public notice, Ecology will hold a public meeting for the purpose of receiving comments.

(c) Consolidating notice and comment opportunities. Whenever reasonable, Ecology will consolidate public notice required under this chapter with notice and comment opportunities required under other laws and regulations.

(d) Site-specific risk assessment. For public notices describing cleanup plans that use site-specific risk assessment or would restrict future site or resource use, the public notice must specifically identify the restrictions and invite comments on these elements of the cleanup plan. This notice must also include a statement indicating the availability of public participation grants.

(3) Additional opportunities. To promote effective and meaningful public participation, Ecology may provide or require public participation opportunities in addition to those specifically required under this chapter. In making this determination, Ecology may consider:

(a) Known or potential risks to human health and the environment that could be avoided or reduced by providing information to the public;

(b) Public concerns about the site;

(c) The need to contact the public in order to gather information about the site;

(d) The extent to which the public's opportunity to affect subsequent Ecology decisions at the site may be limited or foreclosed;

(e) The need to prevent disclosure of confidential, unverified, or enforcement-sensitive information;

(f) The routine nature of the contemplated remedial action;

- (g) Interest in expediting remedial action at the site; and
 - (h) Any other factors as determined by Ecology.
- (4) **Additional methods.** To provide information to the public, Ecology may use or require any of the following methods in addition to those specifically required under this chapter:
- (a) Press releases;
 - (b) Fact sheets;
 - (c) Public meetings and transcription of such meetings;
 - (d) Publications;
 - (e) Personal contact by Ecology employees;
 - (f) Posting signs at the site;
 - (g) Notice in the *Contaminated Site Register*;
 - (h) Notice through the internet;
 - (i) Any other methods as determined by Ecology.
- (5) **Site-specific information on website.** For sites on the contaminated sites list and the no further action sites list, Ecology will make at least the following site-specific information publicly available on Ecology’s website:
- (a) The site’s current listing and remedial action status identified under WAC 173-340-330;
 - (b) The site’s current hazard rankings identified under WAC 173-340-320;
 - (c) Any initial investigation report prepared under WAC 173-340-310;
 - (d) For Ecology-conducted or Ecology-supervised remedial actions:
 - (i) Any proposed action requiring public notice under this chapter;
 - (ii) Any final cleanup action plan issued under WAC 173-340-380; and
 - (iii) Any Ecology determination that the selected cleanup action cannot achieve established cleanup standards or, where applicable, remediation levels;
 - (e) For independent remedial actions:
 - (i) Any independent remedial investigation, interim action, or cleanup action report required under WAC 173-340-515(4) and received by Ecology; and
 - (ii) The results of any Ecology review of an independent remedial action, including any written opinion issued by Ecology under WAC 173-340-515(5);
 - (f) Whether institutional controls are currently required, and any document implementing, amending, or removing an institutional control under WAC 173-340-440;

- (g) Whether periodic reviews are currently required, and any periodic review report prepared under WAC 173-340-420; and
- (h) Any other information Ecology considers appropriate for inclusion.
- (6) Site-specific electronic alerts.** For sites on the contaminated sites list and the no further action sites list, Ecology will provide a person, if requested, a site-specific electronic alert when the site information specified in subsection (5) of this subsection is added or changed on Ecology’s website. Ecology will establish the means for providing such electronic alerts.
- (7) Contaminated Site Register.** Ecology will maintain and regularly publish a *Contaminated Site Register*.

 - (a) Publication.** Ecology will establish the method for publishing the *Contaminated Site Register*, which may include making it publicly available on Ecology’s website, electronically distributing it to interested persons, or any other method deemed appropriate by Ecology.
 - (b) Content.** Ecology will include notice of the following in the *Contaminated Site Register*:

 - (i) The availability of any legislative report required under chapter 70A.305 RCW related to remedial action;
 - (ii) Any rulemaking notice requiring publication in the Washington State Register under chapter 34.05 RCW related to remedial action;
 - (iii) The availability of any Ecology publication related to remedial action, including any new, revised, or rescinded interpretive or policy statement requiring notice in the Washington State Register under RCW 34.05.230;
 - (iv) Any proposed substantive change to the site hazard assessment and ranking process developed under WAC 173-340-320(2);
 - (v) Any update to Ecology’s strategic plans or performance assessments required under WAC 173-340-340(1) and (3);
 - (vi) Any additional resource allocation factors specified by Ecology under WAC 173-340-340(2)(d);
 - (vii) Any proposed model remedy developed under WAC 173-340-390(2);
 - (viii) Any change to the program support cost multiplier calculated under WAC 173-340-550(2)(c);
 - (ix) Any change to the list of Ecology-approved sampling and analysis methods maintained under WAC 173-340-830(4)(a);
 - (x) Any initial investigation determination under WAC 173-340-310(6) resulting in the listing of a site on either the contaminated sites list or the no further action sites list. The notice must include instructions on how to sign up for electronic alerts about the site under WAC 173-340-600(6);

- (xi) For Ecology-conducted or Ecology-supervised remedial actions:
 - (A) Any initiation of a negotiation for a consent decree under WAC 173-340-520 or a discussion for an agreed order under WAC 173-340-530;
 - (B) Any proposed action requiring public notice under this chapter, including any related public meeting or hearing;
 - (C) Any issuance of a final cleanup action plan under WAC 173-340-380; and
 - (D) Any Ecology determination that the selected cleanup action cannot achieve established cleanup standards or, where applicable, remediation levels;
 - (xii) For independent remedial actions:
 - (A) Any notice of a planned independent interim action or cleanup action submitted to Ecology in anticipation of a private right of action under WAC 173-340-545(3)(a); and
 - (B) Any proposed area-wide groundwater conditional point of compliance under WAC 173-340-720(8)(d)(iii)(D); and
 - (xiii) Any other notice that Ecology considers appropriate for inclusion.
- (8) **Evaluation of public participation needs.** For Ecology-conducted and Ecology-supervised remedial actions, Ecology will evaluate public participation needs at the site. The evaluation must include an identification of the potentially affected vicinity for the remedial action. For sites where site-specific risk assessment is used, Ecology will also evaluate public interest in the site, significant public concerns regarding future site use, and public values to be addressed through the public participation plan.
- (9) **Public participation plans.** For Ecology-conducted and Ecology-supervised remedial actions, except emergency remedial actions, Ecology will ensure that a public participation plan is developed and implemented.
 - (a) **Purpose and scope.** A public participation plan is intended to encourage a coordinated and effective public involvement tailored to the public's needs at a site, and facilitate equitable participation by the public. The scope of the plan must be commensurate with:
 - (i) The threats posed by the site to human health and the environment, including vulnerable populations and overburdened communities;
 - (ii) The level of public concern regarding the threats; and
 - (iii) The nature of the proposed remedial actions to address the threats.
 - (b) **Early planning encouraged.** In order to develop an appropriate plan, Ecology or a potentially liable person or prospective purchaser (if submitting a plan to Ecology)

should engage in an early planning process to assess the public participation needs at the site. This process may include identifying and conferring with individuals, community groups, local governments, non-federally recognized tribes, public agencies, or any other organizations that may have an interest in or knowledge of the site.

- (c) **Development.** Ecology will develop the plan, or work with a potentially liable person or prospective purchaser to develop the plan.
- (i) If a plan already exists for the site, Ecology will consider whether the existing plan is still appropriate or whether the plan should be amended. For example, a plan originally developed to address a remedial investigation/feasibility study may need to be amended to address implementation phases.
 - (ii) Unless otherwise directed by Ecology, a potentially liable person or prospective purchaser requesting an agreed order under WAC 173-340-530 or a consent decree under WAC 173-340-520 must submit a proposed plan as part of its request. If a plan already exists for the site, the potentially liable person or prospective purchaser may either resubmit the existing plan with any proposed amendments or submit an entirely new proposed plan. The proposed plan may be revised during the course of discussions on the agreed order or negotiations on the consent decree. The final plan may become part of the agreed order or consent decree.
- (d) **Contents.** A public participation plan must include the following:
- (i) Applicable public notice requirements and how these will be met, including:
 - (A) When public notice will occur;
 - (B) The length of the comment periods accompanying each notice;
 - (C) The potentially affected vicinity and any other areas to be provided notice, to the extent known;
 - (ii) Information repositories. The plan should identify at least one location where the public can review information about the remedial action. Multiple locations may be appropriate;
 - (iii) Methods of identifying the public's concerns. Such methods may include interviews, questionnaires, meetings, contacts with community groups or other organizations that have an interest in the site, or establishing citizen advisory groups for sites;
 - (iv) Methods of addressing the public's concerns and conveying information to the public. These may include any of the methods listed in subsection (4) of this section;
 - (v) Coordination of public participation requirements. The plan should identify any public participation requirements of other applicable federal, state or local laws,

- (a) For independent remedial actions, Ecology will notify the public of the following using the methods specified in subsections (5) and (6) of this section:
 - (i) The site’s listing and remedial action status identified under WAC 173-340-330;
 - (ii) The site’s current hazard rankings identified under WAC 173-340-320;
 - (iii) Any initial investigation report prepared under WAC 173-340-310;
 - (iv) Any independent remedial investigation, interim action, or cleanup action report required under WAC 173-340-515(4) and received by Ecology;
 - (v) The results of any Ecology review of an independent remedial action, including any written opinion issued by Ecology under WAC 173-340-515(5);
 - (vi) Any periodic review of a site under WAC 173-340-420; and
 - (vii) Any document implementing, amending, or removing an institutional control under WAC 173-340-440.
 - (b) Ecology will provide notice of the following independent remedial actions in the *Contaminated Site Register* under subsection (7) of this section:
 - (i) Any notice of a planned independent interim action or cleanup action submitted to Ecology in anticipation of a private right of action under WAC 173-340-545(3)(a); and
 - (ii) Any proposed area-wide groundwater conditional point of compliance under WAC 173-340-720(8)(d)(iii)(D).
 - (c) For independent remedial actions, Ecology may provide public notice of any proposed action for which public notice is required under this chapter for an Ecology-conducted or Ecology-supervised remedial action.
- (21) **Public participation grants.** RCW [70A.305.180](#)(4) requires funds be allocated for public participation grants to persons, including groups, who may be adversely affected by a release or threatened release of a hazardous substance. Persons interested in applying for such grants are encouraged to contact Ecology to learn about available funding, grant application procedures, and deadlines. See chapter [173-321](#) WAC for additional information on public participation grants.
- (22) **Other requirements.** The following sections of this chapter specify additional requirements for providing notice or opportunity to comment.
- (a) WAC 173-340-310(6)(e)(vi) contains focused notice requirements for emergency or interim actions required by Ecology as a result of an initial investigation.
 - (b) WAC 173-340-320(2)(b) contains notice and comment requirements for developing and updating the site hazard assessment and ranking process.

- (c)** WAC 173-340-330(9)(a) and 173-340-335(5)(a) contain requirements for making the contaminated sites list and the no further action sites list publicly available.
- (d)** WAC 173-340-340(4)(a) contains requirements for making Ecology’s strategic plans and performance assessments publicly available.
- (e)** WAC 173-340-390(2)(c) contains notice and comment requirements for developing model remedies.
- (f)** WAC 173-340-440(10) contains local government consultation requirements for proposing institutional controls.
- (g)** WAC 173-340-545(3) contains public notice requirements for private rights of action.
- (h)** WAC 173-340-720(6)(c)(A) contains focused notice and comment requirements for establishing site-specific non-potable groundwater cleanup levels.
- (i)** WAC 173-340-720(8)(d) contains focused notice and comment requirements for establishing off-property conditional points of compliance.

~~**WAC 173-340-610 — Regional citizens' advisory committees.**~~

WAC 173-340-620 Tribal engagement.

- (1) Purpose.** Tribal engagement is an integral part of Ecology’s responsibilities under chapter 70A.305 RCW, the Model Toxics Control Act. Ecology’s goal is to provide Indian tribes with timely information, effective communication, continuous opportunities for collaboration and, when necessary, government-to-government consultation, as appropriate for each site.
- (2) Applicability.** This section applies to Ecology-conducted and Ecology-supervised remedial actions affecting Indian tribes’ rights or interests in their tribal lands.
- (3) Tribal engagement plan.**

 - (a)** Ecology will develop a site tribal engagement plan that identifies Indian tribes that may be adversely affected by the site, opportunities for government-to-government collaboration and consultation, and protocols for communication.
 - (b)** Ecology encourages early planning and engagement. Ecology will seek to engage affected Indian tribes before initiating a remedial investigation or an interim action at a site.
- (4) Relationship with public participation.** Engagement of Indian tribes under this section must be in addition to and independent of any public participation process under this chapter or applicable laws.

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Other Focal Sections

WAC 173-340-450 Releases from regulated underground storage tank systems.

(1) Applicability.

- (a) Releases.** This section applies only to underground storage tank (UST) systems regulated under chapter [173-360A](#) WAC from which there has been a confirmed release of a regulated substance that may pose a threat to human health or the environment. Under chapter [173-360A](#) WAC, UST system owners and operators and regulated service providers must report such a release to Ecology within twenty-four hours.
- (b) Persons.** This section applies only to UST system owners and operators. UST system owners and operators must comply with the requirements in this section in addition to the other requirements in this chapter.
- (c) Other requirements.** This section does not alter the applicability of requirements in other sections in this chapter.

(2) Purpose. Under chapter [173-360A](#) WAC, UST system owners and operators must investigate and clean up confirmed releases in accordance with the requirements of this chapter. This section specifies interim actions that UST system owners and operators must perform immediately or shortly after confirming a release to reduce threats posed by the release, prevent any further release, and characterize the nature and extent of the release. Further remedial action may be necessary under this chapter to investigate and clean up the release. WAC 173-340-120 provides an overview of the cleanup process in this chapter.

(3) Enforcement. UST system owners and operators who violate any requirement in this chapter are subject to enforcement, including civil penalties and orders, under:

- (a)** Chapter [70A.305](#) RCW and this chapter; or
- (b)** Chapter [70A.355](#) RCW and chapter [173-360A](#) WAC.

(4) Administrative options. The interim actions specified in this section may be conducted under any of the procedures described in WAC 173-340-510.

(5) Interim actions. UST owners and operators must perform the following interim actions after confirming a release.

- (a) Initial response.** Within twenty-four hours of release confirmation, UST system owners and operators must:
 - (i)** Remove as much of the hazardous substance from the UST system as is possible and necessary to prevent further release to the environment;
 - (ii)** Eliminate or reduce any fire, explosion, or vapor hazards and do so in a manner that minimizes any release of hazardous substances to surface water and groundwater; and

(iii) Visually inspect any aboveground releases or exposed belowground releases and prevent further migration of released hazardous substances into surrounding soils, groundwater, and surface water.

(b) **Initial site characterization.** Within thirty days of release confirmation, UST system owners and operators must investigate the site to identify the hazardous substances released, the source of the release, the media impacted by the release, and the potential for vapors from contaminated soil or groundwater to enter building, utility vaults, or other structures. At a minimum, UST system owners and operators must:

(i) Develop a sampling and analysis plan meeting the requirements of WAC 173-340-820. The sampling and analysis plan must be based on the substances currently or previously stored in the UST system, type of subsurface soils, depth to groundwater, vapor intrusion pathways, and other factors as appropriate for identifying the presence and source of the release;

(ii) Collect, handle, and analyze samples in accordance with the requirements in WAC 173-340-830;

(iii) Collect samples in the environment where hazardous substances are most likely to be present;

(iv) Investigate groundwater for the presence of hazardous substances and free product if there is evidence of any of the following conditions at the site:

(A) Contaminated soil is in contact with the groundwater;

(B) Contaminated soil extends below the lowest soil sampling depth;

(C) Groundwater contamination has been detected or observed;

(D) The release has migrated to surface water or wetlands; or

(E) There is no evidence of the conditions in (b)(iii)(A) through (D) of this subsection, but UST owners and operators cannot demonstrate to Ecology's satisfaction that the release does not pose a threat to groundwater;

(v) Analyze collected samples for the hazardous substances released from the UST system, including:

(A) For petroleum, the substances specified in Table 830-1 based on the product stored; and

(B) For other hazardous substances, the substance stored and any likely decomposition by-products;

(vi) Conduct any other investigations required by Ecology; and

release. This report must comply with the submittal requirements in WAC 173-340-840 and include, at a minimum, the following information:

- (a)** A summary of the initial response actions required under subsection (5)(a) of this section, and any resulting information and data;
- (b)** The results of the initial site characterization required under subsection (5)(b) of this section, and any other investigations conducted at the site, including:
 - (i)** The source(s) of the releases;
 - (ii)** An explanation of how the releases occurred;
 - (iii)** The hazardous substances released, and the estimated quantity of hazardous substances released;
 - (iv)** The media contaminated by those releases and, to the extent known, the nature and extent of contamination within those media, and sample locations.
 - (A)** If groundwater has not been tested, UST system owners and operators must include a demonstration that the release does not pose a threat to groundwater.
 - (B)** If no potential vapor intrusion pathways have been identified, UST system owners and operators must include a demonstration that there is no potential for vapors from contaminated soil or groundwater to enter buildings, utility vaults, or other structures;
 - (v)** The results of the free product investigation, if applicable; and
 - (vi)** To the extent known, the pathways of exposure at the site and the human or ecological receptors affected by the releases;
- (c)** The physical characteristics of the site, including:
 - (i)** The location of tax parcels, property boundaries, right-of-ways, and above and below-ground structures;
 - (ii)** The geology of the site, including subsurface soil conditions;
 - (iii)** The hydrology of the site, including depth to groundwater, direction of groundwater flow, approximate location of wells potentially affected by the release, proximity of the release to and potential for affecting surface water and wetlands, the quality and use of groundwater and surface water;
 - (iv)** The location of underground utilities and other potential conduits for vapor or free product migration; and
 - (v)** The population and uses of the site and surrounding area;
- (d)** Diagrams and cross-sections of the site, as appropriate, reflecting the information required in (b) and (c) of this subsection;

- (e) At sites where investigations indicate free product is present, information on the free product removal efforts, including:
 - (i) Name of the person responsible for implementing the free product removal measures;
 - (ii) The estimated quantity, type, and thickness of free product observed or measured in wells, boreholes and excavations;
 - (iii) The type of free product recovery system used;
 - (iv) If the recovery or monitoring of free product results in any discharges, then:
 - (A) The location of such discharges;
 - (B) The type of treatment applied to, and the effluent quality expected from such discharges; and
 - (C) The steps taken and planned to obtain necessary permits for such discharges; and
 - (v) Disposition of recovered free product and other contaminated materials generated by site investigations and cleanup;
 - (f) A description of any other on-going or completed remedial actions, and the results of such actions;
 - (g) A description of any planned remedial actions;
 - (h) The type of mechanism used to meet the financial responsibility requirements of WAC [173-360A-1045](#)(2)(a), and if the mechanism is an insurance policy, then:
 - (i) Whether a claim has been made on the policy; and
 - (ii) Whether the insurer has accepted or denied the claim; and
 - (i) Any other information required by Ecology.
- (7) Periodic updates on remedial actions.** At least every three years after release confirmation or more frequently as directed by Ecology, UST system owners and operators must update the interim action report required under subsection (6) of this section and submit it to Ecology unless:
- (a) The site has been removed from the contaminated sites list under WAC 173-340-330;
 - (b) Ecology is conducting remedial actions at the site or is supervising remedial actions at the site under an order or decree; or
 - (c) The site is enrolled in a technical assistance program under WAC 173-340-515(5) or chapter [374-80](#) WAC.

WAC 173-340-510 Administrative options for remedial actions.

At sites where Ecology has determined remedial action is necessary under the state cleanup law, it is the responsibility of each and every liable person to conduct remedial action so that the sites are cleaned up well and expeditiously. This section provides an overview of the administrative options for remedial action and the process for initiating remedial action. If there are any inconsistencies between this section and any specifically referenced sections, the referenced section governs.

- (1) Independent remedial action.** A person may investigate or clean up a site independently, without Ecology supervision or approval, except as provided under WAC 173-340-515(2).

 - (a) Standards.** When reviewing an independent remedial action, Ecology determines whether it complies with the substantive requirements of the state cleanup law. Persons conducting an independent remedial action do so at their own risk. Ecology may require additional remedial action if it determines that such action is necessary under the state cleanup law. See WAC 173-340-515(3).
 - (b) Reports.** Persons conducting independent remedial action must report all remedial investigations, interim actions, and cleanup actions to Ecology. Reports must include sufficient information for Ecology to determine whether the remedial action meets the substantive requirements of the state cleanup law. See WAC 173-340-515(4).
 - (c) Technical assistance.** Persons planning or conducting independent remedial action may request technical assistance from Ecology, including advice on how to investigate and clean up a site and written opinions on whether a planned or completed remedial action meets the substantive requirements of the state cleanup law. Ecology may charge a fee for providing requested technical assistance. PLIA may also provide technical assistance for certain sites under RCW [70A.330.040](#)(7) and chapter [374-80](#) WAC.
- (2) Ecology-supervised remedial action.** Ecology may supervise the investigation or cleanup of a site by a potentially liable person or a prospective purchaser under an order or decree. Such persons are encouraged to initiate discussions and negotiations with Ecology and the attorney general that may lead to an agreement with the state of Washington on the remedial action to be conducted at a site. Ecology and the state will only approve of remedial action if it is an Ecology-supervised remedial action.

 - (a) Consent decree.** Ecology and the attorney general may require remedial action as part of a settlement agreement with a potentially liable person or a prospective purchaser. A settlement agreement must be entered as a consent decree issued by a court of competent jurisdiction. See RCW [70A.305.040](#)(4) and (5), and WAC 173-340-520.

 - (i) Settlement.** A consent decree may contain a covenant not to sue and provide protection from contribution claims.
 - (ii) Initiation.** Negotiations for a consent decree may be initiated by a potentially liable person, a prospective purchaser, or Ecology.

- (b) **Agreed order.** Ecology may issue an order requiring remedial action with which a potentially liable person or a prospective purchaser agrees to comply. See RCW [70A.305.020](#)(1), [70A.305.050](#)(1), and [70A.305.040](#)(6) and WAC 173-340-530.

 - (i) **No settlement.** An agreed order is not a settlement agreement and does not contain a covenant not to sue or provide protection from contributions claims.
 - (ii) **Initiation.** Discussions for an agreed order may be initiated by a potentially liable person, a prospective purchaser, or Ecology.
- (c) **Enforcement order.** Ecology may issue an enforcement order requiring a potentially liable person to conduct remedial action. See RCW [70A.305.050](#)(1) and WAC 173-340-540.
- (3) **Ecology-conducted remedial action.** Ecology may take appropriate remedial action to investigate or clean up a site at any time. Ecology typically conducts remedial action when a potentially liable person cannot be identified or when such persons are technically or financially unable to conduct remedial action. Ecology may seek to recover its remedial action costs from potentially liable persons. Except for emergency actions and initial investigations, Ecology will make a reasonable effort to notify potentially liable persons before conducting remedial action. See RCW [70A.305.030](#)(1) and [70A.305.050](#)(3).

WAC 173-340-815 Cultural resource protection.

- (1) Purpose.** This section specifies requirements that are intended to avoid, minimize, or mitigate adverse effects from remedial actions on archeological and historic archaeological sites, historic buildings and structures, traditional cultural places, sacred sites, and other cultural resources.
- (2) Applicable laws.** Remedial actions must comply with applicable state and federal laws regarding cultural resource protection, including:

 - (a)** The National Historic Preservation Act of 1966, as amended ([54 U.S.C. 300101 et seq.](#));
 - (b)** The Archaeological and Historic Preservation Act of 1974, as amended ([54 U.S.C. 312501 et seq.](#));
 - (c)** The Archaeological Resource Protection Act of 1979, as amended ([16 U.S.C 470aa et seq.](#));
 - (d)** The Native American Graves Protection and Repatriation Act of 1990, as amended ([25 U.S.C. 3001 et seq.](#));
 - (e)** Chapter [27.53](#) RCW, Archaeological Sites and Resources;
 - (f)** Chapter [27.44](#) RCW, Indian Graves and Records;
 - (g)** Chapter [68.50](#) RCW, Human Remains; and
 - (h)** Chapter [68.60](#) RCW, Abandoned and Historic Cemeteries and Historic Graves.
- (3) Consultations and inadvertent discovery plans.**

 - (a) Applicability.** The requirements in this subsection apply to:

 - (i)** Ecology-conducted remedial actions, except initial investigations;
 - (ii)** Ecology-supervised remedial actions; and
 - (iii)** Ecology-funded independent remedial actions.
 - (b) Requirements.** Before any person conducts a field activity capable of affecting a cultural resource, if encountered, Ecology will:

 - (i)** Consult with the department of archaeology and historic preservation and affected Indian tribes on the potential effects of planned remedial actions on cultural resources at the site, unless the remedial action is subject to Section 106 review under the National Historic Preservation Act of 1966, as amended ([54 U.S.C. 300101 et seq.](#)); and
 - (ii)** Prepare or require an inadvertent discovery plan for the site.

 - (A)** The inadvertent discovery plan must be prepared using the applicable form provided by Ecology or an equivalent document that includes the same or more comprehensive information.

- (B)** For Ecology-supervised remedial actions, Ecology may require submittal of the inadvertent discovery plan for its review.
- (C)** The inadvertent discovery plan must be readily available during all remedial actions at the site. Persons conducting remedial actions at the site must be familiar with the contents and location of the plan.
- (D)** The inadvertent discovery plan must be updated as needed to reflect the discovery of cultural resources.

WAC 173-340-830 Sampling and analysis procedures.

- (1) Purpose.** This section specifies requirements for sampling and analysis activities conducted as part of a remedial action. These activities include sample collection, handling, preservation, transportation, holding time, preparation, laboratory analysis, method detection limits, practical quantitation limits, quality assurance, quality control, data reporting, and other technical requirements and specifications.
- (2) Applicability.** All sampling and analysis activities conducted as part of a remedial action must comply with the requirements in this sections and, for sites where there is a release or threatened release to sediment, the requirements in chapter [173-204](#) WAC.
- (3) Plans.** All sampling and analysis must be conducted in accordance with a sampling and analysis plan prepared under WAC 173-340-820.
- (4) Methods.**

 - (a)** All sampling and analysis must be conducted in accordance with an Ecology-approved method or, if Ecology has not approved an applicable method, a standard method or procedure such as those specified by the American Society for Testing of Materials, when available.

 - (i)** Ecology will maintain a list of Ecology-approved methods and make the list publicly available on Ecology’s website.
 - (ii)** Ecology will provide notice in the *Contaminated Site Register* when Ecology adds or removes a method from the list of Ecology-approved methods.
 - (iii)** Ecology will maintain a record of its decisions to add or remove a method from the list of Ecology-approved methods.
 - (iv)** Any person may propose another method for Ecology review and approval.
 - (b)** The methods used to collect, handle, and analyze samples must be appropriate for the site, the media being analyzed, the hazardous substances being analyzed for, and the anticipated use of the data.
 - (c)** Ecology may require or approve modifications to a method identified under (a) of this subsection to provide lower quantitation limits, improved accuracy, greater precision, or to address the factors in (b) of this subsection.
 - (d)** Ecology may require an analysis to be conducted by more than one method in order to provide higher data quality. For example, Ecology may require that different separation and detection techniques be used to verify the presence of a hazardous substance (“qualification”) and determine the concentration of the hazardous substance (“quantitation”).
 - (e)** If Ecology has approved more than one method with a practical quantitation limit less than the cleanup level, any of those methods may be used. When selecting a method in

these situations, consider confidence in the data, analytical costs, quality assurance, and analysis efficiencies.

(5) Laboratories.

- (a)** All hazardous substance analyses must be conducted by a laboratory accredited under chapter [173-50](#) WAC, unless otherwise approved by Ecology.
- (b)** Laboratories must achieve the lowest practical quantitation limits consistent with the selected method and WAC 173-340-707.

(6) Petroleum testing. The minimum testing requirements for petroleum releases are identified in Table 830-1.

Conforming Changes in Other Sections

WAC 173-340-420 Periodic reviews.

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(5) Public participation or notification.

- (a)** For an Ecology-conducted or an Ecology-supervised remedial action, Ecology will:
 - (i)** Provide public notice of a periodic review in accordance with WAC 173-340-600(18); and
 - (ii)** Notify all potentially liable persons known to Ecology of the results of the periodic review.
- (b)** For an independent remedial action, Ecology will provide notice of a periodic review in accordance with WAC 173-340-600(20).

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WAC 173-340-440 Institutional controls.

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(12) Amendment or removal of institutional controls.

- (a) Request.** Any person who has an interest in the real property subject to an institutional control may submit a request to Ecology that the control be amended or removed if the conditions at the site requiring the control under subsection (4) of this section have changed or no longer exist. The request must be in writing.
- (b) Determination.** If Ecology determines that the conditions requiring an institutional control under subsection (4) of this section have changed or no longer exist, then the institutional control must be amended or removed.
- (c) Public participation or notification.**

 - (i)** For Ecology-conducted or Ecology-supervised remedial actions, Ecology will provide or require public notice of any proposal to amend or remove an institutional control in accordance with WAC 173-340-600(19).
 - (ii)** For independent remedial actions, Ecology will provide notice of any amendment or removal of an institutional control in accordance with WAC 173-340-600(20).

WAC 173-340-515 Independent remedial actions.

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(4) Reports to the department.

- (a) Applicability and timing.** Any person who conducts an independent remedial investigation, interim action, or cleanup action for a release that is required to be reported under WAC 173-340-300 must submit a written report to the department within ninety days of the completion of the action. For the purposes of this section, the department will consider an interim action or cleanup action complete if no remedial action other than compliance monitoring has occurred at the site for ninety days. This does not preclude earlier reporting of such actions. See WAC 173-340-450 for additional requirements for reporting independent remedial actions for releases from UST systems regulated under chapter 173-360A WAC.
- (b) Content.** An independent remedial action report must include the information in WAC 173-340-300(3) if not already reported, and enough information to determine if the remedial action meets the substantive requirements of this chapter, including the results of all site investigations, cleanup actions, and compliance monitoring planned or underway. If a restrictive covenant is used, it must be included in the report and it must meet the requirements specified in WAC 173-340-440(9). The department may require additional reports on the work conducted.
- (c) Initial investigation.** If the independent remedial investigation, interim action, or cleanup action is completed within ninety days of release discovery, the department may defer completing any needed initial investigation of the release to enable review of the independent remedial action and report in accordance with WAC 173-340-310(5)(b).
- (d) Notification.** The department will provide notice of an independent remedial investigation, interim action, or cleanup action report received under this section in accordance with WAC 173-340-600(20).
- (e) Liability.** Neither submission of information on an independent remedial action nor any response by the department shall release the person submitting the report or any other person from liability. The department reserves all rights to pursue any subsequent action it deems appropriate.

(5) Technical consultations. The department may provide informal advice and assistance (technical consultations) on the administrative and technical requirements of this chapter to persons conducting or otherwise interested in an independent remedial action. Such advice or assistance is advisory only and not binding on the department. This advice may include written opinions. These written opinions shall be limited to whether the independent remedial actions or proposals for those actions meet the substantive requirements of this chapter and/or whether the department believes further remedial action is necessary at the facility.

- (a)** Upon completing the review of an independent remedial action report or proposal that is voluntarily submitted for the department's review and opinion, the department will:

- (i)** Provide a written opinion regarding the remedial actions performed or proposed at the site;
 - (ii)** Provide a written opinion regarding the remedial actions performed at the site and remove the site from the contaminated sites list if the department has sufficient information to show that the independent remedial actions are appropriate to characterize and address contamination at the site, as specified in WAC 173-340-330(5)(b); or
 - (iii)** Provide a written opinion describing the deficiencies with the remedial action or proposal for a remedial action at the site.
- (b)** It is the department's policy, in conducting reviews under this subsection, to promote independent remedial actions by delisting sites whenever petitions and supporting documents show that the actions taken are appropriate to characterize and address the contamination at the site.
- (c)** The department will provide notice of a written opinion issued under this subsection in accordance with WAC 173-340-600(20).

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Corrections in Part 7

Section or Equation	Correction
Section 704(2)(c)	Concentrations that result in no significant adverse effects on the protection and propagation of terrestrial ecological receptors using the procedures specified in WAC 173-340-7490 through 173-340-7494, unless it is demonstrated under those sections that establishing a soil concentration is unnecessary;
Equation 720-1	ED = Exposure duration (6 years)
Equation 720-3	INH(i) = Inhalation correction factor for petroleum component (i) (use value of 2 for volatile organic compounds and 1 for all other components [unitless])
Equation 730-1	UCF2 = Unit conversion factor (1,000 grams/kg)
Equation 730-2	UCF2 = Unit conversion factor (1,000 grams/kg)
Equation 740-3	<p>ABS = Dermal absorption fraction for petroleum component (i) (unitless). May use chemical-specific values or the following defaults:</p> <ul style="list-style-type: none"> • 0.0005 for volatile petroleum components with vapor pressure > = benzene • 0.03 for volatile petroleum components with vapor pressure < benzene • 0.1 for other petroleum components
Equation 740-4	<p>ABS = Dermal absorption fraction (unitless). May use chemical-specific values or the following defaults:</p> <ul style="list-style-type: none"> • 0.01 for inorganic hazardous substances • 0.0005 for volatile organic compounds with vapor pressure > = benzene • 0.03 for volatile organic compounds with vapor pressure < benzene • 0.1 for other organic hazardous substances
Equation 740-5	<p>ABS = Dermal absorption fraction (unitless). May use chemical-specific values or the following defaults:</p> <ul style="list-style-type: none"> • 0.01 for inorganic hazardous substances • 0.0005 for volatile organic compounds with vapor pressure > = benzene • 0.03 for volatile organic compounds with vapor pressure < benzene and for mixtures of dioxins and/or furans • 0.1 for other organic hazardous substances
Section 745(3)(b)(iii)	Concentrations that result in no significant adverse effects on the protection and propagation of terrestrial ecological receptors using the procedures specified in WAC 173-340-7490 through 173-340-7494, unless it is demonstrated under those sections that establishing a soil concentration is unnecessary; and
Equation 745-3	<p>ABS = Dermal absorption fraction for petroleum component (i) (unitless). May use chemical-specific values or the following defaults:</p> <ul style="list-style-type: none"> • 0.0005 for volatile petroleum components with vapor pressure > = benzene • 0.03 for volatile petroleum components with vapor pressure < benzene

	<ul style="list-style-type: none"> 0.1 for other petroleum components
Equation 745-4	<p>ABS = Dermal absorption fraction (unitless). May use chemical-specific values or the following defaults:</p> <ul style="list-style-type: none"> 0.01 for inorganic hazardous substances 0.0005 for volatile organic compounds with vapor pressure > = benzene 0.03 for volatile organic compounds with vapor pressure < benzene 0.1 for other organic hazardous substances
Equation 745-5	<p>ABS = Dermal absorption fraction (unitless). May use chemical-specific values or the following defaults:</p> <ul style="list-style-type: none"> 0.01 for inorganic hazardous substances 0.0005 for volatile organic compounds with vapor pressure > = benzene 0.03 for volatile organic compounds with vapor pressure < benzene and for mixtures of dioxins and/or furans 0.1 for other organic hazardous substances
Equation 747-2	<p>Koc = Soil organic carbon-water partitioning coefficient (L/kg). See (c)(i) of this subsection.</p>
Section 7493(2)(a)(i)	<p>The person conducting the evaluation may eliminate hazardous substances from further consideration where the maximum or the upper ninety-five percent confidence limit soil concentration found at the site does not exceed ecological indicator concentrations described in Table 749-3. For industrial or commercial land uses, only the wildlife values need to be considered. Any chemical that exceeds the ecological indicator concentrations shall be included as a chemical of ecological concern in the evaluation unless it can be eliminated based on the factors listed in WAC 173-340-703(2)(b).</p>
Section 750(3)(c)(i)	<p>The inhalation absorption fraction may be modified if the requirements of WAC 173-340-702 (14), (15), (16) and WAC 173-340-708(10) are met;</p>
Section 750(6)	<p>Points of compliance. Cleanup levels established under this section shall be attained in the ambient (outdoor) air and air within any building, utility vault, manhole or other structure large enough for a person to fit into, throughout the site. For sites determined to be industrial sites under the criteria in WAC 173-340-745, the department may approve a conditional point of compliance not to exceed the property boundary. A conditional point of compliance shall not be approved if use of a conditional point of compliance would pose a threat to human health or the environment.</p>