TRC

The attached PDF file contains TRCs comments for the Draft PFAS Chemical Action Plan. Please contact me at dkunkel@trccompanies.com or 425-241-8170 if there are any questions regarding our comments.

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Washington State Department of Ecology
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Re: Comments on Per- and Polyfluoroalkyl Substances Draft Chemical Action Plan
Draft for Public Comment
October 2020
Publication 20-04-035

To Whom it May Concern:

Thank you for providing a public comment period for the Per- and Polyfluoroalkyl Substances Draft Chemical Action Plan (CAP), dated October 2020. We understand that the draft CAP was prepared jointly by the Washington State Department of Ecology and the Washington State Department of Health and builds on work that started in 2016. We commend the Washington State Departments of Ecology and Health for their decisive early actions on per- and polyfluoroalkyl substances (PFAS) issues, which has led to preparation of this draft CAP.

TRC has been tracking PFAS technical and regulatory issues for several years and was eager to review the public review draft document. A team of four TRC professionals have each reviewed two or more sections of the document and have prepared written comments for review and consideration by the Washington State Departments of Ecology and Health and the Advisory Committee for inclusion in the Final CAP. Our overall impression is that the draft CAP is a well-written and comprehensive document that presents a significant amount of technical and regulatory information in a logical and orderly format. We are hopeful that our review comments and questions will be a valuable and respectful addition to the public comment process.

EXECUTIVE SUMMARY

1. Executive Summary, page 10: The text indicates that long-chain PFAS tend to be more bioaccumulative. While this statement is true for humans and animals, it is not the case for plants which tend to bioaccumulate short-chain (more water soluble) PFAS more readily. Please consider revising to reflect that long-chain PFAS tend to be more bioaccumulative *in humans and animals*.
2. Executive Summary, page 10: The text does not list marine and anadromous fish tissue as receptors where PFAS have been detected. Text in Appendix 5 on pages 37-38 and later

sections of the document state that perfluoroalkyl acids (PFAAs) have been detected in freshwater, marine, and anadromous fish. Please consider revising the executive summary for consistency with later sections of the document.

3. Executive Summary, page 31: The Department of Health (DOH) is developing fish consumption advisories for perfluorooctane sulfonate (PFOS) in freshwater fish based on Ecology fish sampling data. Are there marine and anadromous fish tissue data? Will there be advisories for marine or anadromous fish consumption, which make up a significant part of the diet of certain communities?

PFAS ASSESSMENT SUMMARY

Fate and Transport, Page 37

1. The statement is made: "Another source of environmental PFAS concentrations is the degradation of long-chain substances, usually called 'precursors'" Many PFAS degrade to perfluoroalkyl acids (PFAAs), which are very stable in the environment and are referred to as terminal substances." We suggest this sentence be revised because: (1) shorter-chain precursors can also transform to PFAAs; (2) the precursors are not a separate source of PFAS; and (3) all PFAA precursors are poly-fluorinated compounds, and it is more straightforward to refer to them as such.
2. The second to last paragraph implies that many/most PFAS are highly soluble, but solubility is unknown for many PFAS, and there is a potentially wide range. This is acknowledged in Appendix 4, where it is stated on page 203: "… most PFAS are at least slightly water soluble and can be transported by water movement." We suggest that the statement on page 37 be revised to align with that on page 203.
3. In the fourth paragraph, Ecology may want to mention the recent announcement by EPA on PFAS-required sampling for NPDES permits: https://www.epa.gov/newsreleases/new-interim-strategy-will-address-pfas-through-certain-epa-issued-wastewater-permits#:~:text=In%20November%202020%2C%20EPA%20issued,wastewater%20and%20other%20environmental%20media

Biosolids, Page 40

1. The statement is made: "Most studies assessing contamination impacts from biosolids application sample WWTPs receiving influent directly from industries using fluorinated compounds. Although some industrial discharge in Washington is possible, we anticipate that the majority of perfluorinated compounds in Washington municipal wastewater originate from domestic sources." We note that due to the PFAS transformations that can inadvertently take place within the WWTP process, and the concentrating of PFAS within WWTP solids fraction, even a secondary or tertiary industry could potentially produce significant terminal PFAS in its biosolids stream.

APPENDIX 1: CHEMISTRY

1. Section 1.0.1, Findings, Paragraph 1 and Section 1.0.2, Introduction: As of September 2020, EPA's Master List of Compounds had increased to 9,252. Please consider updating this number to be consistent with EPA's September 2020 Master List of Compounds.
2. Section 1.1.1, PFAS Terminology, Definition of PFAS: In the cited Buck definition, please correct the moiety to be C_nF_{2n+1}.
3. Section 1.1.3, Non-Polymer PFAS:
    a. Perfluoroalkyl Substances: Please revise the sentence describing the moiety to state C_nF_{2n+1} with n ≥2 (instead of n>2).
    b. Polyfluoroalkyl Substances:
        i. Paragraph 2: The second sentence should state "perfluoroalkane sulfonamido substances have a fully fluorinated carbon chain tail…"
        ii. Paragraph 3: Figure 6 is actually a representation of 8:2 FTS, not 6:2 FTS. Therefore, please revise this paragraph to state "eight perfluorinated carbons (n=8), could be represented as C_8F_{17}….". Also please revise the last sentence to state 8:2 fluorotelomer sulfonic acid.
        iii. Figure 6: Please revise title of figure to 8:2 fluorotelomer sulfonic acid.
    c. Table 4:
        i. We think it would be clearer if the footnotes a through c were associated with the sub-class instead of the class.
        ii. Sub-class PFSAs: Please correct the footnote to "b" instead of "a" since these originate from ECF. This correction is needed for both perfluoroalkane sulfonic acids and perfluoroalkane sulfonates.
        iii. Sub-class PFSIAs: Please revise the definition of the sub-class to Perfluoroalkane sulfinic acids and please correct the footnote to "b" instead of "a" since these originate from ECF. Please revise the example to perfluorooctane sulfinic acid.
        iv. Sub-class PFPAs: Please correct the footnote to "c" instead of "a" since these originate from telomerization.
        v. Sub-class PFPIAs: Please correct the footnote to "c" instead of "a" since these originate from telomerization.
        vi. Sub-class PFECAs/PFESAs: Please remove the acronym PFEAs.
    d. Table 5:
        i. We think it would be clearer if the footnotes a and b were associated with the sub-class instead of the class.
        ii. Sub-class FASEs: Please move the acronyms MeFASEs and EtFASEs after N-alkylperfluoroalkane sulfonamidoethanols.

      iii. Sub-class FASAAs: Please revise the functional group as follows: SO2N(R')CH2COOH where R' = C_mH_{2m+1} (m = 0, 1, 2, 4).
      iv. This table is missing the sub-class N-alkylperfluoroalkane sulfonamides (FASAs), functional group SO2N(R')H where R' = C_mH_{2m+1} (m = 1, 2, 4). These are used as raw material for surfactant and surface protection products.
      v. Sub-class n:2 FTCAs: Please correct the second part of the functional group.
      vi. Sub-class n:2 FTCAs: Please include the footnote "b" for the telomerization process.
      vii. Sub-class: n:2 Fluorotelomer sulfonic acid chloride: The acronym for this sub-class should not be the same as n:2 fluorotelomer sulfonic acids. Please revise.
4. Section 1.1.4, Polymer PFAS
   a. Table 6:
      i. Please revise the description for the perfluoropolyethers as follows: Carbon and oxygen polymer backbone with F atoms directly attached to backbone C atoms
      ii. Side-chain fluorinated polymers: Change to side chains ending in C_nF_{2n+1}.
      iii. Fluorinated acrylate and methacrylate polymers, fluorinated urethane polymers, and fluorinated oxetane polymers: The uses for these should be surface protection products and not surfactants.
5. Section 1.3.1, Electrochemical Fluorination, Figure 10: The title of the figure should state A schematic of the ECF reaction that forms PFOS (not POSF).
6. Section 1.3.4, Technical Quality and Implications for Environmental Impacts, Paragraph 3: Please change the reference to Figure 14 to Figure 12.
7. Table 8: The ITRC definition should be Interstate Technology & Regulatory Council.
8. Table 9: Please revise the definition for PFSA to Perfluoro-sulfonic acid.

APPENDIX 2: ANALYTICAL METHODS

1. Section 2.0.1, Findings:
   a. Paragraph 6: Please revise the release date of Draft Method 8328 to 2021.
   b. Last paragraph: Please clarify if modified versions of EPA-validated methods can be used for regulatory purposes in Washington for non-drinking water matrices. It may be best to include the last sentence in Section 2.4.1 in this section as well.
2. Section 2.1.1, Drinking Water Methods:
   a. Method 537.1, Paragraph 2: It is unclear why hexafluoropropylene oxide dimer acid is listed twice in the parenthetical.
   b. Table 10: Please add "acid" to the definitions of PFBS, PFHxS, and PFEESA.
3. Section 2.1.2, Non-drinking Water Sample Methods:

   a. Paragraph 3: The most recent version of the DoD QSM, Version 5.3 (2019) should be cited for PFAS quality standards.
   b. EPA SW-846 Method 8327: A recommendation should be included to not utilize this method as this is not an isotope dilution method and has shown to be less reliable for several PFAS analytes. Isotope dilution is the gold standard and should be used for any non-drinking water matrix where matrix interferences are more likely. In addition, the detection limits are higher using 8327 than those obtainable using isotope dilution techniques.
   c. Table 13: Please move PFTeDA to Table 12 and remove this table. There is no reason to include PFTeDA in its own table; it should be with the other PFCAs.
   d. EPA Method 8328:
      i. To be consistent with the discussion on Method 8327, please include "SW-846" in the method title.
      ii. Paragraph 1: Please revise the release date of Draft Method 8328 to 2021.
   e. ASTM D7968: Solids (soil), Paragraph 2: The most recent version of the DoD QSM, Version 5.3 (2019) should be cited for PFAS quality standards.

4. Section 2.4.1: One of the major data gaps is the consistency with how labs are dealing with particulates in aqueous samples (e.g., wastewater, surface water, groundwater). For example, some labs are centrifuging/decanting the water and separating out the particulates, some labs are doing separate extractions of the aqueous and particulate phases and combining the extracts for a true total number. Both methods can yield very different results due to the nature of PFAS (e.g., long-chain PFAS adhere to solids more).
5. Table 16:
   a. ITRC: Please correct the definition to Interstate Technology & Regulatory Council.
   b. PIGE: Please correct the definition to Particle Induced Gamma Ray Emission.
   c. TOP: Please correct the definition to state Precursors.
6. Table 17:
   a. FTS: Please correct the definition to remove "6:2".
   b. PFEESA: Please add "acid" to the definition.
   c. PFHpS: Please correct the definition to "sulfonic" acid instead of "sulfinic" acid.
   d. PFHxS: Please correct the definition to "sulfonic" acid instead of "sulfinic" acid.

APPENDIX 3: SOURCES AND USES

1. Table 25: The 2004 (liters) for Other Petroleum Facilities should be 387,929 per Table 22.
2. Section 3.4.2, Wastewater Treatment Plants:

   a. Wastewater Treatment Standards: The last paragraph should include a discussion of the recent announcement by EPA on NPDES permits.
   b. https://www.epa.gov/newsreleases/new-interim-strategy-will-address-pfas-through-certain-epa-issued-wastewater-permits#:~:text=In%20November%202020%2C%20EPA%20issued,wastewater%20and%20other%20environmental%20media.
   c. Publicly Owned WWTPs, Paragraph 5: Please revise the definition of PFAAs to perfluoroalkyl acids.
3. Section 3.4.3, Landfilled Products:
   a. Waste characterization studies:
      i. Carpet: Bullet #1: Please clarify if this is correct as noted: PFOS or PFAS.
      ii. Furniture: Both bullets: Please clarify if this is correct as noted: PFOS or PFAS.
      iii. Food packaging, Paragraph 2: Correct the acronym PFAS (not FPAS).
      iv. Summary: Please clarify if these values represent PFAS or PFOS, based on comments above. Please define the asterisk for the low estimate for carpet.
4. Section 3.5.3, Estimate of PFHxSF and PFDS Emissions: Perfluorodecane sulfonate is listed twice in the first sentence with two different acronyms (PFDS and PDSF). Please clarify.
5. Section 3.5.4, Summary of Historical Emissions: Direct POSF: For the average annual WA emissions, the text states 29.4 metric tons; however, the table shows 20.41 metric tons. Please clarify.
6. Section 3.5.5, Current Emissions: Correct the acronym in the last sentence to PFHxS.
7. Table 43:
   a. ITRC: Please correct the definition to Interstate Technology & Regulatory Council.
   b. RCRA: Please revise the definition to include the word “Act”.
   c. SSEHRI: Please revise the definition to include the word “Research”
8. Table 44:
   a. FTS: Please revise the definition to Fluorotelomer sulfonates.
   b. PDSF: Please clarify as this currently has the same definition as PFDS.
   c. PFAA: Please revise the definition to Perfluoroalkyl acid.

APPENDIX 4: FATE AND TRANSPORT

1. Section 4.0.1, Findings: Transformation, Bullet 1: The statement is made: “All PFAS monomers are either perfluoroalkyl acids (PFAAs) or perfluoroalkyl acid (PFAA) precursors.” We suggest this statement be revised because: (1) PFAS monomers include many other groups of perfluoroalkyl compounds, such as PFESAs, PFECAs, PASFs, PAFs, PFAIs, and PFALs; and

(2) all PFAA precursors are poly-fluorinated compounds, and it is more straightforward to refer to them as such.

2. Section 4.0.1, Findings: Transformation, Bullet 2: The statement is made: “PFAA precursors represent a large group of per- and polyfluoroalkyl substances (PFAS), which contribute terminal PFAS such as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) to the environment.” We suggest this statement be revised because perfluoroalkyl substances are not PFAA precursors; only polyfluoroalkyl substances are.
3. Section 4.0.1, Fate, Bullet 5: Please revise this statement to reflect that short-chain PFAS are less bioaccumulative in animals, but this has not been found for plants (ITRC 2020, Blain et al. 2013, Zhao et al. 2014, Ghisi et al., 2019).
4. Section 4.1.2, Biotic Aerobic Transformation: We suggest that a statement be added to emphasize that these transformations were shown to occur under controlled and sometimes highly oxidizing laboratory conditions, and so would not necessarily translate to natural environmental conditions.
5. Section 4.1.4, Consequences of chemical transformation: In paragraph 2, we suggest adding that many of the precursors are still unknown. This section could also refer back to EPA’s continually growing list of master compounds, mentioned in Section 1.0.1.
6. Section 4.2, Polymeric PFAS: Paragraph 3 states “If side-chain fluorinated polymers—which are often used as oil—and water-resistant treatment for consumer products degrade, then they could be a potential source of PFAS emissions for decades or centuries if not properly disposed and contained in landfills …” We suggest that the phrase “in landfills” be removed, because these polymers could still reach the environment through leachate disposal to POTWs or liner leaks to groundwater.
7. Section 4.3.2, Water.
    a. Release to aqueous media: Ecology may want to mention the recent announcement by EPA on PFAS-required sampling for NPDES permits: https://www.epa.gov/newsreleases/new-interim-strategy-will-address-pfas-through-certain-epa-issued-wastewater-permits#:~:text=In%20November%202020%2C%20EPA%20issued,wastewater%20and%20other%20environmental%20media
    b. Soil interactions: In the section discussing PFAS adsorption to organic carbon in soil, we suggest adding a statement that some PFAS adsorb more readily at low pH and therefore are more mobile at high pH (e.g. Ferrey et al., GWMR 2012).
8. Section 4.5.1, Removal of PFAS from Water.
    a. Paragraph 1: The statement is made: “Conventional water treatments, such as low pressure membranes, biological treatments, disinfection, oxidation, and advanced oxidation, have proven to be ineffective at removing PFAS from water (EPA, 2020b; Ozekin & Fulmer, 2019).” We suggest that the wording be modified to indicate that these approaches “have not *to date* been demonstrated to be effective” to acknowledge that water treatment research is emerging and ongoing.

   b. Paragraph 1: GAC is typically the acronym for the general “granular activated carbon” than the more specific “granular activated charcoal.”
   c. Paragraph 2: The efficacy of GAC decreases substantially in water streams that are high in naturally occurring total organic carbon or contaminated with other organic contaminants, due to the competition for GAC sorption sites. Typically, water streams will have to be pre-treated for organics and contaminants prior to PFAS removal via GAC. This also increases the capital and maintenance costs for such systems. Additionally, the GAC will either need to be regenerated or disposed, creating a PFAS waste stream. The waste streams are discussed for IX, RO, and nanofiltration, but not for GAC.
   d. Ecology may consider mentioning foam fractionation as a technology. This has been used in Australia to treat drinking water and is emerging for use in other areas as well: https://opecsystems.com/enviro/pfas-solutions/ex-situ-treatment-surface-active-foam-fractionation-saff/

9. Section 4.5.2 Stabilization of PFAS in Soils: Sorption and stabilization of PFAS in the unsaturated soil zone using amendments is highly dependent on geochemical conditions, which are subject to change in situ with changing environmental conditions. For example, changes in pH can mobilize sorbed PFAS, and changes in ORP can potentially induce transformations. This approach should be considered with care given difficult-to-control natural/ambient environmental conditions.
10. Section 4.5.3, Ultimate Disposal: For completeness, Ecology may want to consider including a statement about leachate management and reference the biosolids section of the document.

APPENDIX 5: ENVIRONMENTAL OCCURRENCE

1. Section 5.0.1, Page 231: This section notes that PFAAs have been detected in marine fish. This information regarding the presence of PFAAs in marine fish tissue appears to be missing from previous sections of the document, including the Executive Summary. Please consider revising for consistency.
2. Section 5.1.7, Pages 239-240: The statewide freshwater fish study of 2008 and 2016 demonstrated that PFAAs were found more commonly in fish liver samples versus fish filet samples. In addition, median concentrations in fish livers were much greater than median concentrations in filet samples. Will cleanup levels for human health risks from freshwater fish ingestion be calculated using data from fish livers or filets, or a combination of both?
3. Section 5.1.7, Page 240: PBT Screening study, 2011. Results of this carp study and similar bottom feeding fish from Lake Washington, the Lower Columbia River, Lake Spokane, and the lower Yakima River indicate that greater PBT concentrations were noted in whole body samples compared to filet samples. In regard to PFAAs, will cleanup levels for the protection of human consumption be based on whole body sample results or results from filets, which is the portion of the fish that is commonly consumed by human receptors? Please consider clarifying this in the document.

4. Section 5.1.8, Page 244, Figure 34: Sample locations are presented as codes along the X-axis of this bar chart and aren't defined, making it hard to determine where each sample or set of samples came from. Please consider revising Figure 34 to include sample location names on the X-axis or defining what locations the codes represent.
5. Section 5.1.9, Page 245: Data indicate that mussels generally do not bioaccumulate Total PFAA to detectable concentrations. Data also indicate that marine fish generally do not have detectable levels of PFAS in their tissue, except those caught near Total PFAA source areas (Eagle Harbor, Bremerton Waterfront, and Tacoma City Waterway). Even when detected, Total PFAA concentrations in marine fish tissue have significantly lower concentrations than detected in freshwater fish. Will PFAS cleanup levels in marine water bodies be greater than those in freshwater bodies based on this significant difference?
6. Appendix 5, Section 5.3.1, Pages 249-250 Data Gaps: PFAA contamination appears to be greatest in WA State freshwater urban lakes such as Lake Washington; however, the source of contamination is not fully understood according to the draft CAP. Please consider listing likely and potential sources in the document.

APPENDIX 6: ECOLOGICAL TOXICOLOGY

1. In Section 6.1.1 it states that "Although short-chain PFAS are not bioaccumulative…" This is a misleading statement since short-chain PFAS are found to be more bioaccumulative in plants than long-chain PFAS especially the perfluoroalkyl carboxylic acids (PFCAs) (ITRC 2020, Blain et al. 2013, Zhao et al. 2014, Ghisi et al., 2019).
2. Tables 60 and 61 on page 266 are outdated as they note that there is no bioaccumulation of PFCAs with a fluorinated carbon chain length of 4 to 6 when the most recent ITRC April 2020 Table 5-1 notes several studies with BAFs up to 214 for PFHpA. The basis of these tables seems to be from a single study that was conducted 12 years ago. There are numerous peer-review literature studies that were recently published and have expanded our current knowledge of bioaccumulation of PFAS in organisms. It is recommended to update Tables 60 and 61 with more current literature sources.
3. Table 65, page 276: It is unclear why only some PFAS are shown in Table 65. For the sulfonates, there are only entries for PFOS and no entries for PFHxS, PFBS, or PFOSA. There are numerous studies for each of these PFSAs for both mammals and birds which are summarized in SERDP Project ER18-1614 (Conder et al. 2020) as well as ER18-1653 (Divine et al. 2020). Additionally, it is inconsistent to have some of the NOAEL and LOAEL values in units of milligram per kilogram body weight per day (mg/kg-day) and some in mg/kg. Typically, NOAELs and LOAELs are reported as a dose in mg/kg-day.
4. Section 6.5.2, page 280: Recently, Divine et al. 2020 (SERDP Project ER18-1653) produced risk-based screening levels for numerous PFAS compounds in different environmental media (soil, sediment, surface water) for various species, including threatened and endangered species (aquatic life and terrestrial and aquatic plants, invertebrates, birds and mammals). This may be a useful document when Ecology is developing cleanup levels for PFAS as indicated in the recommendation 2.1 section (Subsection of 6.5.2 Recommendations).

APPENDIX 7: HEALTH

1. In Section 7.1.2 PFHxS is listed twice in the first sentence.
2. In Section 7.2.1 the sentence “Domestic production and use of these PFAS and their precursors began in the year 2000, but they have not been federally banned” is incorrect. The sentence is missing “**The phase-out of the** domestic production and use of these PFAS….” as the domestic production and use of these PFAS did not begin in 2000.
3. In Section 7.2.1 under “Serum level of individual PFAAs vary across lifestage and sex” the last sentence on page 306 contains two references to Figure 40.
4. Figure 40, page 306 shows that PFDeA (PFDA) is one of the prominent PFAAs in serum levels in the general U.S. population (NHANES). Why is this not included in the list of the top PFAA measured in human serum in the first sentence of Section 7.2.1?
5. Section 7.2.2, page 312. under *Firefighters* there is an extra parenthesis that should be removed. Also, in the third paragraph of this section, there is a typo in the first sentence. “An Australian study **in** 149 contract firefighters…” should be replaced with “of.”
6. On the top of Page 315, the sentence refers to Figure 44 and notes that it shows the mean serum concentrations in three communities compared to the national norms. Only **two** communities (Pease Tradeport, NH and Airway Heights, WA) are shown in the figure and discussed in the text.
7. Section 7.3, page 317, first bullet under **Work exposures**, first bullet, remove the word “at.”
8. In footnote in Table 69, page 334, the following sentence appears twice: “The maximum detections were in private wells.”
9. In Section 7.5.2 the report notes that the Washington Department of Health recommended state action levels for five PFAS (PFOS, PFOA, PFHxS, PFNA, and PFBS). It would be helpful to include the reasoning for the selection of these specific PFAS chemicals (i.e., the most frequently detected PFAS in Washington State according to Table 69 were selected).
10. In Section 7.5.6, page 341, under the **European Food Safety Authority**, the last paragraph first sentence lists PFOS twice. The second PFOS should be changed to PFOA.

APPENDIX 8: BIOSOLIDS

1. Section 8.4, PFAS Analysis Methods for Biosolids, Page 405: We suggest that the statement “This method uses a chemical oxidation pretreatment.” be amended to include the description “in order to drive precursors to their terminal end points and provide an estimate of the total PFAS mass present.”
2. Section 8.7.2, Modeling Data: The National Council for Air and Stream Improvement, Inc. (NCASI), the Water Environment Federation, and the National Association of Clean Water Agencies have prepared a review of models that could potentially be chosen to derive criteria for PFAS in land applied residuals. Ecology may want to consider adding that study in its

discussion: https://www.ncasi.org/resource/review-of-models-for-evaluating-per-and-polyfluoroalkyl-substances-in-land-applied-residuals-and-biosolids/

APPENDIX 9: REGULATIONS

1. PFAS Assessment Summary, Page 41: There has been a voluntary withdrawal of long-chain PFAS from commercial use in the US. However, the draft CAP document notes that specialized uses are still permitted. The specialized uses that are still permitted are not described in this section. Please consider listing some of specialized uses that continue to use long-chain PFAS. Knowing what the specialized uses are and what industries still use long-chain PFAS would assist regulators and environment consultants in identifying potential long-chain PFAS sources when performing environmental due diligence investigations (e.g., Phase I ESAs).
2. Section 9.1, Table 80, Page 423: For the regulations in which both Ecology and the Department of Health are designated as “responsible agencies”, which agency has primacy should conflicting requirements be identified? Please consider clarifying this in the final version of the CAP.

The authors wish to thank the Department of Ecology, Department of Health, and Advisory Board for the opportunity to provide comments on this important draft document.

Sincerely,

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