



James L Denson
PNW/BC Area Env Protection Mgr
Waste Management
720 4th Avenue, Suite 400
Kirkland, WA 98033

Mr. Sean Smith
Product Replacement Program Manager
Washington State Department of Ecology
Northwest Region Office
P.O. Box 330316
Shoreline, WA 98133-9716

RE: Aqueous Film Forming Foam Collection and Disposal Program – Draft PEIS

Dear Mr. Smith:

WM is submitting these comments on the Washington State Department of Ecology's (the Department's) Aqueous Film-Forming Foam (AFFF) Collection and Disposal Program Draft Programmatic Environmental Impact Statement (Publication Number 23-04-064, December 2023).

WM is the leading provider of environmental services in North America, with nearly 50,000 employees operating 263 solid waste landfills, 348 transfer stations, 103 materials recovery facilities, 44 organics processing facilities, 6 hazardous waste facilities, and a fleet of nearly 20,000 collection vehicles throughout the United States and Canada. WM's deep expertise in the collection, transportation, storage, treatment, and disposal of wastes (both hazardous and non-hazardous) means we are uniquely qualified to handle the proper collection and disposal of Washington state's existing AFFF inventories currently located at fire departments throughout the state.

BACKGROUND

Per- and polyfluoroalkyl substances (PFAS) are a class of manufactured chemicals comprising carbon chains that have multiple fluorine atoms attached. PFAS have been used for decades in a variety of consumer and industrial applications, including AFFF used in firefighting. PFAS have fire resistance characteristics that make them uniquely well-suited for use in AFFF formulations. However, the use of AFFF in firefighting, both in real emergency and training scenarios, has contaminated environmental media (soil / surface water / groundwater). Therefore, agency



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regulators at both the federal and state levels have sought to remove PFAS from AFFF and to prohibit the use of PFAS-containing AFFF. So, as the Department's draft Programmatic Environmental Impact Statement (PEIS) states, fire stations and other similar locations throughout Washington state have inventories of PFAS-containing AFFF that can't be used and must be either destroyed or disposed of in a safe and compliant way.

ALTERNATIVES FOR MANAGEMENT - DISCUSSION

The Department's PEIS discusses five alternatives for management of existing AFFF inventories in need of destruction or disposal:

1. Approved Hold-In-Place
2. Incineration
3. Solidification and Landfilling
4. Class I Deep Well Injection
5. No Action

APPROVED HOLD-IN-PLACE / NO ACTION

WM believes the Hold-In-Place and No Action alternatives are unsuitable because these alternatives do not solve the problem of proper management and place an undue burden on Washington facilities, some of which may have limited resources, to safely store unused AFFF and prevent releases of these materials to the environment. The Hold-In-Place alternative is slightly favorable, because the Department commits to providing suitable containment for use by facilities storing the material. However, WM believes neither alternative directly addresses the problem and unreasonably delays pursuit of existing alternative solutions.

CLASS I DEEP WELL INJECTION

WM largely agrees with the Department's assessment of the Class I Deep Well Injection alternative. However, we respectfully disagree with some of the discussed disadvantages. For example, the PEIS states that deep well injection means the "*disposed AFFF concentrate mass remains in place with no method for verifying PFAS destruction*". Deep well injection, by definition, is not a destruction technology, but rather a disposal technology that ensures a waste is



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injected into a geologically isolated injection zone bounded by confining layers of rock that prevent migration of wastes into underground sources of drinking water (USDWs). Class I deep wells are carefully located and constructed in geological zones specifically designed to make waste mobility/migration impossible due to the imperviousness of the confining layers. So even though deep well injected wastes are not destroyed, they are confined and isolated so that they are forever trapped inside the injection zone, effectively rendering them harmless to USDWs.

The PEIS also states that *“deep well injection facilities are generally operated under limited compliance monitoring; therefore, the long-term stability of injected wastes is undocumented.”* WM strongly disagrees with this assertion as Class I deep well injection wells are regulatorily required to meet rigorous environmental standards to ensure environmentally safe disposal of wastes they are permitted to accept. Deep well facilities are required to conduct numerous monitoring activities, including groundwater, air, mechanical integrity as well as monitoring of the confining structure to ensure wastes are properly injected into the confining geologic zone. Deep well operations must periodically perform extensive testing and evaluation to prove there is no migration occurring and that the injection zone is geologically stable and sufficiently free of faults or fractures to prevent fluid movement.

INCINERATION

WM believes the Department must consider the incineration capacity shortfall that is currently impacting waste disposal via incineration, as this capacity shortfall is expected to continue for several years in the future. Currently scheduling non-bulk, containerized wastes into these facilities is highly limited and many months out. This issue would certainly present a challenge to the disposal of AFFF inventories, which are largely containerized wastes. This could exacerbate the already challenging issue of transporting AFFF over large distances to the incineration facilities highlighted by the Department, as these less than bulk loads may have to be placed in temporary storage at transfer stations until an incineration facility is willing to accept them. In addition, the Department needs to re-analyze this alternative based on the Significance Criteria in Section 3.12.2.2. Specifically, the Significance Criteria in this section states that the Approved Hold in



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Place alternative would not be consistent with the program objectives and legislative code, and then concludes that there would be less than significant impacts on police, fire departments, and emergency services. This analysis does not consider that, when viewed in light of the incineration capacity shortfall, the Incineration alternative necessarily includes an indeterminate period of the impacts associated with the Approved Hold in Place alternative. Fire departments that currently have AFFF will be required to implement many of the administrative and engineering controls listed in Section 3.1.3. for an unspecified period, in addition to other administrative and engineering controls associated with storing and managing hazardous substances. The PEIR does not acknowledge the demands implementing these controls for an indeterminate period will have on fire department resources, as well as whether the concomitant delay in permanently disposing of AFFF waste is consistent with the program objectives and legislative code, as noted in Section 3.12.2.2.

The PEIR also does not analyze the criteria and hazardous air pollutants, and Greenhouse Gas Emissions associated with combustion of fuel to heat the incinerator. The PEIR seems to assume that hazardous waste incinerators are continuously operated at a temperature capable of destroying PFAS. U.S. EPA's 2020 Interim Guidance on the Destruction and Disposal of PFAS and PFAS-Containing Materials states that breaking the carbon-flourine bond requires 1.5 times more energy compared to the thermal energy required to break carbon-chlorine bonds. An incineration facility that is operated to minimize costs and emissions is unlikely to consume additional energy and generate additional combustion emissions by always operating at the higher temperatures and times required to destroy PFAS. The PEIR should be revised to evaluate whether hazardous waste incinerators use additional energy to reach the higher operating temperatures necessary to destroy PFAS, any resulting impacts to the various resource areas, including air quality and Greenhouse Gas Emissions, and energy demands, as well as any mitigation measures that might reduce these impacts. The Department should also compare these additional impacts to other legal alternatives for the permanent management and disposal of AFFF wastes.



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SOLIDIFICATION AND LANDFILLING

Subtitle C Landfills

WM agrees with the Department's assessment that permitted hazardous waste landfills are required by RCRA Subtitle C to be designed with "...rigorous liner and cap systems that limit the risk of releases." In addition, WM also agrees with the Department's assessment that landfill leachate is collected and properly treated or disposed, and that federal and state regulatory requirements also require landfills to monitor groundwater in the landfill area. It is important to note that the PEIR correctly references U.S. EPA's 2020 Interim Guidance on the Destruction and Disposal of PFAS and PFAS-Containing Materials, including that EPA found permitted hazardous waste landfills carry a lower level of uncertainty in their ability to control the migration of PFAS to the environment. Nevertheless, the Department's AFFF collection and disposal program lists incineration as the planned disposal method for AFFF wastes.

WM notes that the Department constrains its analysis of potential disposal facilities to sites that are currently under contract with the Department for waste disposal services. WM believes the Department should expand the PEIR's analysis to include any properly permitted waste disposal facility, regardless of whether that facility is currently under contract with the Department to provide waste disposal services. By restricting the population of facilities to only those with existing contracts, the PEIR prioritizes administrative convenience over environmental protection, and does not consider the potential to reduce numerous environmental impacts, including air quality, Greenhouse Gas Emissions, Human Health and Safety, Transportation and Truck Safety, and Public Services and Utilities that would result from disposing of AFFF wastes at the closest, properly permitted disposal facility that also carries the least uncertainty in preventing PFAS migration into the environment.

For example, by expanding the population of facilities that could be used for disposal, WM's Chemical Waste Management of the Northwest (CWMNW) Subtitle C facility in Arlington OR would be a potential disposal location, as it is a suitable alternative for AFFF disposal. The CWMNW facility has been safely solidifying and disposing of these PFAS containing waste (Including AFFF) from across the country for several years. The facility is located in a very protective environmental setting with regard to safety for air, climate, groundwater, and exceeds Subtitle C landfill design standards. Notability the CWMNW facility is rail served with regular



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service from Seattle. As noted in sections 3.1.2.1, 3.2.1.2, and 3.10.1, travel distance is a key variable affecting criteria pollutant emissions, Greenhouse Gas Emissions, as well as Transportation and Truck Safety impacts. By transporting AFFF wastes a shorter distance to the CWMNW facility, there would be a reduction in each of these impacts compared to transporting the wastes to more remote locations. At the same time, the PEIR does not analyze the increased risks to Transportation and Truck Safety, as well as other resource areas such as Public Services and Utilities, associated with having AFFF wastes in transit over longer distances and longer periods. Because the PEIR assumes that the transportation risks are the same regardless of whether AFFF waste travels one mile or 1,000 miles, the PEIR does not consider that each additional mile traveled extends the risks of collisions, equipment failure, or various human errors that might occur, resulting in an increased risk of releasing PFAS into the environment. It is again worth noting here that the Arlington facility is rail served and significantly reduces GHG emissions and the risks associated with over the road transportation. A PEIR that properly considers these risks would discuss the advantages of permanently managing AFFF wastes near its current location and take into account the benefits of rail transportation.

Subtitle D landfills

Subtitle D landfills are also subject to extensive federal, state, and local environmental, health and safety requirements including detailed design criteria, location restrictions, financial assurance capability, corrective action standards and requirements for closure and post-closure periods. Therefore, Subtitle D landfills in the proper environmental setting are well suited for safe disposal of AFFF and should be considered by the Department as a viable alternative for disposal. Expanding the list of alternatives to include Subtitle D landfills may result in closer locations for disposal, thus minimizing the risk of transporting AFFF over long distances to a final destruction or disposal destination.

Most Subtitle C facilities, and many Subtitle D facilities like the Arlington facilities, have closed-loop systems that manage leachate within the facility rather than discharging their leachate for offsite treatment. PFAS waste streams that are disposed in landfills that produce minimal leachate volumes, especially those facilities that employ stabilization or solidification technologies and are located in dry climates, afford heightened levels of environmental protection.



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CONCLUSION

As owners of RCRA regulated Subtitle C hazardous landfills, Subtitle D non-hazardous landfills, and Class I deep injection wells across the Country, WM understands the importance of being good environmental stewards and ensuring that our operations do not result in harm to human health and the environment. Our facilities must maintain compliance with all our RCRA and solid waste permits along with strict CAA and CWA regulations. Further, the Arlington facilities routinely engage in community outreach and engagement. This engagement is used to disseminate relevant information about our facilities and the operations performed. Regular community outreach also allows our employees the opportunity to participate in meaningful dialogue with the community and receive feedback on the impacts of facility operations with an understanding of local health trends, existing health conditions, and environmental justice concerns. Finally, as stated throughout our comments, WM encourages the Department to keep all proven technologies on the table as it works to finalize this Draft.

As noted above, the PEIR needs revision and additional analysis to properly inform AFFF disposal managers of the environmental impacts and mitigation measures associated with all legal methods of disposal of AFFF wastes, enabling the managers to make the choice with the least environmental impacts, and the least uncertainty with preventing PFAS migration into the environment, unconstrained by the administrative conveniences associated with government contracting. WM appreciates the opportunity to submit comments on this draft PEIS. If you have further questions or concerns, feel free to contact Jim Denson via email at jdenson@wm.com or by telephone at 602-757-3352.

Sincerely,

A handwritten signature in black ink, appearing to be 'James Denson', written over a horizontal line.

James Denson
Waste Management
PNW/BC Area Environmental Protection Manager