

John Krauss

See attached comment letter.

VIA PDF UPLOAD TO PUBLIC COMMENT FORM

January 27, 2023

State Department of Ecology

Re: Comments on Draft PFAS Guidance for Investigating & Remediating PFAS Contamination

The Sammamish Plateau Water and Sewer District (“District”) appreciates the opportunity to offer comments on the Department of Ecology’s “Draft PFAS Guidance for Investigating and Remediating PFAS Contamination in Washington State” (“Manual”). As a water system which has been directly impacted by PFAS contamination of a number of its potable groundwater wells, the District has previously participated in by the Department of Health’s (“DOH”), and Department of Ecology’s (“DOE”) rule making and comment processes. The District maintains a keen interest in evolving regulatory standards, and is offering the following comments as part of the Manual’s public comment period:

1. The District requests that the comment period be extended for at least thirty (30) days to allow appropriate time for public review and comments for the following reasons:
 - a. The release of the Manual for comment was not widely recognized by sewer and water utilities. While attempting to engage with other utilities on the Manual during the comment period, the District was unable to find another agency or professional association who was aware of the Manual’s publication for comment. Given the significance of PFAS impacts on both sewer and water utilities, and potential impacts of the Manual, the public process should allow sufficient time for review and comment by stakeholders.
 - b. Given the evolving PFAS regulatory environment at the State and Federal levels, sewer and water utilities should be provided adequate time to review and understand the Manual. Of particular interest and concern is the nexus between the Manual and Department of Health PFAS regulations which are referenced and incorporated in the Manual. The application of the Manual may directly impact water systems’ compliance with DOH regulations.
2. In addition to requesting an extension of the comment period, the District provides the following comments related to the Manual content:
 - a. The Manual incorporates recently established Washington Department of Health State Action Levels (SAL’s) imposed upon Group A Public Water Systems as investigatory and cleanup levels for potable groundwater cleanup under MTCA, creating the nexus to DOH WAC 246-290. In essence, this results in applying the DOH SAL’s as de facto potable groundwater cleanup levels. The Manual should consider the context of the WAC 246-290 rules related to all other DOH

requirements imposed on Group A Public Water Systems, such as ongoing sampling periods, and public notifications based upon any PFAS investigatory results under MTCA in relation to the levels contained in WAC 246-290. Ongoing sampling/monitoring requirements should not be less stringent than those imposed upon Group A Public Water Systems under WAC 246-290, noting that PFAS monitoring results may vary seasonally or over extended time periods as PFAS migrates through soils and aquifers.

- b. It's unclear how DOE will impose MTCA remediation requirements if monitoring results for PFAS in potable groundwater are at levels below the SAL's. Feedback the District receives from our customers is a preference that the water we provide be completely free of PFAS. A DOE acceptance/tolerance to allow PFAS levels in any concentration in potable groundwater contradicts general customer opinions. This will create significant customer relations challenges for water systems impacted by PFAS contamination.
- c. DOE has elected to propose the DOH SAL's as the basis for establishing MTCA cleanup levels for potable groundwater during a period when the United States Environmental Protection Agency ("USEPA") is working to establish PFAS Maximum Contaminant Levels ("MCL") for drinking water which may supplant the current USEPA Health Advisory Limit ("HAL"). The DOH SAL's may default to the EPA MCL if more stringent. The Manual also notes USEPA is currently developing ambient water quality criteria which may be applied as ARAR's under MTCA. Given the anticipated release of the USEPA MCL and ambient water quality criteria, consideration should be given to delaying the approval and release of the Manual until the USEPA finalizes its work to ensure regulatory consistency and certainty.
- d. The Sammamish Plateau Water and Sewer District has been directly impacted by the PFAS contamination of potable groundwater in the Lower Issaquah Valley. Raw water from the District's Well 7 and 8 exceed the DOH SAL for PFOS. Since 2017, DOE has been a party to investigatory actions being conducted by East Side Fire and Rescue. Ongoing activities have lacked public process which would include the District, an impacted water system, as a stakeholder, including transparent information sharing. The District has had to file public records requests to get access to investigatory documents, and received no notification of pilot treatment activities using Liquid Colloidal Activated Carbon ("CAC") which the Manual/DOE recognizes "has not (been) uniformly concluded to be a field-proven technology". Any MTCA investigatory and remediation activities for impacted or potentially impacted potable groundwater where there are known or potential impacts to a water system should include public process and stakeholder engagement of the water system, since the water system is the party responsible for compliance with WAC 246-290 SAL's. In these instances the process should be directly overseen by DOE as a formal cleanup.
- e. A number of treatment technologies for potable groundwater are unproven, particularly CAC. Since water systems will never be the source of PFAS contamination, but water systems may be impacted by PFAS investigation and remediation actions of others, water systems should be directly engaged in the

MTCA investigatory and cleanup scoping process. Our aquifers, groundwater, and water rights should not become laboratories for pilot testing of unproven remediation methods without awareness and input by the water systems.

- f. The Manual should include special emphasis and guidance for investigating and remediating known or potential contamination in wellhead protection areas, including groundwater modeling and time of travel analysis where contaminant plumes may potentially impact potable groundwater over extended time periods.
- g. Section 3.2.2, Page 16 of 64, states: “However, Ecology can review each cleanup site to determine if there are relevant and appropriate requirements that, while not legally required, should be applied based on circumstances at the site.” This statement is unclear and should not allow for cleanup levels above the SAL. Additionally, the “relevant and appropriate requirements” should consider direct impacts to wellhead protection areas and potable groundwater produced by a water system.
- h. Section 3.2.3, Page 17 of 64, should be revised to require that any cleanup of groundwater reliant on SALs as the ARAR must include extended/long-term monitoring to ensure future PFAS contaminants do not increase and that detections remain below the SALs. If monitoring results indicate levels are increasing above the SALs/ARAR, further cleanup should be required.
- i. Section 3.2.3, Page 18 of 64, states: “For all contaminated sites, Ecology recommends using a laboratory that can achieve practical quantitation limits (PQLs) at or below the SALs listed in Table 3.” DOE’s water lab testing requirements should align with the DOH’s laboratory requirements imposed on water systems.
- j. Soil cleanup levels under Section 3.2.5, Page 19 of 64, should be required to be protective of groundwater, and soils cleanup should include a process of involving any impacted water system, and include remediation which requires clean up to result in groundwater produced by water systems to achieving PFAS non-detection levels.
- k. The cleanup levels in Section 3.2.5, Table 5 Page 21 of 64 for vadose and saturated zones should recognize that PFAS is an inorganic compound which bioaccumulates and is not removed through natural attenuation.
- l. Section 3.2.5, Page 21 of 64, states: “Another option for evaluating the leaching pathway would be to sample groundwater, then if appropriate, use an empirical demonstration in accordance with WAC 173-340-747(9).” Any evaluation of leaching pathways using groundwater sampling should include long-term monitoring of impacts to aquifers and potable groundwater of a water system.
- m. One of the treatment technologies proposed is ex-situ “Soil Washing”. Soil Washing should be cautiously approached and include engagement of the operators of wastewater treatment facilities since the PFAS by-products attributable to soil washing will remain in the wastewater treatment process. This includes effluent, reclaimed water, and bio-solids. Treatment technologies, such as Soil Washing, should remove PFAS from the environment, rather than perpetuate its transport.

3. In addition to the District's comments contained in this letter, the District had its hydrogeological consultants review the proposed Manual. The consultants provided in-depth comments and observations much more detailed and of a higher technical nature. These comments are attached to this letter and are also submitted as a matter of record.

On behalf of the District, thank you for allowing the District to make comments as part of this process. Again we encourage the Department of Ecology to extend the comment period for at least 30 days to allow others sufficient time to review the proposed manual and participate in the process.

Sincerely,



John C. Krauss
General Manager

Encl.

cc: Sammamish Plateau Water Board of Commissioners
Judi Gladstone, Washington Association of Sewer and Water Districts
Ray Hoffman, Cascade Water Alliance

Review Comments for “DRAFT Guidance for Investigating and Remediating PFAS Contamination in Washington State” Dated December 2022

The following are comments on the document titled, *Draft Guidance for Investigating and Remediating PFAS Contamination in Washington State*, dated December 2022. The document was prepared by the Washington State Department of Ecology’s Toxics Cleanup Program.

Sammamish Plateau Water and Sewer District hydrogeological consultants have provided these comments on the document for their integration with the District’s comments into an overall comment set to be provided by the District to WADOE.

Primary Comments

1. **General Comment.** The Document, by force of Title, is trying to be something it is not, that is a Guidance Document. The bulk of the document section text and appendices are supporting information that detail how the State has derived the MTCA cleanup levels. This is not guidance, as it is doubtful the audience/user of this document will be allowed to modify these MTCA cleanup levels employing the same risk-based calculations as described in the document. The sections that pertain to some form of guidance (Section 4.0 for example) merely refer to other guidance documents and procedures outlined in Washington State’s Administrative Code. Numerous references to other guidance for example, ITRC PFAS Guidance and WAC 173-340-820 are essentially the extent of entire Chapters, sections, and sub-sections (see Chapter 4.0). True guidance documents outline procedures, steps, and best practices for the audience/user of this report to follow. Guidance documents are completed with less technically complex lingo and provides clearer direction what should be performed. The State should recognize that this document is more about the supporting science of risk assessment that supports the development of the MTCA cleanup levels and not portray the document as a “guidance” document. A suggested revised title would be “DRAFT Application and Derivation of Washington State MTCA Cleanup Levels for PFAS”.
2. **Section 2.1.** The brief explanation for the work being performed for PFAS in the Lower Iss. Valley does not capture the extent of work being performed at this location and what Ecology has indicated in an October 2, 2022 email to SPWSD, a local water purveyor impacted by this PFAS contamination. Ecology has stated: *"It is Ecology’s plan to transition the management of the LIVA investigation to the formal process under an agreed order to ensure adequate oversight and community engagement for a complex site with much public interest. The timing of this transition depends on the availability of Ecology staff to manage both the technical and the outreach components of the project."* It is recommended that the overview statement of the PFAS work include Ecology’s plan to transition the PFAS work being performed in the Lower Iss. Valley to a formal process under an agreed order.
3. **Section 2.2.** This section should include an expanded description, or flow chart identifying what and how regulatory decisions and updated criteria (Federal and/or State) will impact the decision

criteria (e.g., MTCA Cleanup Levels) and information presented in this interim guidance. To clarify, the science of and information on PFAS is evolving and there are many statements made to emphasize this point in the Draft document. For example, the end of Section 3.0 states “*As new toxicological information emerges, the regulatory levels discussed in this chapter may change and regulatory levels for other PFAS compounds may become available.*”

As such, a document like this, if it is truly to be a “Guidance” document, should include more explanatory text and outline clearly, through flow charts or other visual aids, what primary elements of this Draft guidance are subject to change (e.g., MTCA Cleanup Levels) and how the State and a user of this document addresses these ongoing developments.

4. **Chapter 2.** There were little to no mentions of other key matrices including landfill leachate and sediment. How is Washington State going to address these important media?
5. **Chapter 2.** Many states have included Gen-X in the list of PFAS under regulatory consideration. Curious why this compound is not being considered by Washington State?
6. **Chapter 2.** How is Washington State going to address the transition from fluorine-containing to fluorine-free foam in fire suppression systems that previously used AFFFs? How is the State going to regulate rinsate generated during cleanout of these systems?
7. **Section 3.1.1.** The water ingestion rate from the 2011 edition of the exposure factors handbook (EFH, EPA 2011) was adopted in the derivation of the SALs for PFBS. However, Chapter 3 of the EFH was updated in 2019. As such, the adopted intake rate of 174 mL/kg-day is higher than would be adopted per the 2019 update of 137 mL/kg-day. The PFBS SAL would be equal to 438 ng/L on the basis of this revision.
8. **Section 3.1.1.** Error in footnote 15. The RSC is indicated as being 50%, however the actual SAL derivation uses 20% for PFBS.
9. **Section 3.1.1.** The updated MRL for PFNA on the basis of a shorter half-life needs additional discussion. A shorter half-life would be expected to result in a higher (i.e., less conservative), rather than lower, RfD.
10. **Section 3.1.1.** It is unclear what assumptions changed from the 2020 derivation of the SALs for PFHxS, however, the SAL is slightly lower (65 ng/L) than previously derived (70 ng/L).
11. **Section 3.1.2.** Should add (where bold) into the first sentence for clarification, “*Under the DOH rulemaking, monitoring for PFAS at detection levels below SALs will be required by community and nontransient noncommunity Group A water systems (DOH, 2021c).*”
12. **Section 3.1.2.** Second sentence should explain how “*suspected PFAS contamination*” is determined.
13. **Section 3.1.2.** First paragraph at the top of page 13 should clarify what information/lines of evidence the Washington State Department of Health reviews for this waiver determination.
14. **Section 3.1.2.** Last paragraph, first sentence, should clarify the level above detection will require continued monitoring on a more frequent schedule.
15. **Section 3.1.2.** Last paragraph, last sentence should be expanded and separated into a separate subsection that explains what information the State will provide Water Systems to help explain in clear laymen terms, than this Draft document currently provides, that PFAS concentrations above detection, but below SALs are deemed acceptable for public consumption. This is imperative for proper consumer notification communication and would be helpful for guidance.

16. **Section 3.3.** This section should be removed from the main body of text and provided in an appendix, or attachment to avoid confusion with the actual State requirements. As stated in the section intro, there is no substantive purpose to this information for the application and derivation of the State's MTCA Cleanup Levels for PFAS other than being informational. The only relevant information to pull from this section are federal regulatory assessments, such as IRIS assessments (Section 3.3.2) to add to a flow chart, or visual on how federal regulatory changes impact the information in this document, as suggested in the comment on Section 2.2.
17. **Section 4.1.** per Field et al. 2020 (<https://pubs.acs.org/doi/full/10.1021/acs.estlett.0c00036>), field sampling equipment represents a very unlikely source of PFAS contamination. The PFAS sampling guidance should be updated appropriately.
18. **Section 4.1.** – EPA method 1621 for ToF should also be considered during PFAS RI work.
19. **Section 4.1** – No mention of the potential for PFAS sorption onto colloids for water sampling. Filtered vs. non-filtered samples. Should be discussed.
20. **Section 4.1** – No real mention of porewater sampling. This is the PRIMARY driver for groundwater contamination at AFFF source areas and should be carefully evaluated during PFAS RI/FS.
21. **Section 5.** Protective concentrations were derived for more than the five PFAS with SALs (including PFDA, PFHxA, PFBA, PFUnA and PFDoA). Are these values for the additional PFAS to be used in screening purposes?
22. **Section 5/Appendix B.** Selected endpoints used in the derivation of the ecological protective concentrations should be elaborated upon. It appears that single studies were selected (as opposed to use of a species sensitivity distribution [SSD] or similar process).
23. **Table 7.** Typo in final row for upland soil (total protection).
24. **Section 6.0.** This overview section needs to clarify that "field demonstrated" must include peer reviewed technical evaluation documents. Many pilot tests can have significant pressure towards their success and they should be vetted by an independent, qualified technical peer review that is not conflicted with regard to its outcome.
25. **Section 6.1.** Several novel sorbents (including Fluoro-Sorb) have shown to be more effective than GACs and IX resins and should be discussed herein.
26. **Section 6.1.** Need to expand on the discussion of GACs versus IX resins regarding factors that would negatively impact their performance (elevated TOC, co-contaminants, treatment residuals such as residual chlorine, polyphosphates, etc.), design (empty bed contact time, vessel size, pre-treatment requirements, etc.), and capital and O&M costs (CAPEX & OPEX).
27. **Section 6.1.** No mention of foam fractionation which has been successfully demonstrated at the pilot- and full-scale settings for removal and concentration of PFAS from impacted aqueous waste streams.
28. **Section 6.1.** Need to highlight that all technologies listed for treatment of impacted waste streams are merely designed for PFAS removal or concentration. None of these technologies can readily destroyed PFAS. Need to include a section discussing potentially applicable PFAS destructive technologies.
29. **Section 6.1.** Need to include nanofiltration as a potential treatment technology.
30. **Section 6.1.** There is very little to no long-term performance data associated with CAC. In fact, bench- and pilot-scale testing of CAC is being conducted by DoD-funded research programs

including SERDP and ESTCP. This technology should not and cannot be discussed in the same manner as what are considered proven and mature technologies such as GAC and IX resins.

31. **Section 6.2.1** While this section touches on the issues of long-term effectiveness of Sorption and Stabilization (immobilization) technology, an expanded explanation of the limitations and risks of employing this technology in the subsurface should be included and a more direct discouragement, if not outright ban, on the injection of these immobilization/sorption media into the subsurface at depths where removal/replacement is infeasible and/or cost prohibitive should be stated with this technology. The current statement in the section that more monitoring will be necessary is not adequate guidance for this technology application.
32. **Section 6.2.** Because a soil cleanup level protective of underlying groundwater has not been established, understanding of how porewater emanating from impacted vadose soils impact potential groundwater contamination is VERY important. This is something that needs to be carefully evaluated via lysimetry or batch desorption studies prior to selection and implementation of ANY remedial action.
33. **Section 6.2.** Thermal treatment: DoD is mandating a moratorium on PFAS incineration because of poor understanding of PFAS mass balance during thermal treatment and potential risk of PFAS air emission. This is an area of active research and **MUST** be highlighted!
34. **Section 6.2.** Soil washing: several DoD-funded studies have clearly showed that while soil washing may be effective in removing PFAS from low-TOC, coarse-grained materials, it is very ineffective against TOC-rich fines. Given the high liquid:solid ratio required for effective soil washing and the volume of wash water generated, the economics of soil washing needs to be further studied.