



Confederated Tribes and Bands  
of the Yakama Nation

Established by the  
Treaty of June 9, 1855

8/30/2019

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**Re: YNERWM Comments on the Draft Washington Dangerous Waste / RCRA Permit for Low Activity Waste (LAW) Treatment (Vitrification) Plant and Effluent Management Facility (EMF)**

Dear Ms. McFadden and Ms. Call,

The Yakama Nation Environmental Restoration and Waste Management Program (YNERWM) appreciates the opportunity to submit these comments on the U.S. Department of Energy's (USDOE's) proposed draft "Waste Treatment and Immobilization Plant Project Proposed Operating Permit for the Low-Activity Waste Facility and Effluent Management Facility," Reference: WA7890008967.

The Confederated Tribes and Bands of the Yakama Nation is a federally recognized sovereign pursuant to the Treaty of June 9, 1855 made with the United States of America (12 Stat., 951). The USDOE's Hanford site occupies lands ceded by the Yakama Nation and to which the Yakama Nation reserved numerous rights pursuant to the Treaty.

"The Yakama Nation supports cleanup actions that are complete, permanent and are based on proven technology."<sup>1</sup>

The draft proposes conditions for permitting the operation of the Low Activity Waste Treatment plant (LAW Facility) for the vitrification of High Level Wastes from Hanford tanks and the associated Effluent Management Facility (EMF).

The proposal is part of a "Direct Feed Low Activity Waste" (DFLAW) system which is proposed to have dramatic changes from the prior system for removal and treatment of tank wastes in the Waste Treatment Plant (WTP), which included constructing and operating a massive

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<sup>1</sup> Russell Jim, YNERWM to the Tri-Party Agreement agencies December 31, 2014 regarding Central Plateau Cleanup Principles.

“Pretreatment” plant and High Activity Waste treatment plant in addition to the LAW facility. This DFLAW system is dramatically different than the system and facilities analyzed in the Tank Closure and Waste Management Environmental Impact Statement (TCWMEIS), on which the Yakama Nation submitted extensive comments (USDOE EIS-0391, December 2012). Therefore, the YNERWM strongly believes that a Supplemental Environmental Impact Statement (SEIS) must be prepared to comply with NEPA and SEPA in order for the agencies’ decision makers to appropriately consider the potential significant impacts from the numerous major changes. The SEIS should accompany the draft permit for tribal and public review and comment, in order for the YNERWM to be able to comment effectively in regard to whether proposed permit conditions for the new DFLAW configuration will appropriately protect human health, safety and the environment.

USDOE issued a Supplemental Analysis (SA), EIS-0391-SA-02, in January 2019 seeking to justify a decision not to prepare a full Supplemental EIS. However, notice and opportunity to comment on this Supplemental Analysis was inadequate. As we discuss in our detailed comments, this Supplemental Analysis is seriously flawed and cannot be relied upon by the agencies in lieu of a Supplemental EIS.

USDOE made a major change in the entire programmatic approach to High Level Nuclear Waste treatment at Hanford, substituting Direct Feed LAW with tank-side Cesium and Strontium removal (TSCR) for the massive investment in detailed pretreatment in the derailed Pretreatment Plant. This massive change required a supplemental EIS, considering the changes in safety envelopes, waste streams, final waste form and leachability characteristics, potential air emissions and solid wastes from secondary waste streams from LAW and EMF, which are the focus of the current permit modification request.

As USDOE and Bechtel say in the draft permit: “*The DFLAW configuration is independent of the Baseline configuration.*” This new configuration was not analyzed in any prior EIS. The dramatic changes in this configuration with potential significant impacts include: the use of facilities to treat waste that are not in containment, e.g., TSCR; changes in how long mixed High Level Nuclear Wastes will remain in leaking or potentially leaking Single Shell Tanks or potentially leaking Double Shell Tanks (including that sludge will not be removed from DSTs for processing as previously analyzed); and, processing of wastes without removal of waste streams analyzed for the Pretreatment Plant.

The environmental, safety and health impacts of the entire system are required to be considered throughout the administrative processes by both USDOE and WA Ecology. Because the permitting of the DFLAW system is phased, with permits for different system elements being prepared and issued for comment on a staggered schedule, it is vital for the impacts of the entire system to be considered in a Supplemental EIS.

Federal regulations require preparation of a Supplemental EIS when, as here, there has been a major change in the federal agency’s proposal based on technical inability to utilize one technology (pretreatment) and substituting another set of technologies and facilities which have not been previously evaluated for potential impacts on human health, safety and the environment (Tank Side Removal taking place in facilities that lack basic containment features for releases or accidents, changes in transfer lines, changes in waste composition for LAW vitrification and byproduct waste treatment (EMF)). None of these examples were examined in the TCWMEIS or Hanford Tank Waste Remediation System (TWRS) EIS. 40 CFR 1502.9 requires:

(c) Agencies:

- (1) Shall prepare supplements to either draft or final environmental impact statements if:
  - (i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or
  - (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.
- (2) May also prepare supplements when the agency determines that the purposes of the Act will be furthered by doing so.
- (3) Shall adopt procedures for introducing a supplement into its formal administrative record, if such a record exists.
- (4) Shall prepare, circulate, and file a supplement to a statement in the same fashion (exclusive of scoping) as a draft and final statement unless alternative procedures are approved by the Council.

Pursuant to Council on Environmental Quality (CEQ) guidance for when supplemental EISes are required, this permit modification must be accompanied throughout the decision making process by a supplemental EIS since there has not been a NEPA review of these massive changes:

- i. “As a rule of thumb [...] EISs that are more than 5 years old should be carefully reexamined to determine if the criteria in Section 1502.9 compel preparation of an EIS supplement.
- ii. “If an agency has made a substantial change in a proposed action that is relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, a supplemental EIS must be prepared for an old EIS so that the agency has the best possible information to make any necessary substantive changes in its decisions regarding the proposal. Section 1502.9(c)”

The draft permit describes numerous wastes whose form, quantities and composition are likely to have changed significantly with the switch to DFLAW and removal of pretreatment. Disposition of these wastes, such as entrained resins or dangerous mixed liquid wastes, has potential significant impacts for hundreds and thousands of years. Yet, these changes have not been considered in a supplemental EIS.

In order to facilitate review by tribes, other governmental agencies and the public, each portion of the draft permit or permit modification is required to be accompanied by a “technical fact sheet,” pursuant to Ecology’s regulations (WAC 173-303-840). The YNERWM’s ability to review and comment on the draft permit was undermined by the lack of a Supplemental EIS; and, further undermined by the failure of the technical fact sheet to provide required information regarding waste types, quantities, processes for treatment or disposal, etc. The permittees provided their draft of the “technical fact sheet” as Attachment 2 in their transmission of the proposed permit modification on June 26, 2019. USDOE-ORP Submittal of Proposed Class 3 Permit Modification Operating Permits for LAW and EMF from ORP Manager Brian Vance to Ecology Manager Alex Smith. This was not easily found since the notification fact sheet did not provide a link or notice that this more readily reviewable document (compared to the entire 863 page submission) was available.

The technical fact sheet fails to disclose the changes in waste streams to be moved to and treated in both LAW and EMF due to the drastic change in expected process with removal of pretreatment. WAC 173-303-840 requires the fact sheet to include waste types and quantities. The technical fact sheet should, in fact, be a set of technical fact sheets describing each facility and chapter proposed to be modified. Wastes for each unit and facility are not described, processes are not described, waste products and disposition are not described.

Risk assessments should evaluate receptors based on Yakama Nation Members' use of nearby ceded lands. The LAW and EMF facilities, along with the other WTP facilities, are being constructed to the east of the existing 200 Areas. This area includes lands ceded by the Yakama Nation under the Treaty of 1855, and to which the Yakama Nation retains certain rights. For the areas adjacent to the facilities, the Yakama Nation would be deprived of its rights to utilize resources pursuant to the Treaty and possibly pursuant to provisions of the NHPA for at least sixty to eighty more years if these facilities operate under current USDOE projections for how long it may require to treat all of Hanford's tank wastes. All too often, USDOE bases its risk assessments for facilities on hypothetical human "receptors" who are not living on, or utilizing, the Hanford site.

USDOE's draft permit states that USDOE typically assesses risk based on a "plausible exposure scenario," which is "based on where potential receptors currently exist or may reasonably be expected to exist within the foreseeable future." Draft Permit Page 4.33. Unfortunately, USDOE has often failed to recognize that the reasonably foreseeable uses of land and resources includes members of the Yakama Nation living on lands and utilizing resources on the Hanford site as guaranteed by the Treaty of 1855 and pursuant to the provisions of the NHPA. The relevant requirement for a Washington State Dangerous Waste permit is to utilize the risk assessment elements of MTCA, which call for use of the reasonable maximum exposure scenario. This reasonable maximum is tribal use and a tribal exposure scenario.

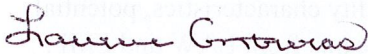
In the NEPA Supplemental Analysis for DFLAW (January, 2019), USDOE wrongly asserts that the nearest potentially exposed public for purposes of analyzing risk from Tank Side Cesium Removal (TSCR) is "more than 6.8 miles from the IX Column Storage Pad." SA at 3-10. This callously ignores the Treaty rights of the Yakama Nation to utilize ceded lands and resources on the Hanford site, including the Central Plateau outside the operational areas.

Therefore, the Yakama Nation ERWM must insist that the risk assessments for air emissions (from LAW and EMF, including evaporator use; and, from Tank Side Cesium Removal) and safety will be based on the potential for Members of the Yakama Nation to be in close proximity to the fence line of the facility over the operational period. Appropriate emission limits must be protective of the Yakamas utilizing the adjacent area as guaranteed under the Treaty of 1855, and protective of the wildlife, plants and other resources which the Yakama Nation retained rights to utilize. Discussion should include if use of evaporation with emission can be minimized and active treatment of liquid waste maximized. The Yakama Nation is available to consult with both Washington State and USDOE on how to incorporate our use of resources in proximity to the facilities in the risk assessments.

The YNERWM Program has extensive comments on topics ranging from sampling requirements to training and reporting of releases. One theme from these comments is that Ecology should be immediately notified of releases. We also urge that Ecology ensure that Defense Nuclear Facilities Safety Board (DNFSB) staff have full access to inspect and join investigations through permit conditions regarding inspections.

Attached are extensive detailed comments of the YNERWM Program, including further discussion and documentation of concerns raised in this summary (Attachment #1). The YNERWM Program welcomes discussion with each of your agencies in regard to resolving the concerns specific to the draft permit as well as our overarching concerns regarding lack of recognition that Members of the Yakama Nation are reasonably expected to be using ceded lands in much closer proximity to the facilities being permitted than the risk assessments assume. Please contact me at [lcontreras@ynerwm.com](mailto:lcontreras@ynerwm.com) to schedule meetings to discuss our comments and resolve our concerns.

Sincerely,



Laurene Contreras, Administrator

Yakama Nation ERWM

**Attachment #1: YNERWM Program Detailed Comments on the Draft Washington Dangerous Waste / RCRA Permit for Low Activity Waste (LAW) Treatment (Vitrification) Plant and Effluent Management Facility (EMF) Reference Draft for Permit: WA 7890008967**

**Part A: Process and Ability to Review the DFLAW System and Proposed Permit:**

1. SEPA / NEPA

- a. SEPA and NEPA require that the consideration of environmental and health impacts accompany the proposal throughout the agency decision making process. By failing to have the environmental records accompany the decisions on the draft permit, and making unit specific condition decisions without the benefit of either impact analyses or consideration of alternative permit conditions to mitigate impacts, the YNERWM Program's and public's rights to have the potential impacts considered and mitigated have been violated.
- b. USDOE made a major change in the entire programmatic approach to High Level Nuclear Waste treatment at Hanford, substituting Direct Feed LAW with Tank-Side Cesium and Strontium removal (TSCR) for the massive investment in pretreatment described in the TCWMEIS for the now derailed Pretreatment Plant. This massive change required a Supplemental EIS (SEIS), considering the changes in safety envelopes, waste streams, final waste form and leachability characteristics, potential air emissions and solid wastes from secondary waste streams from LAW and EMF, which are the focus of the current permit modification request.
  - i. As USDOE and Bechtel say in the draft permit: "The DFLAW configuration is independent of the Baseline configuration." This new configuration was not analyzed in any prior EIS. The dramatic changes in this configuration with potential significant impacts include: the use of facilities to treat waste that are not in containment, e.g., TSCR; changes in how long mixed High Level Nuclear Wastes will remain in leaking or potentially leaking Single Shell Tanks or potentially leaking Double Shell Tanks (including that sludge will not be removed from DSTs for processing as previously analyzed); and, processing of wastes without removal of waste streams analyzed for the Pretreatment Plant.
  - ii. While the TCWMEIS and draft permit describe secondary containment for processing Hanford tank wastes, including for the Pretreatment Facility and related storage or transfer tanks, the DFLAW configuration "bypasses" pretreatment and utilizes a "Tank Side Cesium Removal" process that does not have secondary liquid or air containment and other important safety measures. The potential risks and impacts from this new configuration have never been analyzed in an EIS. Nor are they described in any environmental analyses accompanying this proposed permit modification. Nor is the lack of a safety envelope for TSCR discussed in the supplemental analysis (January 2019). This permit modification is part of a system. The environmental, safety and health impacts of the entire system are required to be considered throughout the administrative processes by both USDOE and WA Ecology.

- c. Federal regulations require preparation of a Supplemental EIS when, as here, there has been a major change in the federal agency's proposal based on technical inability to utilize one technology (pretreatment) and substituting another set of technologies and facilities which have not been previously evaluated for potential impacts on human health, safety and the environment (Tank Side Cesium Removal taking place in facilities that lack basic containment features for releases or accidents, changes in transfer lines, changes in waste composition for LAW vitrification and byproduct waste treatment (EMF). None of these examples were examined in the TCWMEIS or TWRS EIS. 40 CFR 1502.9 requires:

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(4) Shall prepare, circulate, and file a supplement to a statement in the same fashion (exclusive of scoping) as a draft and final statement unless alternative procedures are approved by the Council.

Pursuant to CEQ guidance for when supplemental EISes are required, this permit modification must be accompanied throughout the decision making process by a supplemental EIS since there has not been a NEPA review of these massive changes:

- i. "As a rule of thumb [...] EISs that are more than 5 years old should be carefully reexamined to determine if the criteria in Section 1502.9 compel preparation of an EIS supplement.
- ii. "If an agency has made a substantial change in a proposed action that is relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, a supplemental EIS must be prepared for an old EIS so that the agency has the best possible information to make any necessary substantive changes in its decisions regarding the proposal. Section 1502.9(c)"

The draft permit describes numerous wastes whose form, quantities and composition are likely to have changed significantly with the switch to DFLAW and removal of pretreatment. Disposition of these wastes, such as entrained resins or dangerous mixed

liquid wastes, has potential significant impacts for hundreds and thousands of years. Yet, these changes have not been considered in a supplemental EIS.

- d. NEPA and SEPA require the environmental assessments, including assessments of risk with potential mitigation strategies and conditions, to accompany and be considered on the record PRIOR to permitting. USDOE seeks to replace this with an “environmental risk assessment” for critical risks arising from processes, waste characterization, analysis and acceptance criteria. However, the draft permit is not even accompanied by this impermissible substitution of a SEIS by an undefined risk assessment (a risk assessment would be expected to be incorporated by reference into, and summarized in, the Supplemental EIS). Section 3B.3, page 3B.8.
- e. The draft permit says that the acceptance criteria may be updated following periodic revisions to the waste feed data quality objective report. That report is appropriately subject to periodic update. What is inappropriate is not specifying when and under what circumstances it must be updated; and, not having the risk assessment available for review DURING permitting and public review:
  - 1. “The DQO Reports are designed to address the regulatory needs of the WTP and will be re-evaluated as a result of the environmental risk assessment, which is currently under development. The environmental risk assessment is scheduled for completion prior to the commencement of cold commissioning of the WTP. The RDQO Optimization Report and the DFLAW DQO Report’s processes are subject to periodic evaluation and may affect the list of analytes, selection of analytical methods, and associated QA/QC requirements.”

Page 3B.8.

- f. USDOE issued a “Supplemental Analysis” (SA) to the TCWMEIS in January 2019. ***This SA is not a Supplemental EIS.*** Rather, supplemental analyses are intended to provide an analysis of whether the changes in a proposal meet the requirements discussed above requiring development and release of a Supplemental EIS. In this case, it is a document used to justify not preparing a Supplemental EIS.
  - i. USDOE concludes that the DFLAW system was analyzed in the TCWMEIS on the basis of the TCWMEIS discussing that the start up of the WTP facilities would be “phased” with a short delay between startup of the High Activity Waste (HAW) facility after the LAW facility, in order to gain operational experience and to avoid attempting simultaneous startup of the world’s most complex nuclear and chemical processing plants.
  - ii. However, the TCWMEIS never analyzed a system without operation of the Pretreatment Plant, which is the basis for the DFLAW system.
  - iii. USDOE’s own Supplemental Analysis acknowledges that the EIS and 2013 Record of Decision includes “*pretreatment of all tank waste, with separation into LAW and HLW.*” Supplemental Analysis at 1-4, citing the Record of Decision, 2013 TC&WM EIS ROD (78 FR 75913).
  - iv. USDOE erroneously asserts that the operations and potential impacts of DFLAW were fully considered in the TCWMEIS within the scope of the



phased startup of LAW before HAW. However, the processes considered in the TCWMEIS and RoD included pretreatment as fully described in the TWCWMEIS in regard to operation of the Pretreatment Facility.

- v. The portable Tank Side Cesium Removal operation was never mentioned in the TCWMEIS. Nor was there any consideration of directly feeding LAW to the LAW facility for extended periods of time without the extensive, and fully contained, removal and pretreatment of wastes in the described Pretreatment Facility.
- vi. USDOE offhandedly acknowledges that the TCWMEIS did not even foresee, much less consider safety and environmental impacts from, many of the facilities that are now proposed to be permitted as part of the DFLAW system:

“DFLAW would, however, perform some of these functions in facilities that are different from those described in the EIS. To accomplish DFLAW, DOE would need to complete construction of the following facilities: the EMF, a cesium removal system (initially a TSCR unit followed by either an additional TSCR unit or construction and use of a permanent cesium removal capability-all under the LA WPS project), necessary transfer lines, and an IX Column Storage Pad. The facilities would all be located in the 200 East Area, which over the past several decades has been a heavily impacted and highly disturbed, industrial area. The functions of vaporation, filtration, and cesium IX that the WTP Pretreatment Facility would have performed on tank waste would instead be performed by the EMF and the cesium removal system.”

Supplemental Analysis at Section 2.1, page 2-1.

- vii. USDOE acknowledges that it is now proposing to utilize facilities which are radically different in size, risk, treatment processes, secondary waste production<sup>2</sup>; and, which it never forecast in the TCWMEIS.
- viii. This is akin to saying that an agency which analyzed a highway system using a tunnel to cross a river in a major city, and is now going to replace the tunnel with numerous bridges, does not have to do a Supplemental EIS because the bridges serve the same cars – even if the risks, locations, pollution impacts are all different. USDOE attempts to justify this explicitly by saying the “cumulative impacts” will be the same because the new facilities will not operate at the same time as the previously analyzed facilities:

*“DOE does not intend to operate the Pretreatment Facility at the same time as the EMF and the cesium removal system. Therefore, potential*

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<sup>2</sup> In the Supplemental Analysis, USDOE acknowledges that the total secondary wastes will increase from the amounts considered in the TCWMEIS, but fails to disclose what those amounts or types of wastes will be, or how they will be disposed: “the secondary waste generated as a result of DFLAW would represent an additional, but small, fraction of the waste streams presented in the TC&WM EIS (see Tables 4-86 and 4-155).” SA at 3-12.

*environmental and human health impacts associated with those facilities would not result in added cumulative impacts compared to the impacts presented in the TC&WM EIS for the WTP Pretreatment Facility.”*  
Supplemental Analysis at page 2-1.

- ix. The cumulative impacts from entirely new liquid waste streams, which will be treated in a new facility (EMF), cannot be said to be the same as under the prior system just because they will not operate simultaneously. USDOE acknowledges that the Pretreatment Facility analyzed in the TCWMEIS utilized extensive “ultrafiltration” processes to pretreat waste, in addition to use of cesium ion exchange to remove cesium. However, in the DFLAW / TSCR proposal, ultrafiltration is entirely dropped. There is no discussion in the Supplemental Analysis of the potential impacts from the removal of ultrafiltration, including how this changes the waste streams to LAW, may change final waste form composition, may change transfer flow characteristics... All of these potential impacts should be considered in a Supplemental EIS for tribal and public comment, as well as for decision makers to consider before permitting.
- x. Risks were never considered in the TCWMEIS from use of Tank Side Cesium Removal without the defense in-depth containment in a massive Pretreatment Plant for emissions or releases and additional potential radiological exposures. The nature and volume of highly radioactive resin wastes with new chemical wastes will change from the Pretreatment facility to use of ion exchange columns in a portable facility with potential increased wastes for disposal in the IDF landfill or requiring vitrification.
- xi. USDOE inherently acknowledges that the portable TSCR without permanent constructed containment, ventilation, etc. has additional, unanalyzed risks compared to a permanent concrete and steel TSCR facility. See SA Section 2.3.2. USDOE has failed to consider the potential significant impacts and alternatives, including holding off cesium removal until a permanent facility is constructed, in any NEPA or SEPA analyses, as required by both statutes. Ecology cannot issue permits for the related facilities that rely on a system with potential significant impacts and alternatives which have never been considered.
- xii. For the Supplemental Analysis, USDOE failed to consider the potential for “facility accidents” to include seismic, fire, pressurization, accidental or other events causing a release from the unshielded, uncontained Tank Side Cesium Removal unit and equipment. This failure is inexcusable. Instead, in section 3.3.2, USDOE considered the straw man potential for a fire or dropping of a dry cesium exchange capsule on the storage pad, and concluded that this risk was too low with a low probability of release to justify further analyses. The analysis considered only radiological dose, not chemical release. The risk from release during operation, however, is much greater than from the storage of the columns – ranging from vapor exposures to natural or human caused major accidental releases.
- xiii. USDOE seeks to justify rushing forward with a Tank Side Cesium Removal to meet the TPA milestone for operating LAW facility by December 31,

2023. See SA inset box at page 2-7. A TPA milestone cannot legally justify proceeding with construction and operation of a dangerous facility, creating new unanalyzed waste streams, in violation of NEPA and SEPA. Further, USDOE has been urged to comply with NEPA and SEPA by preparing a Supplemental EIS for the TSCR and permanent cesium removal facilities and DFLAW configuration by many parties for several years. Any failure is due to USDOE's intransigence.

- xiv. USDOE does acknowledge that the outdoor storage of the highly radioactive cesium ion exchange (IX) columns with new chemical wastes, resulting from the substitution of TSCR and DFLAW for the analyzed pretreatment facility, was never considered in the EIS:

*“the TC&WM EIS did not explicitly analyze interim storage of spent IX columns loaded with IX media and cesium, nor did it specifically address the construction and operation of an IX Column Storage Pad.”*

Supplemental Analysis at Table 2-1, page 2-3.

- xv. However, USDOE did not even prepare a Supplemental EIS for the indefinite storage of the ion exchange columns. Instead in SA Section 3.3, USDOE justifies failure to prepare a Supplemental EIS for the storage of the Cesium Ion Exchange columns by pointing out that USDOE did complete a full NEPA analysis in the TCWMEIS for storage of dry casks with Cesium and Strontium capsules from B-Plant. Ironically, if this demonstrates anything relevant, it is that NEPA and SEPA required a Supplemental EIS for the DFLAW Cesium Ion Exchange column storage.
- xvi. USDOE acknowledges that the non-elutable Cesium ion exchange columns are NOT designed to have the Cesium easily removed. This infers that the claims that the Cesium will be removed and disposed via vitrification in the HLW facility, as considered in the TCWMEIS, may not be technically or economically feasible – resulting in on-site disposal of wastes with very significant impacts (and whose disposal in near surface landfills is likely illegal).
- xvii. The TSCR ion exchange also has significant new wastes, whose storage and disposal has not been considered, compared to the Pretreatment Facility housed cesium removal ion exchange analyzed in the TCWMEIS. The Pretreatment Plant was analyzed on the basis of using “elutable” ion exchange column technology. Elutable ion exchange means that the cesium is not permanently bound to the ion exchange medium and would be regularly “washed” out or removed from the ion exchange. This would greatly reduce the volume of highly dangerous ion exchange wastes to be disposed in the IDF landfill. However, USDOE now intends to use “non-elutable” cesium ion exchange resins columns. See SA at 2-3. This will greatly increase the wastes for disposal. The impacts of the increased waste generation and disposal, or increased difficulties in vitrifying the ion exchange columns with Cesium, have never been considered. Additional wastes from “dewatering” the cesium ion exchange columns would be

generated and added back into the AP High Level Waste tanks. SA page 2-6 and 2-7.

- xviii. It is reasonable to forecast that at least 780 of these extremely radioactive ion exchange columns would be sitting in some unanalyzed “temporary” outdoor site prior to any startup of the WTP’s High Activity Waste (HAW) facility. See SA page 2-7 (120 columns produced with up to 150,000 Ci of Cs per column every five years per unit. USDOE proposes two units. HAW cannot start operations, according to USDOE, prior to 2035 without a massive, unanticipated influx of construction funds).
  - xix. The generation of these numerous additional wastes is NOT consistent with Washington’s Waste Management Priorities pursuant to RCW Chapter 70.105 and WAC Chapter 173-303.
  - xx. Ecology has a duty under Chapter 70.105 and SEPA to analyze the impacts from the additional generation of wastes and to use its authorities under Chapter 70.105 and SEPA to mitigate impacts by requiring use of technologies that generate less dangerous wastes.
  - xxi. No decision maker can be said to have considered the risks and mitigation for those risks as part of the record for this draft permit.
  - xxii. As discussed in our comments, even the corrosion prevention system for the High Level Waste transfer piping is changed in the DFLAW “configuration” from the system analyzed in the TCWMEIS.
  - xxiii. The Supplemental Analysis was not referred to or linked to in any notices for this draft permit, which violated notification requirements and precludes reliance on the SA.
  - xxiv. The SA did not undergo the same notice and comment which would be required for a Supplemental EIS. Therefore, the Yakama Nation and public were not aware of, and did not have opportunity to object to the conclusion of the SA that a Supplemental EI is not necessary.
- g. The potential for significant changes to liquid waste streams in comparison to those considered in the TCWMEIS is high. This draft permit modification includes the Effluent Management Facility. There is no record of consideration of those changes to waste effluents, evaporation emissions, liquid waste discharges and treatment processes. The SA has a one sentence acknowledgement that total secondary waste streams will be greater than analyzed in the TCWMEIS, without discussion of quantities or types / characteristics of the additional waste. Nor, as discussed above, is there any record to review and comment on in regard to the safety of the changed configuration to Tank Side Cesium Removal (TSCR) which will not have secondary containment, may have new emissions and will certainly require storage of a new highly radioactive, high Cesium waste form in an outside location. The Yakama Nation and public are entitled to review the consideration of whether those changes are potentially significant and if they require mitigation.

2. The required “technical fact sheet” for RCRA / HWMA permits pursuant to WAC 173-303-840(2)(e) and (f) is found at page 780 of the submittal and permit modification as Attachment 2. This requirement is not met by the typical brief “fact sheet” that provides basic notice to the public. This is supposed to be a detailed document disclosing: type and quantities of wastes, a summary of the basis for conditions with supporting references (iii)(C); variances from standards and why they are justified; procedures for requesting a hearing.
  - a. The permittees provided their draft of the “technical fact sheet” as Attachment 2 in their transmission of the proposed permit modification on June 26, 2019. USDOE-ORP Submittal of Proposed Class 3 Permit Modification Operating Permits for LAW and EMF from ORP Manager Brian Vance to Ecology Manager Alex Smith. This was not easily found since the notification fact sheet did not provide a link or notice that this more readily reviewable document (compared to the entire 863 page submission) was available.
  - b. The technical fact sheet fails to disclose the changes in waste streams to be moved to and treated in both LAW and EMF due to the drastic change in expected process with removal of pretreatment. WAC 173-303-840 requires the fact sheet to include waste types and quantities.
  - c. The technical fact sheet lists submissions and which regulation they are required by, but fails to provide any description of the submissions, modifications and major new provisions.
  - d. The technical fact sheet should, in fact, be a set of technical fact sheets describing each facility and chapter proposed to be modified. Wastes for each unit and facility are not described, processes are not described, waste products and disposition are not described.
  
3. While most attention on the vitrified waste produced from mixing of High Level Wastes with glass in the Low Activity Waste Treatment / Vitrification Plant (LAW Facility), the “secondary” waste streams pose serious environmental impacts and safety risks.
  - a. Vitrified LAW waste will be in the form of glass blocks, which are planned to be disposed in Hanford’s Integrated Disposal Facility (IDF) landfill. Permitting of this landfill, which has already been developed, was contentious because of the potential for IDF to be used for unanticipated large quantities of waste, in unanticipated forms and without knowing the waste characteristics. Waste will leach from IDF and contaminate groundwater. Ecology agreed to have permit conditions for IDF requiring updated performance assessments and limits on waste acceptance if the performance assessments predict that any waste constituent will exceed 75% of maximum contaminant limits (MCL) in groundwater at any time in the future.
  - b. Secondary mixed radioactive and hazardous wastes which will be disposed in IDF include massive contaminated LAW Vitrification melters and large “ancillary equipment,” contaminated pumps, offgas emission HEPA filters and other emission control systems, resins and catalysts.
  - c. With the switch in processes to DFLAW, there are major changes in waste streams for disposal in IDF which have not been analyzed in any environmental assessment. There has not been an updated EIS for the DFLAW system, or a new performance assessment for IDF considering if the changes in anticipated wastes may impact performance.

- d. Some secondary liquid waste streams will be returned to Double Shell Tanks (DSTs) for later processing in the hoped for Pretreatment Plant and HLW Vitrification Plant. Some will be transferred to EMF and for disposal in IDF.
  - e. Large quantities of secondary liquid waste streams will be generated and sent to the Effluent Management Facility (EMF) for transfer to LERF/ETF (Effluent Treatment Facility) for treatment and discharge to soil or evaporation. This draft permit includes EMF within its scope as well as the LAW Facility, but not the ETF. This limits the ability to review and comment to pieces of a system instead of allowing review and comment on the entire system.
  - f. This draft permit does not update sampling and analysis requirements for those secondary waste streams in the LAW facility and units associated with this draft permit. Instead, the draft permit relies on updating the waste acceptance criteria for each of the other permitted recipient units to set appropriate sampling. See Draft Permit at 3.C.8. This leaves a large hole in analysis and in the Yakama Nation's or public's ability to comment. There is no assurance that each receiving unit's permit will be modified before start up of LAW Vitrification operations in 2022 or 2023.
4. Connections between systems and facilities are where accidents are most likely to occur.
- a. WAC 173-303-830(3) provides that "When a permit is modified, only the conditions subject to modification are reopened." This presents a challenge when there are closely interconnected permit conditions.
    - i. Under SEPA, closely related, interconnected actions, such as safety issues arising from delivery of waste to the unit whose permit is being modified, should also have potential modifications considered. This is what is known as substantial SEPA authority. SEPA, and NEPA, require consideration of all impacts, not just those from the portion of the permit being modified. For DFLAW, this means closely interrelated provisions subject to other portions of the permit should be reviewable.
  - b. Transfer lines TSCR and AP to LAW, EMF
    - i. In the DFLAW configuration, High Level Waste transfer lines from tank farms direct to LAW from LAW to EMF and EMF to LERF/ETF are varied from the previously planned piping. This new configuration has not been considered in a Supplemental EIS.
    - ii. Instead of cathodic protected buried lines, in some cases the double transfer line will be HDPE encased. The new HDPE encased transfer lines will have to intersect and join the existing transfer lines to LERF/ETF.
    - iii. Cathodic protection is the preferred methodology to prevent corrosion.
    - iv. The changes increase risk both from the transfer points between systems and long-term corrosion or freezing and movement.
  - c. EMF: the permit should bar disposal of solidified liquid effluent stream in the IDF landfill if the quantities and characteristics of the waste streams are not considered or if releases will exceed 75% of MCL to groundwater when modeled. Where's the modeling?
  - d. IDF must have new performance assessment per permit conditions to review if TSCR increases mobile contaminants. Permit bars disposal of waste above amount which is modeled to reach 75% of MCL in groundwater.

- e. The Permit should specify specific waste limitations for waste transferred to LAW for treatment that are based on the concentration limits and maximum quantities disposable in IDF pursuant to the IDF permit. Due to removal of pretreatment from the processes, both a new SEPA / NEPA analysis and permit performance assessment must be conducted to set those operating limits.
  - f. A treatment variance for LDR testing of ILAW containers, which will be disposed in IDF is being proposed. This is not supported by reasonable assurance that the changes in waste composition for LAW, without pretreatment, will not be significant and impact the long term performance of IDF to prevent groundwater contamination.
5. Why are LAW and EMF being treated as class 3 Mods, not brand new facilities?

**Part B. Substantive Permit Comments and Questions:**

1. Violations of emission rate limits during the emissions test do not have to be reported to Ecology immediately upon discovery. Instead permit condition I.E.21 and Part III Specific Conditions, Sections III.10.K.1.h.iii and III.10.I.18.c and d, and several other provisions allow USDOE 24 hours to notify Ecology of violations of air operating emission limitations during the emission testing phases. As with releases of hazardous substances generally, releases in excess of allowable limits should trigger immediate reporting, ESPECIALLY during the emission testing and Other Emission Testing. III.10.I.18.c E.1 at page 30, and III.10.I.18.d E.1, at page 33. Please revise Permit Condition I.E.21. While the conditions require USDOE / Bechtel to immediately stop the feed to LAW Vitrification system whose operation led to the violation of emission limits, the notification to Ecology should be immediate. The draft permit provisions inappropriately assume that USDOE and Bechtel will know why, or from which aspect of operations, the excess emissions are caused or from. This is not likely. Further, there is likely to be technical and professional judgments involved in making that determination. This, Ecology should be notified immediately so determinations to keep processing are not made inappropriately due to contractual or management pressures.
2. Sampling and Waste Acceptance:

*“While operating in the Direct Feed LAW configuration, WTP will not accept and/or treat mixed waste that carries the D001 (ignitable) waste code and/or the D003 (reactive) waste code.”*  
 Permit Part A, XI.

- a. The commitment to prevent ignitable or reactive wastes depends on full characterization of wastes in tanks. This illustrates the need for all relevant portions of the permit to be available for review at one time along with the potential significant environmental, safety and health impacts with alternatives for entire revised DFLAW system (with Tank Side Cesium Removal [TSCR]) in a supplemental environmental impact statement (EIS), because the ability to characterize, separate and safely store ignitable and reactive wastes is outside the scope of this permit. Yet, with neither a NEPA supplemental EIS or the relevant permit provisions available for review, we are unable to review and comment on this fundamental safety and compliance issue; e.g., since full characterization of tanks

halted years ago, how will the ignitable and reactive wastes be identified, separated and stored? Will new tanks serving multiple purposes be the best alternative for this? Would it be better to have the analytical lab capacity available to test wastes upstream as they are removed from tanks? What percent of waste composition with dangerous ignitable and reactive wastes is permissible (and how does this affect safety, worker health, and long term waste performance)?

- b. Why is this commitment limited to ignitables and reactive wastes, and not include volatile organics or self catalyzing wastes (which may have explosive potential without falling under the ignitable category)? Where is the list of chemicals known to be in tanks which will guide separation and removal to meet this permit requirement?
- c. Are wastes with potential volatile toxic or other health risks going to be identified and removed from the tanks before entering the DFLAW system? How will this be achieved to reduce worker exposure?
- d. Chapter 3C, Waste Analysis Plan “describes waste analysis during WTP operations.” It does not adequately describe and require waste analyses, separation and diversion from wastes in tank farms to meet the requirement that ignitable and reactive wastes will not be within the DFLAW system, nor describe and bar wastes with worker health and safety risks and wastes which may generate other chemical reactions from entering the system.
- e. 16,300 Ton (T) of D-1 Ignitable waste per year are listed in the Part A for Pretreatment facility despite the contradictory statement that no ignitables will be transferred to or stored at the Pretreatment Facility. Part A.
- f. The limitation on waste in Part A has the notation that ignitable (D-0001) and reactive (D-0003) wastes will only be present and are listed solely for the pretreatment facility, and will be removed in PTF. However, DFLAW operation will not include PTF. Therefore, it is necessary to list and describe removal and storage of ignitable and reactive wastes:

*“\*Waste codes for ignitability (D001) and reactivity (D003) apply only to the waste while it is in the pretreatment facility, LAW feed receipt FRP vessels and the HLW feed receipt vessel. Downstream of these vessels, the D001 and D003 waste codes are administratively removed from the project’s waste streams.”*

Footnotes Section XIV, Line 1, Part A.
- g. A description of these wastes by specific chemical properties and safety requirements should be provided, so that appropriate requirements specific to the wastes are incorporated. This requires characterization / identification of wastes upstream, which is not described.
- h. Entering one quantity for D-0001 of 16,300 T (tons) and having absolutely no permit limitation on wastes within this quantity is not acceptable practice and does not provide Ecology with appropriate oversight. All other wastes are listed as being



included in the 16,300 T, with no further breakout of quantities for each code. This does not meet the waste description requirements.

- i. Chapter 3A, page 3.A.7, Total Organic Carbon misidentifies the regulation regarding total organic carbon limitation for air emission regulation as “subpart BB of WAC 173-303-691.” WAC 173-303-691 incorporates EPA regulations, including 40 C.F.R. 264.1051 and 40 CFR Part BB. Both should be properly referenced. To avoid regulation under the air emission rule, total organic carbon must be properly analyzed prior to transfer into the DFLAW system – e.g., prior to removal from tanks. Volatile organics will reduce following stirring to remove waste and transfers. The regulations are intended to regulate the emission. Therefore, sampling must occur prior to movement. Sampling must be by phase and vary by tank for organics. Having a requirement of only one sample per tank (Section 3A.5.8) fails to provide the required level of assurance that air emission regulations from leakage do not apply.
  - i. The 10% Total Organic Carbon (TOC) parameter has been proposed merely to adhere to a regulatory trigger. TOC should be established based on further analyses of potential organic compounds present in different tanks, piping, transfer locations and for acceptance in waste forms, particularly secondary wastes. Table 3B-2.
- j. The permit fails to specify how sampling for organics, PCBs, volatile organics, metals or ignitables will be representative of all wastes transferred, including failing to specify a minimum number of samples for a given volume of waste from each portion or layer of a tank prior to transfer to the DFLAW system. Instead, the permit specifies only sample size with a variance due to the need for shielding of tank waste samples due to radioactivity. See Pages 3.A.7–10 (while this chapter is for the baseline configuration, the plan is similar for DFLAW without pretreatment).
- k. Section 3A.5.8 at 3.A.19 requires only ONE sample per tank. This one sample is “anticipated” to be just 300 mL of “slurry” containing 30 g of solid and 170 mL of supernatant liquid. Table 3B-3, page 3B.26, footnote a. For HLW being transferred in the DFLAW configuration to the LAW Facility, the permit specifies the lower figure of just 170 mL of waste as the anticipated sample size. Page 3C.6. This fails to ensure that all phases and layers of tank wastes to be transferred will be sampled. Tank wastes are not uniform. Sampling requirements should vary by phase and layer, e.g., increased sampling for metals from sludges; and, increased sampling for ammonia and semivolatile organics for supernates.
- l. A single HLW tank grab sample of 300 mL or 170 mL cannot be viewed as representative of the wastes in a 500,000 to 1.2-million gallon tank with numerous phases and states of waste. The permit should establish minimum waste sampling from each distinct portion of a tank’s wastes, with greater specificity in a tank sampling requirement document adopted for each tank.
  - i. Section 3B.5.2.3 addresses representativeness as well. This section also fails to require appropriate representative sampling prior to initial treatment

campaigns or to incorporate minimum sampling requirements for various types or phases of wastes in given feed tanks as well as for tanks within the LAW facility:

*“The number of samples collected for the characterization of waste feed and secondary waste streams will be evaluated during the development of standard operating procedures to ensure that sampling is representative of the total waste being sampled. Sample requirements will be periodically re-evaluated as characterization data from previous treatment campaigns and additional process knowledge becomes available.”*

- ii. This fails to provide any meaningful, enforceable requirement for sampling of secondary waste streams to meet limitations which should be in the permit in order to properly permit treatment and disposal of those secondary waste streams.
  
- m. DFLAW processing of waste batches would be allowed based on submission of a waste profile for each batch of waste to the WTP operator (contractor). Draft Permit Section 3C.5. The draft has no requirement for the waste profile to be based on truly representative sampling. The draft permit has no requirement for sharing the profile with Ecology with a review period. The draft permit has no requirements in place that will ensure that constituents from the sludge in tanks are not present. Sludge is not defined and there may not be a rigid line between waste forms and phases.
  
- n. The provision of the draft permit allowing for the waste acceptance criteria for processing HLW in the LAW facility to be waived by contractor personnel is not acceptable. Draft Permit at Section 3C.5, page 3.C.5 (*“Alternately, a change to the waste acceptance criteria may be made on a case-by-case basis (as long as there are no design or safety basis impacts and permit compliance is maintained).”*). See also Section 3A.5.6.
  
- o. Meeting waste acceptance criteria is a permit condition which is supposed to be based on analyses to prevent serious environmental, health and safety impacts (including cumulative impacts from repeatedly waiving criteria). Waiving of criteria, therefore, must be done only with notice to, and approval by, Ecology (and air regulators when there are potential air impacts). The permit should establish that analyses and updates to waste performance or potential emission calculations may be required for waiver, and that cumulative impacts from all waivers may not exceed any estimate of impacts considered in prior analyses.
  
- p. For ignitables, the permit asserts that only Tank C-103 contains a separate organic solvent phase and that there is no history of fires in tank wastes. This ignores the documented history of ignitable and explosive waste precursors being disposed in tanks from facilities such as PUREX, with lower temperature limits for ignitability. These chemical precursor wastes, e.g. tributyl phosphate, which were disposed in tanks, were ignitable above 60 degrees Centigrade, the regulatory threshold.

3. The final waste form, radioactive vitrified glass for disposal in the IDF (Integrated Disposal Facility), is not readily subject to testing and analysis to ensure the waste does not exceed constituent limits. Therefore, it is vital that sampling, analysis and waste processing conditions are set with rigor and rigorously applied.
  - i. Section 4E.1.2 apparently eliminated any reference to sampling glass during formulation. Yakama Nation ERWM asks USDOE and Washington Ecology to respond to whether this is essential for purposes of ensuring that final waste meets acceptance criteria and performance assessment assumptions for glass to be disposed in IDF, and why this language was struck out from the current draft.
4. The permit, as we discuss *infra*, fails to establish firm sampling, analysis, training qualification and processing conditions. Of particular concern is the lack of requirements for specific employee qualification and immediate reporting to Ecology of any conditions which are outside normal, expected and permitted analytical ranges or operating conditions.
  - a. Draft Permit Chapter 3C (DFLAW Waste Analysis) would allow secondary wastes to be disposed in IDF based on either process knowledge or sampling. It is not appropriate to substitute process knowledge for rigorous sampling at each stage of treatment and removal. Page 3.C.3. IDF performance objectives are based on assumptions that waste forms will meet acceptance criteria and that the waste forms will perform as modeled. These assumptions rely on rigorous sampling and analysis to test assumptions and confirm that waste acceptance criteria and models are conformed with.
  - b. Failure to immediately report exceeding waste acceptance criteria or operations exceeding administrative parameters may very well lead to waste with unacceptable levels of constituents outside the modeling for IDF disposal, secondary waste composition or emission limitations. As noted in another section of our comments, the draft permit fails to require immediate reporting to Ecology of such operational variances, even during the operational testing phase for LAW and EM Facilities. Immediate reporting should be a fundamental element of quality control for dangerous processes for which final waste form may not be restored to meet parameters (or when emissions may result in exceeding conditions). USDOE should have proposed immediate reporting. Since USDOE and Bechtel failed to propose appropriate immediate reporting, it is vital that Ecology include immediate reporting of such exceedances and that personnel regularly demonstrate that they will report to Ecology as a training qualification condition.
  - c. Reports to Management on conditions which MAY have an adverse effect on quality, emissions, should be shared with Ecology, and Ecology should have advance notice of reviews to determine if Ecology personnel or a qualified contractor will participate in reviews as a permit condition. See Section 3B.7.3. The permit should specify as a condition that any employee who observes a nonconforming condition or parameter has a duty to report to management, the QA Manager, and to Ecology; and, that the facility management shall post this duty along with how to report and assurances that reporting may be done anonymously.

- d. These conditions for reporting, and ensuring protection of those reporting, have been found necessary by repeated documented instances of Hanford workers feeling that they could not report upset conditions or alarms to management without retaliation.
5. Training: The dangerous waste training plan must be an enforceable permit condition, not just a guide in the operating record.

Training qualifications should be specified in the permit. It is appropriate that some draft changes have added a qualification requirement, rather than solely stating that personnel are expected only “to read and understand” sampling procedures. See 3B.6.1.3. However, how qualifications will be established, and personnel demonstrate that they are qualified should be specified in an additional training requirement documents – incorporated by reference into the permit. This is important to specify for operating processes, particularly for recognizing and reporting out of specification waste conditions.

6. Inspections:
  - a. The addition of weekly inspections of dangerous waste container storage is appropriate. Section 6A.2.1.4.
  - b. YNERWM supports requirements for integrity assessments occurring every 7 years for equipment and lines with high potential for corrosion or erosion. See Section 6A.2.1.9. These lines may be used for decades.
  - c. Sumps and low point secondary liquid containment equipment should be subjected to actual alarm testing every two years, not just visual or historic record inspection. Additionally, USDOE should be required to perform actual testing of alarm response to releases with Ecology on a biennial basis to ensure training is effective and that alarms are operable.
  - d. Section 6A.2.4 should require testing and integrity assessment of the transfer pipes for which cathodic protection against corrosion has been replaced in the DFLAW system with HDPE insulation. This integrity assessment should be on the same schedule as for assessments of equipment and tanks.
  - e. Ecology can greatly enhance its own inspection and oversight capabilities if it can ensure access to the facilities by the Defense Nuclear Facilities Safety Board (DNFSB) during Ecology inspections and on DNFSB staff’s own determinations. USDOE has sought to significantly weaken DNFSB access and oversight. DNFSB has expertise that Ecology cannot, and should not have to, replicate.

The inspection provisions of Chapter 6 of the permit should include enforceable permit conditions guaranteeing DNFSB access to the facility and retaliation free access to staff. The permit should also require USDOE to respond in a timely manner to all DNFSB safety reports issued to DNFSB.

Indeed, given the history of the WTP facilities to date, the permit should have an enforceable condition that retaliation against any employee reporting safety or environmental concerns to Ecology or DNFSB is a violation of the permit.

Ecology should also include permit provisions ensuring that upon Ecology request, the National Institute for Occupational Safety and Health (NIOSH) will be able to join inspections and in reviews of exposures or illness.

7. The draft permit includes the Pretreatment Facility (PTF) in numerous process and total dangerous waste unit capacity descriptions. Yet, PTF is not proposed to be operational for a decade or more, and will require extensive safety, engineering and permitting changes to be operational. Thus, including PTF dangerous waste units or tanks in the permit, including Part A, is inappropriate. This permit should be limited to the DFLAW process and LAW and EMF facilities, along with associated waste transfer and feed facilities.
8. Storage capacities are proposed to be limited in the Part A Sections XI-XIII solely by total volume of the tanks and storage areas, with no description or limitation based on waste characteristics; e.g., 1.361 million gallons of waste stored in containers. This should be broken out by facility, and by types of waste. The regulations require a description of wastes and quantities, not just a total summation of storage capacity as constructed.
9. Characterization should list metals which are dangerous waste under WA law, not just “RCRA metals.” For example, Beryllium is a dangerous waste. It must be identified and disposed in accord with WA DW regulations.
10. Air emissions, section 3C.6: USDOE inappropriately seeks exemption from dangerous waste air emission regulation of tanks and containers citing:

*These tanks and containers are excluded under WAC 173-303-692(1)(b)(vi) because they qualify as waste management units “...used solely for the management of radioactive dangerous waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act.”*

Draft Section 3C.6 at pages 3.C.16, 17.

- a. First, USDOE does not regulate radioactive dangerous wastes under authority of the AEA and NWPA, and has no “regulations” to manage the waste in accordance with.
- b. Second, USDOE’s assertion blatantly disregards the provisions of the Federal Facilities Compliance Act (FFCA), which amended RCRA to explicitly require USDOE to submit mixed waste treatment plans to state hazardous waste regulators for approval, which is Ecology for Washington State.
- c. Thirdly, the YNERWM Program must highlight that USDOE has unilaterally asserted that it has authority to redefine High Level Wastes in a manner which would exclude Hanford tank wastes from NWPA authority and requirements, e.g., disposal of High Level Wastes in deep geologic repositories. USDOE has also sought approval from Washington State, and based the entire system for disposal on-site of LAW vitrified mixed wastes upon agreement that the wastes may be disposed as

“wastes incidental to reprocessing” after treatment and removal of key radionuclides. USDOE can not be allowed to now assert that it does not need to meet Washington’s dangerous waste air emission standards for a facility which will process mixed radioactive dangerous wastes.

- d. The YNERWM Program urges Washington State to fully regulate air emissions from tanks and containers pursuant to WAC Chapter 173-303, and adopt appropriate permit conditions in the next version of this permit.
11. Outdoor tanks lack adequate secondary containment and sampling of storm water, Section 4.2.1: There are eight outdoor tanks at EMF in partially coated cement “vault-like structures”, a caustic collection tank in a cement berm at the LAW Facility and two outdoor process condensate tanks outside the Pretreatment Facility in a “vault-like structure.” These have only been designed to hold the contents of the largest vessel plus precipitation from a 25 year precipitation event.
- a. This configuration fails to consider why an outdoor tank may fail. Under many potential failure scenarios, more than one tank may fail at a given time, e.g., from a seismic / earthquake event, fire, major precipitation event, accidental over pressurization.... Regulations require secondary containment adequate for all contents. This is particularly important for an outdoor tank storage area where the release will be straight to the environment. For internal storage areas, permit conditions describe gradient and other elements for collection of wastes exceeding the volume of the largest single tank or vessel. Those conditions are not applicable to the outdoor tanks.
  - b. Testing of storm water collected in these outdoor berms or vaults before discharge is a necessary condition which is missing from the draft permit. We have had instances of USDOE and contractors asserting that releases from storage containers were merely storm water, when, in fact, subsequent analyses showed the releases to be contaminated with dangerous and radioactive wastes (e.g., wastes stored outdoors at CWC). Therefore, the permit should mandate that testing should occur on a regular basis or on a continual flow for release of “storm water” from the tank berms and vaults.
  - c. Low Point Drain Vessel for EMF: how will leakage be detected? This is not described in Section 4G.2.1. A steel liner is described in the section. Steel liners may not prevent all releases. The vessel location is not intended for personnel entry.
12. Risk Assessments should evaluate receptors based on Yakama Nation Members Nearby Use of Ceded Lands: Air emission risk assessments will be performed to set operating emission criteria or limits. This risk assessment to meet WAC 173-303-680(2)(c) is described in Section 4.3.9 of the Draft Permit.

- a. The LAW and EMF facilities, along with the other WTP facilities, are being constructed to the east of the existing 200 Areas. This area includes lands ceded by the Yakama Nation under the Treaty of 1855, and to which the Yakama Nation retains certain rights. For the areas adjacent to the facilities, the Yakama Nation would be deprived of its rights to utilize resources pursuant to the Treaty and possibly pursuant to provisions of the NHPA for at least sixty to eighty more years if these facilities operate under current USDOE projections for how long it may require to treat all of Hanford's tank wastes. All too often, USDOE bases its risk assessments for facilities on hypothetical human "receptors" who are not living on, or utilizing, the Hanford site.
- b. USDOE's draft permit states that USDOE typically assesses risk based on a "*plausible exposure scenario*," which is "*based on where potential receptors currently exist or may reasonably be expected to exist within the foreseeable future.*" Draft Permit Page 4.33.
- c. Unfortunately, USDOE has often failed to recognize that the reasonably foreseeable uses of land and resources includes members of the Yakama Nation living on lands and utilizing resources on the Hanford site as guaranteed by the Treaty of 1855 and pursuant to the provisions of the NHPA. The relevant requirement for a Washington State Dangerous Waste permit is to utilize the risk assessment elements of MTCA, which call for use of the reasonable maximum exposure scenario. This reasonable maximum is tribal use and a tribal exposure scenario.
- d. The quantities of liquid waste proposed to be evaporated at EMF are not disclosed, nor has there been any disclosure of whether the DFLAW with EMF operation will increase air emissions or change where / how emissions occur. See Chapter 4G. Impacts from these emissions are not discussed in any Supplemental EIS or other NEPA or SEPA evaluation accompanying the draft permit.
- e. In the NEPA Supplemental Analysis for DFLAW (January 2019), USDOE falsely asserts that the nearest potentially exposed public for purposes of analyzing risk from Tank Side Cesium Removal (TSCR) is "more than 6.8 miles from the IX Column Storage Pad." SA at 3-10. This callously ignores the Treaty rights of the Yakama Nation to utilize ceded lands and resources on the Hanford site, including the Central Plateau outside the operational areas.
- f. Therefore, the Yakama Nation ERWM must insist that the risk assessments for air emissions (from LAW and EMF, including evaporator use; and, from Tank Side Cesium Removal) and safety will be based on the potential for Members of the Yakama Nation to be in close proximity to the fence line of the facility over the operational period. Appropriate emission limits must be protective of the Yakamas utilizing the adjacent area as guaranteed under the Treaty of 1855, and protective of the wildlife, plants and other resources which the Yakama Nation retained rights to

utilize. Discussion should include if use of evaporation with emission can be minimized and active treatment of liquid waste maximized. The Yakama Nation ERWM is available to consult with both Washington State and USDOE on how to incorporate our use of resources in proximity to the facilities in the risk assessments.

### **Part C: Specific Comments:**

1. Page Chapter 3.i, Line 2: Edit “CHAPTER 3.0” to “CHAPTER 3” to be consistent with the *Fact Sheet* and the *Hanford Facility RCRA Permit Modification Notification Form*.
2. Page Chapter 3.5, Lines 13–14, “EMF will reduce the effluent volume from the LAW Facility by evaporation”: How about the effluent volume from the Lab?
3. Page Chapter 3.5, Line 24: Edit “Treated LAW and HLW” to “Pretreated LAW and HLW”.
4. Chapter 3A, all the page numbers: Edit from “Chapter 3.A” to “Chapter 3A”, because they are now in Chapter 3A, not Chapter 3, Appendix A anymore.
5. Page Chapter 3.A.ii: Please add prefix “3A-” to Tables 1–6; and edit the related table numbers and citations in the text.
6. Page Chapter 3.A.22, Line 5: Edit “WAC 173-303-380(a, b, and c)” to “WAC 173-303-380”.
7. Pages Chapter 3B.iii–iv: (i) Some Sections are marked “Deleted”. Please update the TABLE OF CONTENTS and the citations to the Sections accordingly; (ii) Four of the tables in the chapter are marked as “Deleted”. Please update the table numbers and titles accordingly; (iii) the figure is marked as “Deleted” too on Page Chapter 3B.30.
8. Page Chapter 3B.v: The abbreviation “RDQO” for “Regulatory Data Quality Objectives Optimization Report” is not consistent with Page Chapter 3.A.3, Line 11, where it stands for “Regulatory Data Quality Objectives”. Please edit to make them consistent within the permit.
9. Page Chapter 3B.7, Line 34: Is the abbreviation “ARL” the same as the “Lab” defined in Page Chapter 3B.v? Or is it a part of the Lab? Please clarify.
10. Page Chapter 3B.8, Lines 27–37 and footnote 1: Edit text to make consistent use of acronym “RDQO”.
11. Page Chapter 3B.8, footnote 1: Both versions of ASME NQA-1-1989 and ASME NQA-1-2000 are outdated. Please update the RDQO and QAM reports to meet the requirements of NQA-1-2017.
12. Page Chapter 3B.10, Line 21: Please update the “TABLE OF CONTENTS” accordingly after the change of section titles.
13. Page Chapter 3B.12, Line 9: The criteria for RPD and RSD are included in Table 3B-1 (as updated), and the updated Table 3B-2 is titled “Analytical Method Requirements for Tank Waste Acceptance Samples”. Please double-check to make sure the citation to a Table is correct.



14. Page Chapter 3B.13, Lines 14–15: The citation to “Section 3B.7.2 for a discussion of the data report package” should be rewritten, because Section 3B.7.2 is “Data Reduction and Review”. Should the citation be “Section 3B.8.2”?
15. Page Chapter 3B.13, Line 15: The data evaluation and assessment description is not added in Section 3B.7 after it is marked deleted in Section 3B.9, so the citation to “Section 3B.7” is invalid. Please rewrite Section 3B.7 to include data evaluation and assessment.
16. Page Chapter 3B.15, Line 37: Please edit “WTCC” to “Waste Treatment Completion Company (WTCC)”.
17. Page Chapter 3B.16, Line 23: Please double-check the citations to the two Tables.
18. Page Chapter 3B.17, Line 19: The citation to “Section 3B.7” is strange because this *is within* Section 3B.7.
19. Page Chapter 3B.17, Line 30: Please double-check the citation to the “Table 3B-3”. The RPD is listed in the updated Table 3B-1, and Table 3B-3 is about sample handling.
20. Page Chapter 3B.18, Line 35: It looks like the Title of this section may be edited to “Data Report Package” to fit the content.
21. Page Chapter 3B.20: Why delete the Reference list?
22. Page Chapter 3B.27, Table 3B-3: (i) In the footnote of the table, Citation “Table 3B-3” is invalid; (ii) please correct “Table 3B- and Table 3B-2”, and make sure to cite the right Table.
23. Chapter 3C, all the page numbers: Edit from “Appendix 3.C” to “Chapter 3C”.
24. Page Appendix 3.C.ii: (i) Edit all the Section numbers from “3A” to “3C”; (ii) Add prefix “3C-” to Tables 1–6 and edit the corresponding tables and citations to the tables.
25. Page Appendix 3.C.3, Line 33: Edit “Appendix 4A” to “Chapter 4A”.
26. Page Appendix 3.C.4: (i) Edit “Table 1” to “Table 3C-1”; (ii) Add a citation to Table 3C-1 in the text before the table.
27. Page Appendix 3.C.5, Line 33: “The pipeline will be flushed after the transfer is complete, as appropriate”: Please specify criteria to stop flushing, and where to discharge the flushing fluid.
28. Page Appendix 3.C.5, Lines 35–37: Please specify the criteria for comparing the volume of waste feed transferred and volume of waste feed received. How is the flushing fluid counted?
29. Page Appendix 3.C.6, Table 2: Edit “Table 2” to “Table 3C-2”.
30. Page Appendix 3.C.6, Line 20: Edit “Table 6” to “Table 3C-6”.
31. Page Appendix 3.C.7, Lines 4–5: Edit “Table 6” to “Table 3C-6”.
32. Page Appendix 3.C.8, Line 17: Edit “Table 6” to “Table 3C-6”.
33. Page Appendix 3.C.10, Table 3: (i) Edit “Table 3” to “Table 3C-3”; (ii) Add a citation to Table 3C-3 in the text before the table.
34. Page Appendix 3.C.11, Lines 2, 6, and 13: Edit “Table 4” to “Table 3C-4”.
35. Page Appendix 3.C.12, Lines 20 and 24: Edit “Table 5” to “Table 3C-5”.
36. Page Appendix 3.C.13, Line 7: Edit “Table 5” to “Table 3C-5”.

37. Page Appendix 3.C.13–14, Section 3C.5.4 Land Disposal Restrictions Evaluation for Immobilized Waste: As described in Page Appendix 3.C.5, Lines 2–3, the Section 3C.5, Waste Pre-acceptance and Acceptance Processes, describes “the actions performed before every campaign to determine candidate feed tank waste is acceptable for treatment at WTP”. It is confusing to add a subsection 3C.5.4 on disposal under Section 3C.5 on waste acceptance to WTP. Please reorganize the sections.
38. Page Appendix 3.C.14, Line 44: Edit “Table 6” to “Table 3C-6”.
39. Pages Appendix 3.C.17–18, Section 3C.6.1 Recordkeeping: From the content of this section, it should serve the WAP, not only the Air Emissions. It looks strange to list it under “3C.6 Air Emissions”. Please reorganize the sections.
40. Page Appendix 3.C.19, Line 1: Edit “Table 6” to “Table 3C-6”.
41. Page Chapter 4.iii–iv: The section numbers and titles are not consistent with the text, please update the TABLE OF CONTENTS to be consistent with the text, and update all the citations to the sections of this chapter accordingly.
42. Page Chapter 4.v, Titles for Chapter 4E and 4I: Delete “Process Description” to be consistent with the Fact Sheet and the corresponding chapter titles.
43. Page Chapter 4.v, Title for Chapter 4G: Edit “Direct-Feed Low Activity Waste Facility (EMF) Process Description” to “Direct-Feed Low Activity Waste Facility Effluent Management Facility”.
44. Page Chapter 4E.6, Line 46: Edit “SBS” to “Submerged Bed Scrubbers (SBS)” for the first use of “SBS”.
45. Page Chapter 4E.7, Line 3: Edit “Wet Electrostatic Precipitators” to “Wet Electrostatic Precipitators (WESP)” for the first use of “WESP”.
46. Page Chapter 4.7, Lines 36–37, “the Tank Operations Contractor (TOC)”; and all affected text of this permit: The acronym TOC has been used for *Total Organic Carbon*, as shown in Chapters 3A, 3B, and 3C, and Part III, “OPERATING UNIT GROUP 10—SPECIFIC CONDITIONS”, Page Conditions.12 (and other places). Do not use it for *Tank Operations Contractor*. Correct all the affected text to avoid confusion.
47. Pages Chapter 4.9, Line 42, “Container storage areas”: This is not consistent with the Part A Form, that “*a total of seven (7) container storage areas are permitted to store the dangerous/mixed waste in containers. Three (3) of the areas will be located in the HLW Facility, one (1) area will be located in the Lab, and three (3) areas are considered part of the BOF.*” Delete Line 42 to be consistent with the Part A Form.
48. Page Chapter 4.10, Lines 11–16: In Part A Form, the miscellaneous units are treated as one type. Edit to be consistent with the Part A Form and description of other facilities.
49. Page Chapter 4.11, Line 9: There are “tank storage” and “tank treatment” in PT, LAW, and HLW facilities; but there is no tank treatment (T01) in the EMF, based on the Part A Form. Using the same term “Tank systems” for all these facilities is confusing. Suggest edit to be consistent with the Part A Form.

50. Page Chapter 4.24, Line 42, Subsection 4.2.5.4, “Ancillary equipment such as piping is addressed within Section 4.2”: The Subsection 4.2.5.4 is within Section 4.2. Please cite the subsection number.
51. Page Chapter 4.26, Line 37 to Page Chapter 4.27, Line 7: This proposed addition is about *Identification and labeling of Containers*. It is okay to be put under Tanks and Containers in general, but it looks strange to put it under *Subsection 4.2.9 Air Emissions*. Please verify.
52. Page Chapter 4.27, Lines 11–18: The proposed modification to the citation of “Appendix 3A” to “Chapter 3C” is wrong. Because Chapter 3C is WAP for DFLAW, and WTP is not accepting D001 and D003 wastes while operating in the DFLAW configuration. Please double-check where the D001 and D003 waste numbers are described and correct the proposed citation modification.
53. Page Chapter 4.28, Lines 8–9, “Other miscellaneous treatment sub-systems, and their associated process control features, are described in Section 4.2”: According to Page Chapter 4.11 and the Table of Contents on Page Chapter 4.iii, Section 4.2 is “Tanks Systems”. Please verify and correct the description.
54. Page Chapter 4.30, Line 26: The proposed addition of “may” will cause uncertainty and confusion of conditions that warrant automatic waste feed cut off. Please delete “may”.
55. Page Chapter 4.30, Lines 32–33, “These interlocks have been sufficient to allow continued melter operations without inadvertent feed cut off signals, yet provide a sufficient safety margin, and can be found in Permit condition table III.10.H.F”: Table III.10.H.F on Page Conditions.233 is marked as “RESERVED” and no parameter is listed. Please verify.
56. Page Chapter 4.33, Section 4.3.9: The tribal exposure scenarios should be evaluated and considered in the risk assessment.
57. Page Chapter 4.34, Line 33: Edit “Section 4.2” to “Section 4F.4.2”.
58. Page Chapter 4.34, Line 35: Edit “Section 5.1” to “Section 4G.5.1”.
59. Page Chapter 4.35, Lines 39–42: How is air from C5 area treated and circulated or discharged?
60. Page Chapter 4.36, Line 8, “Waste minimization information is presented in Operating Unit Group 10 of the permit.”: This *is within* Operating Unit Group 10 of the permit, and as stated in Page Chapter 4.34, Lines 10–12, “Sections 4.4.6 through 4.4.9 describe the applicability of air emission controls, waste minimization, groundwater monitoring, and functional design requirements to the WTP. References to other sections of the permit are provided as appropriate”. This Section is the place to describe the details of “waste minimization.” Please provide more specific information.
61. Page Chapter 4E.iv: Add the list of “Figures” and “Figure 4E-1 LAW Process Flow” to the TABLE OF CONTENTS.
62. Page Chapter 4E.8, Line 40, “WAC 173-303-200, generating dangerous waste on-site”: The title of WAC 173-303-200 has been revised to “Conditions for exemption for a large quantity generator that accumulates dangerous waste” (<https://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-200>, accessed 8/26/2019), and there are fifteen (15) items now under WAC 173-303-200. Please double-check the

applicability of WAC 173-303-200 and make corrections of the Permit accordingly. Check other places of the Permit for updated regulations.

63. Page 4E.20, Line 16: Edit “RWH” to “Radioactive Solid Waste Handling (RWH)”, if Line 15 is deleted.
64. Page Chapter 4E.26, Line 8: Edit the first “LAW LMH system” to “LAW Melter Handling System (LMH)”, and the second “LAW LMH system” to “LMH”, to be consistent with Page Conditions.11 of Part III, “OPERATING UNIT GROUP 10—SPECIFIC CONDITIONS”.
65. Page Chapter 4E.27, Line 30: The citation to “Section 4.2.10 Air Emissions” needs to be verified, because of the inconsistency between the TABLE OF CONTENTS and the text of Chapter 4. On Page Chapter 4.iii, Line 30, the Section title is “4.2.10 Air Emissions”; but on Page Chapter 4.27, Line 8, the section title is “4.2.10 Management of Ignitable, Reactive and Incompatible Waste in Tanks”. Please verify and correct corresponding errors accordingly, including other sections and citations.
66. Page Chapter 4E.31, Lines 26–31 and 35–37: In Lines 26–31, the ILAW finishing line is described as a “C5 zone”; in Lines 35–37, it is described as a “C3 contamination area”. Are they two different finishing lines or the same finishing line but extend from C3 to C5 areas? Please clarify.
67. Page Chapter 4E.36, Line 9; and Page Chapter 4E.37, Line 41: Edit “LAW-MLTR-00001/2” to “LMP-MLTR-00001/2” to be consistent with the rest of the permit.
68. Page Chapter 4E.37, Lines 22–23, “The pour cave may be reclassified for equipment maintenance”: What are the regulation requirements and procedures of the reclassification?
69. Page Chapter 4E.44, Line 7: Please define “TLP” first.
70. Page Chapter 4E.58, Table 4E-5: The proposed Location numbers need to be corrected, i.e., from “7” to “9”, and “8” to “10”.
71. Pages Chapter 4G.i and iii, Line 3: Remove the parentheses enclosing “EFFLUENT MANAGEMENT FACILITY”, because it is the primary topic presented in this chapter.
72. Page Chapter 4G.5, Lines 18–20, “Waste received at the LAW Vitrification Facility from the Tank Operations Contractor (TOC)~~LAWPS~~ will not be characterized as ignitable (D001) or reactive (D003)”: (i) Rewrite this sentence to mean that the ignitable or reactive waste will not be sent to LAW; (ii) delete “(TOC)”, because TOC has been used to stand for Total Organic Carbon.
73. Page Chapter 4G.7, Lines 31–34, “After every waste transfer, the underground waste transfer lines are flushed and drained to the EMF low-point drain vessel (DEP-VSL-00001); the effluent is collected and processed at the EMF.”: Please specify the criteria to stop flushing.
74. Pages Chapter 4G.8–9, Section 4G.1, “CONTAINERS”: This section as written only describes wastes, nothing about containers. Will each type of waste be kept in a separate container or all wastes mixed in one container? Please clarify.
75. Page Chapter 4G.8, Lines 39–40, “WAC 173-303-200, generating dangerous waste on-site”: The title and content of WAC 173-303-200 has been revised. Please revise the Permit accordingly.

76. Page Chapter 6.iii, Lines 2–7: It is strange to use Section number “6.0” under Chapter number “6.0”. Please edit “Chapter 6.0” to “Chapter 6”.
77. Page Chapter 6.7, Lines 16 and 28: Edit “Chapter 7.0” to “Chapter 7” to be consistent with Line 5 of this page. Please check throughout the text for consistency.
78. Page Chapter 6.8, Lines 41–42: Edit “a 24-hour rainfall” to “the maximum 24-hour rainfall”.
79. Page Chapter 6.10, Lines 38–39, “Prior to receiving waste from the tank farms, waste must meet the criteria in the Waste Analysis Plan (Chapter 3C).”: Chapter 3C is for DFLAW, and no ignitable or reactive waste should be accepted here. Should it be Chapter 3A? Please verify.
80. Page Chapter 6.11, Line 12, “This page intentionally left blank.”: Delete this line or make it a separate page.
81. Page of “Change Control Log”, Chapter 6A, after “Modification History Table”: Delete “APPENDIX 6A” or Edit it to “Chapter 6A”.
82. Page Chapter 6A.iv, Line 2: The Table number “Table 6A-4-1” is not consistent with the rest of the tables. Edit it to “Table 6A-1”. Correct the corresponding Table number and citations to it.
83. Page Chapter 6A.iv, Line 12: This line is just a footnote of Table 6A-3d. Delete this line in the TABLE OF CONTENTS.
84. Page Chapter 6A.iv, Line 14, “Table 6A-4c”: Is there a “Table 6A-4b”?
85. Page Chapter 6A.12, Line 22, “Table 6A-4b”: This table is not listed in the TABLE OF CONTENT. Please verify. Please check all the table numbers and citations.
86. Page Chapter 6A.19, Table 6A-3b: Why put Table 6A-3b in the middle of Table 6A-3a? Please verify.
87. Chapter 7 Building Emergency Plan: Please include “7” in its section and page numbers to be consistent with other chapters.
88. Page 12 of Chapter 7, Line 5: The acronym PCS in “Process Control System (PCS)” is not consistent with Chapter 4, Page Chapter 4.8, Line 11, and Chapter 4G, Page Chapter 4G.13, Line 13, “Process Control System (PCJ)”. Please edit to make them consistent and check throughout the permit for consistency.
89. Page B-8 of Chapter 7: “Attachment C” is presented here but not listed in the TABLE OF CONTENTS for Chapter 7. Please verify and add the details required for the Evacuation Routes.
90. Page Conditions.3, Lines 31–32: (i) Edit Chapter numbers and titles to be consistent with Page 3.iii; (ii) Add “Chapter 3C Waste Treatment Plant Waste Analysis Plan for the DFLAW Configuration”.
91. Page Conditions.13, Line 1: This line is a duplicate of Line 14 on Page Conditions.3. Delete this line.
92. Page Conditions.205, Line 28; and Page Conditions.268, Line 26: “WAC 173-303-081(a)(2)(a)(i)” cannot be found. Please verify.
93. Page Conditions.209, Section III.10.H.5.b, Lines 23–27, “At a minimum, engineering information specified below will show the following as described in WAC 173-303-640, in

accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings and information on sumps and floor drains):”: All the items following this sentence (i.e., III.10.H.5.b.i through ix) are updated to “RESERVED”. Please modify this sentence to indicate this update or add the details.

94. Page Conditions.212, Section III.10.H.5.d, Lines 17–20, “At a minimum, engineering information specified below will show the following as required pursuant to WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings):”: All the items following this sentence, except for Item xiii, are updated to “RESERVED”. Please modify this sentence to indicate the update or add the details.
95. Pages Conditions.234 through 256: The Section III.10.I is modified to as RESERVED, but later in the draft permit file, there is another Section III.10.I, LAW Long Term Operations (Section III.10.I, Pages 1–34). Should the first III.10.I be just deleted or marked as revised? It is confusing to keep it RESERVED and then another version followed, especially when the Technical Fact Sheet is hidden at almost the end of the 863-page draft permit modification document (from 780 to 788 of the 863 pages), making it even harder for the public to review.
96. Page Conditions.272, Section III.10.J.5.b, Lines 25–29, “At a minimum, engineering information specified below will show the following as described in WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings and information on sumps and floor drains):”: All the items following this sentence (i.e., III.10.J.5.b.i through ix) are updated to “RESERVED”. Please modify this sentence to indicate this update or add the details.
97. Pages Conditions.273 through 277, Sections III.10.J.5.c and d: Same as last comment. All the items are modified to RESERVED, so there is nothing to show under “specified below will show ...”. Please verify.