

REPORT OF PUBLIC COMMENT

Notice Number	2024-65	Rule Number	Env-Or 600 (various sections)
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<p>1. Agency Name & Address:</p> <p style="margin-left: 20px;">Department of Environmental Services 29 Hazen Drive P.O. Box 95 Concord, NH 03302-0095</p>	<p>2. Were there attendees at the public hearing?</p> <p>3. Was public comment submitted during the public hearing?</p> <p>4. Was public comment submitted during the public comment period?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/>
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5. Short Title: **Contaminated Site Management**

6. Comments received and responses, if applicable:

Rule Section:

General

Comment:

There was a lack of notice of the proposed rules. The single public hearing did not provide sufficient opportunity for public comment.

Action Taken:

The department filed the Rulemaking Notice on April 4, 2024, which was published in the New Hampshire Rulemaking Register on April 11, 2024, as Office of Legislative Services (OLS) Notice 2024-65. In conjunction with the notice being published in the register, the department also issued a [Technical Summary Report](#) summarizing the analysis and derivation of the proposed values for soil remediation standards (SRS) for four (4) per- and polyfluoroalkyl substances (PFAS) that includes references to studies completed on behalf of the department.

The department conducted an in-person public hearing on May 23, 2024, at the New Hampshire Department of Transportation’s Granite State Conference Room located at 7 Hazen Drive, Concord, NH. Eight (8) members of the public attended and three (3) provided oral comments.

The public comment period deadline was extended from its original date of May 31, 2024, to June 14, 2024, at the request of the New Hampshire Business and Industry Association (BIA) to allow additional time for the submittal of written comments. By the close of the comment period, eight (8) members of the public submitted written comments. Written comments were received from the OLS that were mostly editorial. Specific questions were addressed directly with OLS prior to drafting the Final Proposal.

Rule Section:

General

Comment:

NHDES’s fiscal analysis with respect to PFAS soil remediation standards is flawed and incomplete.

Action Taken:

The fiscal analysis of these rules was conducted by the Legislative Budget Assistant and is set forth in the Fiscal Impact Statement which is included with the Rulemaking Notice. The Fiscal Impact Statement contains details on the specific impact of these rules. These rules were required by statute and any costs associated with them are attributable to the statute.

Rule Section:

Title

Comment:

The rules do not define “contaminated site” included in the title of the rules

Action Taken:

None. The terms ‘contamination’ and ‘site’ are both defined in the rules, a separate definition of 'contaminated site' is not necessary since a site is defined as “a place or location where a discharge is known or suspected to have occurred and includes the full extent of contamination resulting from the discharge.” The phrase 'contaminated site' is redundant given the definition of 'site', but for the purpose of the title of the chapter it is informative to readers who may not have familiarity with the definitions contained therein.

Rule Section:

General and Env-Or 606.19 Table 600-2

Comment:

The rules lack adequate scientific basis.

Action Taken:

Some changes have been made to some standards since the initial proposal (IP) based on the updates to United States Environmental Protection Agency (EPA) Method 1633, which indicates the ongoing commitment the department has to ensuring these rules are consistent with the most current scientific understanding.

Specifically, the proposed soil remediation standards (SRS) for perfluorooctanoic acid (PFOA), perfluorohexane sulfonic acid (PFHxS), and perfluorononanoic acid (PFNA) have been updated based on the publication of EPA Method 1633 (Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS (epa.gov)), dated January 2024 and are summarized below in units of nanograms per gram (ng/g)" or parts-per-billion (ppb). Please note no change was made to the proposed SRS for perfluorooctane sulfonic acid (PFOS) in the final proposal. The proposed SRS consider practical quantitation limits (PQLs)/estimated quantitation limits (EQLs) based on the highest value of the range of limits of quantitation (LOQs) published in the final validated EPA Method 1633 for each analyte.

PFOA CAS RN 335-67-1 0.4 ng/g

PFHxS CAS RN 355-46-4 0.4 ng/g

PFNA CAS RN 375-95-1 1.3 ng/g

Further, the ambient groundwater quality standard (AGQS) for naphthalene was amended as part of a prior update to the AGQS in Table 600-1 of Env-Or 603.03(c) that became effective September 1, 2018. In conjunction with the AGQS updates, the department also revised and published, as applicable, the leaching-based value for these chemicals in the 2018 Update to Risk Characterization and Management Policy (RCMP)

Appendices B and E. The SRS for naphthalene has been revised from 5 mg/kg to 28 mg/kg to reconcile Table 600-2 of Env-Or 606.19(b) and the RCMP Appendix E.

The SRS values for PFAS are based, in part, on a study of PFAS occurrence in shallow soil and biosolids in New Hampshire conducted with the United States Geological Survey (USGS) described in USGS General Information Product 208 titled [Per- and Polyfluoroalkyl Substances \(PFAS\) in New Hampshire Soils and Biosolids](#). Results of this study and another study prepared for the department by a contractor are documented in:

- ❖ [“Statewide survey of shallow soil concentrations of per- and polyfluoroalkyl substances \(PFAS\) and related chemical and physical data across New Hampshire, 2021”](#) prepared by the USGS and dated October 19, 2022.
- ❖ [“Confirmatory Sampling for Per- and Polyfluoroalkyl Substances \(PFAS\) in Shallow Soils Across New Hampshire, 2022”](#) prepared by the USGGS and dated June 14, 2023.
- ❖ [“Solid/Water Partitioning of Per- and Polyfluoroalkyl Substances \(PFAS\) in New Hampshire Soils and Biosolids: Results from Laboratory Experiments at the U.S. Geological Survey”](#) prepared by the USGS and dated February 9, 2023.
- ❖ An evaluation of modeling approaches to assess PFAS leaching from soil to groundwater, documented in [“Development of Leaching-Based Soil Values for Select Per- and Polyfluoroalkyl Substances \(PFAS\)”](#) prepared by Sanborn, Head & Associates (Sanborn Head) for the department and dated September 29, 2023.

Accordingly, in developing these rules, the department worked with the USGS to evaluate the statewide occurrence of PFAS in shallow soil and factors that influence PFAS mobility in New Hampshire-specific soils. The results of the USGS study were released as three data releases available on the USGS websites listed in the diamond bullet list (above). The results of the USGS Statewide Survey of shallow soil concentrations of PFAS showed the presence of one or more PFAS in all 100 soil samples collected from 0-6 inches across the State, suggesting widespread occurrence of PFAS in New Hampshire soils at varying concentrations. The department contracted with the engineering and environmental consulting firm Sanborn Head to evaluate the latest scientific literature pertaining to fate and transport of PFAS from soil to groundwater, and to evaluate modeling approaches that could be used to inform the development of soil remediation standards through the identification of leaching-based values. Sanborn Head's September 2023 Report incorporated findings of the USGS study by utilizing solid-liquid partitioning coefficients (K_d) values derived for New Hampshire soils. The department used long-established methodologies that incorporated data and information from the USGS work and Sandborn Head for developing the PFAS SRS, which are documented in the Technical Summary Report.

In summary, the final proposed SRS for PFAS are based on the leaching-based soil concentration derived by the department or the estimated quantitation limit from the Final EPA Method 1633 when the leaching based concentration is lower than what can be reliably measured. The leaching-based soil concentration is based on a protective approach to a specific contaminant release scenario for one of the most vulnerable soil types in New Hampshire. Specifically, this scenario is a subsurface release of PFAS to a sandy soil containing only a small amount of organic carbon (greater amounts of carbon in soil tend to limit the leachability of PFAS). The department chose to use this scenario because sandy soils comprise important aquifers across the state used extensively for water resources and public water supplies that serve over a hundred thousand residents in the state.

Rule Section:

General

Comment:

The Soil Remediation Standards are premature because they are based on the current AGQS rather than the new EPA maximum contaminant levels (MCLs).

Action Taken:

The New Hampshire legislature required the department to initiate rulemaking for SRS prior to November 1, 2023, which is before the June 25, 2024 effective date of the [EPA’s MCLs for six PFAS](#).

The EPA MCLs (which include the four PFAS with NH AGQS) have not yet been adopted by the department as New Hampshire MCLs and AGQS. The department monitors the evolving scientific knowledge related to PFAS and plans to update the relevant rules as needed in response to new MCLs and/or AGQS, as well as to new information related to PFAS toxicity and leaching (the soil to groundwater migration pathway). Further, the department notes that since the proposed SRS for three of the four PFAS are equivalent to the EPA Method 1633 LOQs because they are greater than the AGQS-based leaching values, the adoption of the EPA MCLs as AGQS is unlikely to change the proposed SRS values for three of the four PFAS. For further information, please see the [Technical Summary Report](#).

Rule Section:

General

Comment:

The rules extend liability to a broad class of individuals based on the presence of regulated contaminants, a term that is undefined by statute, and responsible parties should not be declared as a matter of administrative rule.

Action Taken:

The definition of ‘regulated contaminant’ has been revised in the final proposal to reflect the authority described in the underlying statutes, and the definition of “contamination” has been revised for clarity and to eliminate redundancy with the definition of “regulated contaminant”, which it references.

Rule Section:

General

Comment:

The proposed rules unlawfully apply to all regulated contaminants and notification of AGQS exceedance without sufficient legislative authority.

Action Taken:

As described previously, underlying authority for Env-Or 600, including regulation of ‘regulated contaminants’ rests on several statutes passed by the legislature.

Rule Section:

General

Comment:

An adjudication is necessary to determine whether someone is a responsible party.

Action Taken:

The department agrees. The department sometimes indicates if it believes a party is a responsible party. That opinion is not binding. If the department and the party disagree as to whether a party is a responsible party and cannot resolve the issue cooperatively, the department may either issue an administrative order or refer a case to NHDOJ which may file a lawsuit. Any party subject to an administrative order may appeal it to the

appropriate environmental appeals council where the person can make the arguments they believe to be relevant. If a lawsuit is filed, the party is given the opportunity to respond to the lawsuit and make the arguments they believe to be relevant.

Rule Section:

General

Comment:

The department should take a clear stance that only the companies that “intentionally” produced, distributed, and discharged PFAS compounds into NH air, water, and soil are liable as “responsible parties”, not municipalities and other public entities.

Action Taken:

None. The Env-Or 600 rules implement various statutes. Those statutes do not require that a party “‘intentionally’ produce, distribute, and discharge PFAS compounds” in order to be liable. The NHDES rulemaking cannot change the statutory requirements. While the department is sympathetic to the numerous challenges and costs imposed on municipalities and other public entities by PFAS, the department has a statutory duty to protect human health and the environment and provide for the investigation, management, and remediation of contaminated sites. Unfortunately, there are numerous instances in the state where PFAS discharged by municipalities or public entities resulted in contamination of private water supply wells in violation of health-based regulatory standards. The department remains committed to fulfill its duty to protect human health in such cases where people are impacted by releases of PFAS, even if the discharger is a municipality or other public entity.

Rule Section:

General

Comment:

“The framework outlined in Env-Or 600 Contaminated Site Management was implemented for petroleum & MBTE [*sic.*] remediation, it is an inappropriate framework to simply add-on PFAS compounds and change language from “oil” to “oil or regulated contaminant” or that “PFAS compounds are fundamentally different contaminants and should not be categorized within the Contaminated Site Management rules with Oil and MBTE [*sic.*]”.

Action Taken

It is a common misunderstanding that Env-Or 600 Contaminated Site Management rules were implemented only to address petroleum and MtBE contamination. As discussed earlier in this summary, and pursuant to Env-Or 601.02, the Contaminated Site Management Rules apply to discharges of Regulated Contaminants. PFAS are considered Regulated Contaminants based on the definition in Env-Or 602 and RSA 485-C:2, XIII. As such, the scope of Env-Or 600 Contaminated Site Management Rule has never been limited to petroleum and MtBE remediation.

These rules have been applied for over eight years to PFAS investigation and remediation since PFAS were discovered at high concentrations in various public and private water supply wells in the state.

Rule Section:

General

Comment:

A comment suggested that “due to the notorious ubiquity of PFAS, it is possible for these chemicals to be present in petroleum, underground storage tanks (USTs)...”

Response:

Between 2017-2018, groundwater at a subset of projects eligible for reimbursement through the New Hampshire Petroleum Reimbursement Fund (Fund) were analyzed for PFAS. The department did not observe direct evidence of PFAS contamination resulting from a release of oil from a storage tank system. In all cases where PFAS was found to be present at a petroleum release site, the department concluded that the source and release mechanism(s) for the observed PFAS were not attributable to the petroleum discharge.

Rule Section:

General

Comment:

“Our clients have had no previous reasonable expectation or understanding of any additional, non-reimbursable costs when they signed up for the reimbursement program, and they were not given any reason to believe that they would be responsible for subsidizing NHDES-requested/required sampling for additional PFAS analytes to fulfill other obligations introduced by the Env-Or 600 amendments. For example, our clients have always been under the impression that the responsible party would only need to pay the deductible until the maximum budget for fund reimbursement has been reached. If Env-Or-600 is amended to include provisions pertaining to PFAS, it would place undue financial burden and stress on our clients that they cannot afford, and in most cases, likely would not be conducive to expeditious, meaningful, and comprehensive sampling results.” “We believe it is entirely unfair to introduce new costs, potential or otherwise, to our clients associated with Env-Or 600 revisions and more extensive PFAS sampling.”

Action Taken:

None in this rulemaking. The Oil Discharge and Disposal Cleanup Fund (Fund) provides financial assistance to owners of oil storage facilities, public and private water supplies, and potential contamination source properties for prevention and cleanup of oil discharges. If a Fund-eligible oil discharge is co-mingled with a discharge of a non-oil contaminant such as chlorinated volatile organic compounds, 1,4 dioxane, arsenic, manganese, or PFAS, the cost to clean up non-oil contaminants has always, since inception of the Fund, been the responsibility of the responsible party as these costs are not eligible for reimbursement through the Fund.

As previously noted above, RSA 485-H:13 directed the department to adopt rules specific to SRS for PFOA, PFOS, PFHxS, and PFNA. In the case of a comingled discharge of PFAS, the costs associated with the SRS for the four PFAS are attributable to law, not rule.

Rule Section:

General

Comment:

Given that the USGS Statewide Survey identified the potential for PFAS to be present in soil statewide, several commentors expressed concern that the proposed SRS do not consider some level of PFAS as background given that the levels reported in the USGS Statewide Survey are frequently greater than the proposed SRS values. One comment indicated that establishing the SRS [at these levels] could discourage site cleanup. Another comment indicated that Vermont and Maine have “set SRS above existing background levels.”

Action Taken:

Consistent with the requirements of RSA 485-C to protect New Hampshire’s groundwater quality as a potential drinking water source, the department developed the proposed PFAS SRS to be protective of New Hampshire’s drinking water quality based on available data and literature. The department acknowledges the potential for background impacts at sites, and soil standards do not apply to contamination attributed solely to background.

As indicated in the [Technical Summary Report](#), the department did not include natural background values for PFAS in derivation of the SRS because PFAS are anthropogenic contaminants. The department did not identify statewide background PFAS values for consideration in developing the SRS because although the USGS Statewide Survey showed the potential for New Hampshire’s shallow soil to contain PFAS in areas generally remote from known or potential PFAS discharges, the observations were variable. In general, PFAS concentrations in samples collected from USGS Statewide Survey sampling locations decreased with depth. Of note, even though PFNA and PFHxS were detected in shallow soil samples, the proposed SRS values for these PFAS are greater than the BTVs described in the [Technical Summary Report](#). Further, in soil samples collected at some study locations, no regulated PFAS were detected at concentrations greater than the proposed SRS.

As described in the [Technical Summary Report](#), the department reviewed occurrence study data collected by others in Vermont and Maine, as well as soil remediation standards and guidance values promulgated by others ([see ITRC's Regulatory Values table in the Technical Resources for Addressing Environmental Releases of PFAS](#)), in the development of the proposed SRS. The soil standards or the soil remediation guidelines developed by Vermont and Maine, respectively, are not comparable to New Hampshire SRS because these are based on different evaluations of risk and different conceptual site models. For example, the department understands that [Vermont’s soil standards](#) address only the direct contact risk, and do not address the potential for leaching of PFAS from soil to impact groundwater quality, nor do the published values propose statewide background levels. The department understands that Maine’s remedial guidelines address the potential for leaching of PFAS from soil to impact groundwater quality, but the targeted groundwater quality concentrations used to derive the guidelines are greater than New Hampshire’s AGQS; additionally, although Maine allows consideration of background (site-specific local background or published statewide BTVs), the BTVs are less than Maine’s risk-based leaching to groundwater Remedial Action Guidelines.

Rule Section:

Env-Or 601.02

Comment:

Several commenters stated that discharges to groundwater and surface water from publicly owned wastewater treatment plants should be exempt from regulation under Env-Or 600, as well as discharges to domestic septic systems.

Action Taken:

None needed. These discharges are not subject to Env-Or 600 as long as they are conducted in accordance with all other applicable laws and regulations. Wastewater treatment plants and domestic septic systems are regulated under separate Chapters of NHDES regulations and their underlying statutes. Some of these regulations have monitoring and corrective action provisions, such as in the case for wastewater treatment plants that have groundwater discharge permits. Further, RSA 485-C says, “*Except for discharges of domestic wastewater regulated under RSA 485-A:13 and RSA 485-A:29, no person shall violate ambient groundwater quality standards.*” [RSA 485-C:6 (IV)]. The applicability of the Env-Or 600 rules is limited to those circumstances listed in Env-Or 601.02.

Rule Section:

Env-Or 602.03

Comment:

Differentiating between “natural background” and “anthropogenic ambient background,” will have severe unintended consequences (Env-Or 602.03; 606.19(f)).

Env-Or 602.03 “Background” (b) “Anthropogenic ambient background”: The examples listed should include anthropogenic ambient background of PFAS contamination originating from discharges of domestic wastewater and from non-point source atmospheric discharges, assuming this is the intent.

Action Taken:

This proposed change defining anthropogenic and natural background has been removed and the Final Proposal returns to the original language for the definition of background with one change from the word ‘chemical’ to ‘substance’ to be more consistent with the use of ‘substance’ throughout the Chapter. The department will be working with stakeholders to prepare guidance on this concept and will consider this issue in the upcoming rulemaking which will, as required, be initiated before June 1, 2025.

Rule Section:

Env-Or 602.03(b)

Comment:

Request Env-Or 602.03(b) be amended to add Env-Or 602.03(b)(6) “Sludge that was managed in accordance with Env-Wq 800.

Action Taken:

None taken. Land application of sludge that adversely impacts offsite groundwater may be subject to Env-Or 600.

Rule Section:

Env-Or 602.05 and 602.10

Comment:

The definition of ‘Cause and Contribute’ significantly expands the department’s regulatory authority to require remediation or seek cost recovery for any contribution of a regulated contaminant that is non-de minimis and a ‘de minimis’ exception is not real.

Action Taken:

These sections defining ‘Cause and Contribute’ and ‘de minimus’ have been removed from the final rule. The original intention of the draft rule was to restrict, not expand the reach of these regulations beyond the authority granted in the applicable statutes. The department will review this again in the upcoming revisions to Env-Or 600 which will, as required, be initiated before June 1, 2025.

Rule Section:

Env-Or 602.10

Comment:

“De minimis”: rainwater or municipally provided tap water meeting drinking water standards could easily be impacted at levels greater than one-tenth of the applicable AGQS given the current standards and typical laboratory reporting limits. Would discharges in these instances not be considered de minimis discharges?

Action Taken:

See above. This section has been removed from the final rule. The department will review this concept in the context of the upcoming revisions to Env-Or 600 which will, as required, be initiated before June 1, 2025.

Rule Section:

Env-Or 602.20

Comment:

The definition of “Liable” is overly broad, vague, ambiguous, and violates notions of due process under state and federal constitutions.

Action Taken:

The section defining ‘Liable’ has been removed from the final rule. There was no intention to attempt to expand the reach of these regulations beyond the authority granted in the applicable statutes.

Rule Section:

Env-Or 602.26 and Env-Or 602.27

Comment:

The definition of PFAS is too broad and impermissible, regulating thousands of PFAS without legislative precedent.

Action Taken:

None. RSA 485-H:13 requires the department to adopt rules specific to the application of RSA 485, RSA 485-C, RSA 147-A, and RSA 147-B to PFAS contamination, including soil remediation standards for PFOA, PFOS, PFHxS, and PFNA. There are several definitions pertaining to PFAS in statute. House Bill 1649 amended RSA 147-B by adding definitions pertaining to PFAS. The definitions in the proposed rule are consistent with the definitions in this statute. This rule only regulates those four PFAS that are currently regulated with an AGQS and adds an SRS.

Rule Section:

Env-Or 603.04(a)

Comment:

Env-Or 603.04 (a): Are de minimis dischargers (residences and POTWs) exempt from having to provide safe water?

Action Taken:

As discussed in response to an earlier comment, the Env-Or 600 only applies to those circumstances listed in Env-Or 601.02. A discharge to groundwater from a POTW or to a domestic septic system would only fall within the framework of these rules if the circumstances met the applicability provisions listed in Env-Or 601.02.

Rule Section:

Env-Or 603.04 (a)

Comment:

What is the definition of “safe water”?

Action Taken:

None. The phrase “safe alternate water” is used in RSA 485-C:4 VIII (c) with respect to rulemaking authority for cases where groundwater exceeds AGQS in a water supply well. Proposed rule Env-Or 603.04 (a) describes provision of “potable water”. The common definition of potable water applies in this case, which implies that potable water is both safe to drink and palatable for human consumption, meaning that it does not violate state and federal drinking water standards and it is free from objectionable tastes, odors, and color.

Rule Section:

Env-Or 604

Comment:

The proposed rules do not include exemptions to the notification requirements for CERCLA sites and for sites with Groundwater Management Zones.

Action Taken:

None. Notification of contamination is necessary for the department to carry out its duty to provide for the investigation, management, and remediation of contaminated groundwater. This is true even if a site is being managed under the federal Superfund program under CERCLA; however, CERCLA may exempt certain sites from state regulations depending on the Applicable or Relevant and Appropriate Requirements (ARARs). According to Env-Or 603.02 (b), groundwater quality within a Groundwater Management Zone permitted in accordance with Part Env-Or 607 is exempt from groundwater quality criteria specified in Env-Or 603.01; therefore, the notification provisions of Env-Or 604 do not apply.

Rule Section:

Env-Or 604

Comment:

Commenters expressed concerns about the application of this portion of the rules to “the employees and contractors of the responsible party.” Specifically: “forcing notification obligations on parties other than the responsible party will only erode trust and may be detrimental overall” and “may place otherwise uninvolved employees in conflict with their employer”. One commenter asked if this new requirement “supersede[s] attorney/client privilege if an attorney has knowledge of a violation”.

Action Taken:

The department has revised the following paragraphs/sections in Part Env-Or 604 Notifications to remove “the employees and contractors of the responsible party” from the final proposal from the following:

- paragraph (a) of Section Env-Or 604.02 Notification of Groundwater Quality Violation;
- paragraph (a) of Section Env-Or 604.05 Non-Aqueous Phase Liquid (NAPL) Notification;
- paragraph (a) of Section Env-Or 604.06 Discharges of Oil or Regulated Contaminants Requiring Immediate Notification; and
- section Env-Or 604.07 Potential Discharges Requiring Notification Within 60 Days.

Rule Section:

Env-Or 604

Comment:

Because the proposed PFAS soil remediation standards are unnecessarily low, the proposed standard could result in reportable conditions at any site in the state where soil is sampled for PFAS, leading to unnecessary sampling and remedial actions throughout the state.

Action:

None. The scientific basis for the PFAS soil remediation standards is discussed above. With respect to this concern, not all detections of PFAS in soil at levels greater than the SRS values in Table 600-2 will require notification to the department. Notification is not required if the situation does not meet the applicability criteria of Env-Or 601.02. Notification is also not required if the detections represent background conditions as

defined in Env-Or 602.03 because, pursuant to Env-Or 606.19(f), SRS do not apply to background contamination.

The department is mandated by RSA 485-C Groundwater Protection Act to establish SRS for the protection of groundwater quality and human health (RSA 485-C:4 VIII (b)). Current scientific understanding of the fate and transport of some PFAS suggests the potential for very low concentrations in certain soil (relative to other contaminants and to concentrations observed in the USGS Statewide Survey) to leach and contaminate groundwater at concentrations that would violate AGQS. As discussed in the [Technical Summary Report](#), the proposed SRS are protective of New Hampshire's sand and gravel aquifers and associated supply wells, which serve over 100,000 people in the state. The department also acknowledges that not all PFAS discharges will involve the release mechanisms or geologic/soil conditions modeled for the leaching-based values incorporated into the proposed SRS. Per Env-Or 606.19(c) and (d), in lieu of remediating a site to the SRS for PFAS, a responsible party may propose site-specific soil remediation standards using a conceptual leaching model specific to site conditions.

Rule Section:

Env-Or 604.06

Comment:

The requirement to “notify the department immediately, within one hour...may not always be possible depending on the circumstances. We recommend notification as soon as possible (or practicable).”

Action Taken:

None. The department believes that notification within one hour after obtaining knowledge of a discharge is reasonable. The timeframe established in rule is consistent with the framework established in law for a discharge of a hazardous waste (RSA 147-A:11, and rule Env-Hw 513.01), a discharge of oil (RSA 146-A:5 and rule Env-Or 604.06) and is generally similar with other New England States' reporting guidelines.

Rule Section:

Env-Or 604.06

Comment:

A very large list of everyday products has the potential to discharge “regulated contaminants” under specific circumstances and the conditions requiring notification to the department within one hour are sweeping. (i.e. any discharge from a boat or on a beach would require a one-hour notification). We recommend providing clarity for situations that meet this requirement.

Action Taken:

Env-Or 604.06 (a) has been revised to make an exemption for sheens resulting from properly functioning vessel engines.

Rule Section:

Env-Or 604.09

Comment:

Potential Discharges Impacting Indoor Air: discharges to soil or groundwater are very difficult to document based on indoor air impacts alone. Indoor air data can be problematic on its own given the likelihood of interference from non-contaminant contributors. Concluding indoor air quality is an indicator of soil and/or groundwater contamination without supporting data does not follow standard investigation lines of evidence.

Action Taken:

None. The department agrees that a determination of whether a vapor intrusion is due to a release cannot be made based on the results of an indoor air sample alone. The requirement to report ‘potential discharges’ based on indoor air results was added to fill in an important gap in reporting of potential discharges that could pose potential exposure risks to building occupants. The department is aware of cases where indoor air sample results showed potential for human exposure above health-based thresholds and potential discharges to the environment that were not reported because there was not an explicit regulatory reporting requirement. Under the proposed rule, the threshold for reporting does not require a definitive conclusion (e.g., using multiple lines of evidence) that an indoor air sample by itself would indicate a discharge, but rather that a discharge is one possible cause of the indoor air sample results.

Rule Section:

Env-Or 606.19

Comment:

Several commenters expressed concern that any person or site that has caused or contributed to anthropogenic ambient background levels of soil contamination must remediate to natural background. One of the comments also added that “The only alternative offered by the Proposed Rules is to prepare a site-specific risk analysis (at significant cost) and propose to the department a remedial plan consisting of some combination of cleanup and restriction of site activities and uses, which, NHDES, in the end, may not accept. See Env-Or 606.19(c) and (e).”

Action Taken:

The intent of the statute and rules is for a responsible party to address the contamination in soil resulting from their discharge. Env-Or 606.10(d)(3)(g) requires a responsible party to provide a Remedial Action Plan (RAP) that recommends action to “restore soil quality to the soil remediation criteria specified in Env-Or 606.19” and Env-Or 606.19(a) applies to all contaminated soil resulting from a discharge, with some exceptions. One of the exceptions is Env-Or 606.19(f), which currently states that the Table 600-2 SRS do not apply to contamination at or below background levels. With these provisions, the Rule allows a responsible party to recommend action to restore soil quality to background levels if those background levels are greater than the SRS.

The department recognizes that modifying Env-Or 606.19(f) using the term “cause and contribute” in the Initial Proposal might lead to confusion. In the Final Proposal, the department has removed the proposed “cause and contribute” language from 606.19(f) because it is redundant. Any determination of background needs to be based on multiple lines of evidence.

The existing provisions of Env-Or 606.19(c) and (d) allow a responsible party to propose an alternative site-specific SRS. While this approach may necessitate a greater investment in risk assessment activities, the responsible party may also benefit if the risk assessment identifies site-specific SRS that are greater than the statewide values published in Env-Or 606.19 Table 600-2, thereby resulting in overall savings by limiting the scope of remediation and potentially achieving site closure in a shorter time. As described in the Technical Summary Report, the department made several data-driven decisions to derive statewide PFAS SRS that are protective of the most vulnerable soil types in New Hampshire. The department recognizes that PFAS are less leachable in some soils, so it may be advantageous in some cases to develop site-specific soil remediation standards. As such, the department anticipates developing a draft guidance document to support responsible parties and their consultants in proposing alternative site-specific SRS for PFAS, with the goal of reducing uncertainty and promoting regulatory acceptance of the proposed values.

The department’s approval of a Remedial Action Plan (see Env-Or 606.10) is based on the adequacy of the information provided by the responsible party in the Remedial Action Plan Report (see Env-Or 606.12). The department’s responsibility for evaluating risk and approving a RAP is clearly defined in Env-Or 606.13.

Rule Section:

Env-Or 606.19 Table 600-2

Comment:

The proposed SRS were derived using a select sandy and well-draining soil that is not representative of the varying soil types throughout the state. The rules do not indicate how this will be accounted for at individual contaminated sites.

Action Taken:

The department developed leaching-based soil values for PFAS using a conceptual model that is generally consistent with the conceptual model historically used by the department to derive leaching-based soil values for other contaminants. The historical methodology, outlined above, is described in the Appendices to NHDES' RCMP and the 2018 Update to RCMP Appendices B and E. The methodology used for PFAS leaching is described in Attachment B of the Technical Summary Report. The conceptual model is designed to simulate New Hampshire's sand and gravel aquifers and be protective of water quality in the associated supply wells, which serve drinking water to over 100,000 people in New Hampshire, as previously described.

The department recognizes that different modeling parameters may result in different leaching-based values for any contaminant. The existing provisions of Env-Or 606.19(c) and (d) allow a responsible party to propose a site-specific SRS in lieu of using the statewide SRS published in Table 600-2. As discussed elsewhere in this response to comments, the department anticipates developing a draft guidance document to assist with derivation of site-specific SRS, including site-specific, leaching-based values.

Rule Section:

Env-Or 606.19 Table 600-2

Comment:

The report prepared by Sanborn, Head & Associates, Inc. ("SHA") for the department titled "Development of Leaching-Based Soil Values for Select Per- and Polyfluoroalkyl Substances (PFAS)" (September 29, 2023) (the "SHA Report"), is premised on several faulty assumptions, the source of which is unclear.

Action Taken:

None. It is unclear to the department which assumptions in the Sanborn Head report are considered by the commenter to be faulty.

Rule Section:

Env-Or 606.19 Table 600-2

Comment:

The soil organic carbon-water partition coefficient values reported in Table 4 of the NHDES Attachment B and the referenced data in the SHA Report cannot be reconciled. The values listed by the department appear to be lower than the lowest value observed in the U.S. Geological Survey data set as summarized in the SHA Report at Table 2, resulting in unduly conservative leachability estimates.

Action Taken:

None. As described in the Technical Summary Report, the department and Sanborn Head used different subsets of the USGS Solid/Water Partitioning Study dataset to satisfy different data objectives. The department selected a range of organic carbon soil-water partition coefficient (Koc) values that were appropriate for deriving leaching-based soil values and Sanborn Head selected a different range of Koc values that were appropriate for their modeling efforts.

Sanborn Head evaluated potential benefits and disadvantages for various fate and transport models for PFAS leaching from soil to groundwater and identified chemical-specific input parameters used in those models. As shown on Table 2 and discussed in the Sanborn Head Report, Sanborn Head performed their assessment using data from “select” USGS solid/water partitioning study samples. Twelve samples and associated data were selected by Sanborn Head from which Koc values were calculated. Sanborn Head provided statistical information (e.g., minimum and maximum values) for that limited dataset in Table 2 of the Sanborn Head Report. Sanborn Head also discussed the rationale for their selection of Koc values to support their modeling efforts in Appendix A of the Sanborn Head Report.

The department subsequently selected a modeling approach to derive leaching-based values considered in the SRS development matrix (see the Technical Summary Report). In contrast to Sanborn Head, the department incorporated the full dataset of non-spiked samples from the USGS Solid/Water Partitioning Study because the full data set represents a greater range of site conditions and more accurately characterizes statewide New Hampshire-specific conditions. The department selected the 10th percentile Koc value from the above-described range of the USGS Solid/Water Partitioning Study dataset for use in leaching modeling. The 10th percentile was chosen to protectively model leaching based on New Hampshire soils within the lower range for retention of adsorbed PFAS. The 10th percentile from the Koc dataset with a foc (fraction of organic carbon content) value of 0.1% was used to derive the leaching-based soil values. This selection is also consistent with the conceptual model described elsewhere in this response to comments. The chemical-specific input parameters used by the department in our modeling are summarized in Table 4 of Attachment B of the Technical Summary Report.

Rule Section:

Env-Or 606.19 Table 600-2

Comment:

Section 1.3 of the SHA Report describes the many processes and factors that can affect the fate and transport of PFAS. In Section 1.3.1 of the SHA Report, which discusses solid-phase partitioning, SHA lists soil texture and mineralogy, electrostatic interactions, and hysteresis among others as factors that can affect solid-phase partitioning. The SHA Report further states that if these mechanisms “are sufficiently accounted for by using representative...values, then these factors do not tend to result in the calculation of a more protective or less protective leaching-based soil values.” However, the evaluation conducted by SHA and the department does not address whether these factors were actually and sufficiently accounted for by using representative values. Therefore, the approach used to model transport is unsupported and results in a significant oversimplification of PFAS transport.

Action Taken:

None. The department used the best available science to propose statewide SRS values that would be protective of our most sensitive drinking water aquifers. The department acknowledges that predictive models are mathematical tools for approximating real-world processes that are not be able to incorporate all factors influencing a chemical’s fate and transport. To address some of the uncertainty about the governing mechanisms and influencing factors for PFAS partitioning, the department initiated a multi-year study with the USGS to learn more about leaching potential of certain PFAS found in New Hampshire’s soil. As described in the Technical Summary Report, the department calculated leaching-based values based on a statistical analysis of those findings, using New Hampshire specific Kd (solid-liquid partitioning coefficient) values derived from laboratory experiments. In general, the use of representative Kd or Koc values in modeling can greatly reduce uncertainty introduced by processes that cannot be explicitly accounted for by a model. The department used experimentally-derived, New Hampshire-specific soil partitioning values to implicitly account for several such processes that may affect PFAS fate and transport. Because the USGS Soil/Water Partitioning Study suggested that organic carbon content was a strongly influencing factor for New Hampshire soils, the department converted the Kd values to Koc values (organic carbon partitioning coefficient) for input to the model, as described in the Technical Summary Report and the Sanborn Head report.

Given the emerging scientific knowledge about PFAS soil sorption, desorption, leaching to groundwater through the vadose zone, and migration in saturated soil, the department recognizes that modification to this approach may be warranted as new information becomes available. Env-Or 606.19 allows a responsible party to complete a site-specific risk assessment that may propose use of alternative models and model inputs to derive site-specific soil remediation standards.

Rule Section:

Env-Or 606.19 Table 600-2

Comment:

Section 1.3 of the SHA Report states that there are over four orders of magnitude of variability in literature assessing the relevant values, which makes these values unreliable for modeling leaching-based soil values. Further, it is suggested that using site-specific values that reflect actual field conditions is a significantly better predictive tool, which underscores the unreasonableness of NHDES' leachability evaluation.

Action Taken:

None. The department understands that this comment refers to a reference in the Sanborn Head Report that published Kd and Koc values have a range of over four orders of magnitude. As stated elsewhere in this response to comments, given the range in variability of the literature values, the department chose to use state-specific data generated through the USGS solid/water partitioning study, which provided New Hampshire-specific Kd and Koc values. As such, the department did not need to rely on variable published data from studies conducted in other states, whose validity and representativeness have not been evaluated by the department.

As indicated in responses to previous comments, Env-Or 606.19(c) and (d) allow for proposal of site-specific SRS based on site-specific data.

Rule Section:

Env-Or 606.19 Table 600-2

Comment:

Several comments suggested that the leaching values are not reasonable because much of the shallow soil data collected during the USGS study exceeds the leaching values and yet the NHDES PFAS Mapper does not depict widespread exceedances of the AGQS across New Hampshire.

Action Taken:

None. As described in RCMP Appendix B, the department uses a protective conceptual site model to predict leaching potential of contaminants from soil to groundwater. This model is a sub-surface release in sandy soil with limited organic carbon content, which is meant to represent and be protective of the most vulnerable groundwater resources in the state. Specifically, for the PFAS SRS leaching-based values, the model predicts the potential for subsurface PFAS discharges to sandy soil (1 to 2 meters below grade) to impact groundwater quality at levels greater than AGQS as measured in an overburden well located 10 meters from the point of discharge (where the well extracts groundwater from 3 meters below the ground surface).

Since there is a great deal of variation in hydrogeology across the state, not all locations in New Hampshire match the modeled conditions and the department recognizes that the proposed SRS may not be representative of sites located in different hydrogeologic environments than the leaching conceptual model. However, the PFAS leaching conceptual model is consistent with historical leaching modeling used by the department to develop SRS for other contaminants. As indicated in responses to previous comments, Env-Or 606.19(c) and (d) allow for a responsible party to propose site-specific SRS based on site-specific data including leaching.

There are currently very few locations in New Hampshire with co-located soil and groundwater PFAS data with which to compare to the proposed SRS and current AGQS. It is not appropriate to assess the leaching-

based values using the USGS soil occurrence data and groundwater data from the PFAS Data Mapper. The NHDES PFAS Sampling Dashboard does not include all groundwater data collected in the state, does not differentiate between bedrock and overburden groundwater data, and does not show co-located soil and groundwater data. Nor do many of the well locations with data displayed on the NHDES PFAS Sampling Dashboard or the USGS study locations meet the protective conceptual model for leaching used to derive the leaching-based value. For example, the hydrogeology of deep (e.g. > 100 feet below ground) bedrock water supply wells that withdraw groundwater from fractures (cracks) in rock differ significantly from the modeled extraction well that pulled water from a sandy aquifer at a depth of only 10 meters (approximately 33 feet) below ground.

Rule Section:

Env-Or 606.19 Table 600-2

Comment:

A technical comment was raised regarding the analytical reporting limits for PFAS in soil. The commenter states that the proposed SRS are within the measurement of error for the testing procedure proposed.

Action Taken:

None. EPA Method 1633, Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, was finalized in January 2024, after rulemaking was initiated. The SRS values in the Final Proposal consider Estimated Quantitation Limits (EQLs) in soil based on the highest value of the range of Limits of Quantitation (LOQs) published in the final method, and thus the SRS values for PFOA, PFNA, and PFHxS in the Final Proposal have increased from the values in the Initial Proposal. The department acknowledges that factors outside the control of an analytical laboratory (e.g., sample matrix) may occasionally make it difficult to achieve reporting limits less than or equal to the SRS. Similar to current practice for other contaminants, the site professional should introduce any data qualifiers and discuss the impact on the conceptual site model in report submittals.

Rule Section:

Env-Or 606.19(f)

Comment:

Relative to the language in Env-Or 606.19(f), commenters sought clarification on how a responsible party would demonstrate that PFAS contamination in soil is attributed to background levels and the site did not cause or contribute to background levels, such that the SRS would not apply

Action Taken:

The department is developing a draft guidance document that responsible parties and their consultants may find useful to support evaluations of potential soil background conditions. The department's recommendations in the draft guidance document are generally consistent with our current expectations for other contaminants, with the addition of considerations for PFAS contamination in soil. Due to the varied nature of contaminant discharges, receptors, and risk, a site-specific approach to background determinations is required. While not prescriptive, the approach typically includes an evaluation of historical activities and uses at the subject property and vicinity, an assessment of existing analytical data and/or collection and analysis of media samples, comparison of analytical data to statewide Background Threshold Values (BTVs) and local observations, and/or statistical analyses. All determinations must include evaluations of both the lateral and vertical extent of contamination and assessment of multiple lines of evidence.

In the final proposal, the department has removed the proposed "cause and contribute" language from Env-Or-606.19(f) because it is redundant.

Rule Section:

Env-Or 611.06(d)

Comment:

Multiple commenters suggested that the proposed rule would cause increased impact and cost on construction and development projects with earthwork such as infrastructure and roadway projects that disturb soil. Another comment indicated the potential for excavated soils to be replaced with impacted fill soils.

Action Taken:

In response to this and other comments a change has been made to Env-Or 611.06(d) to expand the options for reuse of contaminated soil from sites managed under Env-Or 600 rules.

The department carefully considered this topic during the rule proposal process. The current Env-Or 600 rules as well as the text of the Initial Proposal and Final Proposal do not require soil to be sampled for PFAS (or other contaminants) absent a known or potential discharge.

Contaminated soil generated during earthwork projects needs to be managed in accordance with Env-Sw 903 of the New Hampshire Solid Waste Rules and characterized pursuant to Env-Hw 502.01 of the New Hampshire Hazardous Waste Rules. This requirement is active today, regardless of any proposed revisions to Env-Or 600.

Based on the USGS Statewide Survey findings, the department recognizes the potential for some PFAS to be present in shallow soils at varying concentrations across the state. Given this potential, the department agrees that it is impractical to remove soil from one location just to replace the excavated material with virgin imported fill that is also impacted by background conditions. Further, the department recognizes that it may not always be possible to manage soils with PFAS solely attributed to background in accordance with either of the currently specified options in Env-Sw 900 (e.g., management onsite or at a permitted solid waste facility, etc.). The department will be initiating rulemaking for Env-Sw 900 to address applicability of the solid waste rules to PFAS-contaminated shallow soil.

Rule Section:

Env-Or 614

Comment:

There is no legislative authority to require a website and setting up a website would be costly and burdensome.

Action Taken:

Upon further consideration of the comments received and other factors, the department deleted the proposed provision in the rules requiring responsible parties to create websites under certain circumstances for PFAS sites. The purpose of this provision was to enhance communication between a responsible party and impacted receptors. Many people impacted by a release of contaminants that contact the department are skeptical of the intentions of the responsible party. The department is concerned that even if the website rule is perfectly implemented, it still may not achieve the intended goal of enhancing communication if the intended target audience is not likely to trust the information source, and thus not be receptive to receiving the information.

Rule Section:

Env-Or 614.02

Comment:

Providing PFAS Safety Data Sheets (SDS) may not be possible at sites where original product usage is not known or where there are no active facilities. Does this refer to SDSs for PFAS information from each individual PFAS chemical?

Action Taken:

This rule has been revised to require a responsible party to provide all safety data sheets or other information in their possession pertaining to PFAS use at the responsible party's facility if requested by the department.

Rule Section:

Env-Or 614.04

Comment:

Env-Or 614.04: Remediation waste may be disposed of at a solid waste facility. How can this be promulgated without permission of regulated solid waste facilities? What if the solid waste facility has a detectable plume of PFAS?

Action Taken:

This rule simply allows appropriately permitted solid waste facilities to accept remediation waste specified in the rule if a facility chooses to accept it, unless it has been determined to be a hazardous waste pursuant to RSA 147-A. Solid waste facilities are at liberty to decline waste they do not wish to receive. Permitted active landfills are required to be lined and implement ongoing release detection monitoring to ensure leachate is contained, so a facility should be able to safely manage such wastes if the facility is operated and maintained as designed and pursuant to applicable rules and statutes.

Rule Section:

N/A

Comment:

Some comments were received about the Background Threshold Values (BTV) presented in the [Technical Summary Report](#). The comments question the management of outliers in the BTV derivation; suggest that the relatively high BTVs may allow contamination to be concluded to be a background condition at many sites; and indicated that perhaps statewide BTVs are unnecessary because the source of PFAS might be determined from the profile. Another comment questioned whether the department would be setting anthropogenic ambient background values for all regulated contaminants.

Action Taken:

None. The BTVs are a guidance tool and are not part of the proposed Env-Or 600 revisions, therefore these comments will be considered as part of the background guidance document preparation. The department is not currently planning to set background values for all regulated contaminants.