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January 15, 2021

Via electronic submission: [ChemActionPlans@ecy.wa.gov](mailto:ChemActionPlans@ecy.wa.gov)

Ms. Irina Makarow  
Washington Department of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600

RE: Draft PFAS Chemical Action Plan

Dear Ms. Makarow:

The National Waste & Recycling Association (NWRA) appreciates the opportunity to provide comments on the Washington Department of Ecology's (Ecology) Draft PFAS Chemical Action Plan (CAP). NWRA is a trade association that represents private-sector waste and recycling companies in the United States, and manufacturers and service providers who do business with those companies. NWRA's members operate in all fifty states and the District of Columbia. NWRA provides leadership, education, research, advocacy, and safety expertise to promote North American waste and recycling industries, serve as their voice, and create a climate where members prosper and provide safe, economically sustainable, and environmentally sound services.

NWRA members are interested in the proposed CAP as they have hundreds of waste and recycling collection, processing, and disposal facilities across the country. Through these operations, they manage the end-of-life for many products that contain PFAS. This includes landfills, recycling, and composting facilities.

We commend Ecology on prioritizing public health by focusing on ensuring that drinking water is safe and managing environmental PFAS contamination by establishing clear standards that can be supported. We also support the goal of reducing PFAS in products as the most effective and economic means by which public exposure to PFAS can be mitigated. As long as PFAS remain in products, the public will be exposed to them.

That being said, NWRA is not aware of any members from the landfill sector that were included in the development of the CAP. Given that waste management is an integral component of any plan to reduce the impacts of PFAS on human health and the environment, we urge Ecology to consult with our members that are active in the state before further developing recommendations that could impact our operations. Specifically, the landfill industry is interested in partnering with Ecology's fourth goal of understanding and managing PFAS in waste as more information is needed in this area.

### **General Comments on Management of PFAS-Containing Waste**

We appreciate and support the CAP's call to understand and safely manage PFAS in waste streams and to minimize related impacts. Foundational to this effort is the measurement of proposed PFAS initiatives against their ultimate effect on reducing harmful exposures. This approach will allow development of strategies targeted to deliver the greatest benefit, ideally factoring in complexities such as these:

- While our operations neither manufacture nor use PFAS, we receive wastes containing numerous and undefined PFAS compounds and quantities of PFAS from those we serve.<sup>1</sup> PFAS cannot be significantly reduced in landfill leachate without limiting inbound waste sources so long as PFAS continue to circulate in the economy in the form of food packaging, construction materials, carpeting, myriad household products, manufacturing byproducts, and other goods.
- PFAS concentrations in leachate may be sensitive to changes in consumer use of PFAS, as shown in unpublished data gathered over the course of several years and submitted to the State of Minnesota. The data suggest a downward trend in concentrations of PFOA and PFOS in leachate that appears to correlate with U.S. policies phasing out the manufacture and use of PFOA and PFOS in consumer products.
- The mass of PFAS in landfill leachate contribution at publicly-owned treatment works (POTWs) is typically low, but highly variable. The leachate received at a POTW also often constitutes a small fraction of total incoming flow. In those cases, reducing PFAS in leachate or reducing leachate volumes to POTWs will have a negligible effect on concentrations of PFAS in POTW influent and effluent. Comprehensive studies in the states of Michigan<sup>2</sup> and

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<sup>1</sup> National PFAS Receivers Factsheet. November 1, 2019.

[https://cdn.ymaws.com/wasterecycling.org/resource/resmgr/issue\\_brief/National\\_PFAS\\_Receivers\\_Fact.pdf](https://cdn.ymaws.com/wasterecycling.org/resource/resmgr/issue_brief/National_PFAS_Receivers_Fact.pdf)

<sup>2</sup> Michigan EGLE. Michigan PFAS Action Response Team. Landfills Workgroup. Website:

[https://www.michigan.gov/pfasresponse/0,9038,7-365-86513\\_99807\\_99808-527972--,00.html](https://www.michigan.gov/pfasresponse/0,9038,7-365-86513_99807_99808-527972--,00.html):

Michigan Waste & Recycling Association. Statewide Study on Landfill Leachate PFOA and PFOS Impact on Water Resource Recovery Facility Influent. Technical Report. March 1, 2019.

<https://www.bridgemi.com/sites/default/files/mwra-technical-report.pdf>

North Carolina<sup>3</sup>, for example, concluded that non-leachate sources are the most significant mass contributors for PFOA and PFOS at POTWs, whereas landfill leachate represents a minor contribution.

- Landfills and POTWs are highly interdependent, and both are vital to Washington communities. Landfills provide safe, environmentally protective management of Washington’s municipal solid waste. Many landfills rely on POTWs for leachate treatment to ensure compliance by controlling leachate fluid levels. POTWs, in turn, increasingly rely on landfills for biosolids management. Efforts to address PFAS at landfills and POTWs must avoid disrupting this interdependence. If landfills curtail acceptance of biosolids from POTWs to avoid PFAS, or POTWs are forced to exclude landfill leachate, those waste streams will be stranded. At best, that would impose significant costs for alternative management of those wastes for businesses and consumers; at worst, it could curtail the ability of the landfill or POTW to continue operating.
- In December 2020, EPA released its draft Interim PFAS Destruction and Disposal Guidance<sup>4</sup> (EPA’s Guidance). The document evaluates technologies for destruction and disposal of PFAS and PFAS-containing materials and identifies thermal treatment, landfilling and underground injection as options that are commercially available and capable of destroying or managing PFAS. EPA’s Guidance states that modern MSW landfills can “control the migration of PFAS into the environment.” The document further states that when considering destruction and disposal options that is as protective of the environment, RCRA Subtitle D landfills rank fourth in order of uncertainty while thermal treatment options have higher levels of uncertainty in managing migration of PFAS into the environment. We encourage Ecology to review Section 3 of the guidance to understand how landfills play an important role in managing PFAS.
- Research has concluded that Subtitle D landfills reliably sequester certain PFAS compounds. For example, an October 2019 study directed by the State of Vermont<sup>5</sup> collected 100 samples from waste streams suspected to contain

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<sup>3</sup> North Carolina DEQ. Waste Management Work on Emerging Compounds. Website:

<https://deq.nc.gov/news/key-issues/emerging-compounds/waste-management-work-emerging-compounds#nc-collective-study-emerging-compounds-in-landfill-leachate>;

National Waste & Recycling Association – Carolina Chapters. North Carolina Collective Study Report. Collection Study of PFAS and 1,4-Dioxane in Landfill Leachate and Estimated Influence on Wastewater Treatment Plant Facility Influent. March 10, 2020. <https://files.nc.gov/ncdeq/Waste%20Management/DWM/NC-Collective-Study-Rpt-03-10-2020.pdf>

<sup>4</sup> U.S EPA. Draft Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances, December 18, 2020. <https://beta.regulations.gov/docket/EPA-HQ-OLEM-2020-0527/document>.

<sup>5</sup> Vermont DEC. Vermont PFAS Investigation and Response. Website: <https://dec.vermont.gov/pfas>; Sanborn, Head & Associates, Inc. PFAS Waste Source Testing Report. October 2019. <https://anrweb.vt.gov/PubDocs/DEC/SolidWaste/OL510/OL510%202019.10.15%20NEWSVT%20PFAS%20Source%20Testing%20Rpt%20-%20Final.pdf>

PFAS compounds entering the NEWSV, Inc. Landfill in Coventry, VT. The study found less PFAS leaving in landfill leachate than entering the landfill in waste streams. This indicates that a small fraction of the PFAS entering the landfill in wastes leaves in leachate and a significant fraction is sequestered from environmental “cycling”. Because modern lined landfills contain waste and protect the groundwater, they appear to be a preferred solution for safe disposition of PFAS-containing waste.

- We also question whether stringent regulation of leachate would translate into material reductions in exposure, given the relatively low mass involved as compared to continued household exposures and the fact that leachate management practices essentially eliminate the potential for direct exposure to the general population.

It is important to note that so long as PFAS remain ubiquitous in society, they will find their way into landfills and landfill leachate. Initiatives that reduce PFAS sources and help PFAS-intensive industries reduce their use of PFAS - and thus PFAS wastes - are the most effective means of reducing PFAS in landfills and thus in leachate.

Crucially, though, state policymaking must be grounded in an understanding that PFAS cannot be completely eliminated from landfills. Landfills cannot and should not avoid receipt of PFAS-containing wastes from households and other generators, who routinely discard household products, packaging, and goods containing PFAS. While the amount of PFAS contributed to the waste stream by each individual generator may be small, their collective impact could be significant. At landfills servicing few industrial generators, small-volume generators may be the primary source of PFAS in the waste stream.

Like landfills, composters are unable to avoid receiving PFAS contained in food, packaging, and some biodegradable utensils and service ware. Policies affecting composters should balance the minimal impact of PFAS at composting operations with the significant environmental value those facilities provide

Lastly, as noted previously, PFOA and PFOS concentrations in leachate appear to be declining as a result of phase-outs of these compounds in the marketplace. More importantly, with the phase-out of PFOA and PFOS, average levels of these compounds in human blood levels have declined from 1999 to 2014 by 60% and 80% respectively.<sup>6</sup> We urge the State to continue seeking means of assisting PFAS manufacturers and users to transition away from their use and avoid importation of PFAS containing consumer products into Washington.

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<sup>6</sup> *Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) in the U.S. Population*. August 21, 2017, [https://www.atsdr.cdc.gov/pfas/docs/PFAS\\_in\\_People.pdf](https://www.atsdr.cdc.gov/pfas/docs/PFAS_in_People.pdf); Agency for Toxic Substances and Disease Registry, CDC.

## **Specific Comments on the Washington State Chemical Action Plan**

### **Comment 1.**     The Plan should recognize Subtitle D landfills as an important part of PFAS end-of-life management

NWRA agrees with Ecology that an important aspect of understanding and managing PFAS in waste is continuing to evaluate landfill PFAS emissions information, including through leachate sampling and by sampling groundwater and gas emissions at landfills. Much of this work has been done or will be done throughout the United States. In doing so, however, Ecology should recognize that landfills provide an important function of sequestering a significant amount of PFAS, thereby removing the compounds from environmental “cycling”.<sup>7</sup> It is thus imperative that Ecology include in its evaluation how different classifications of landfills in different environments serve as effective means for the secure disposal of waste materials containing PFAS. *See* WAC 173-333-420(1)(f)(ii).

While most PFAS will remain in the waste mass, some trace amount will be mobilized. This trace amount will be controlled because Subtitle C and D landfills are lined to prevent migration of contaminants into the groundwater.

We thus recommend that Ecology include language in the CAP addressing how Subtitle C and D landfills can provide for effective long-term management of PFAS wastes. Landfill management is currently the most environmentally sound method of managing PFAS containing wastes because 1) most of the PFAS remain sequestered within the landfill and 2) lined-landfills protect the groundwater.

### **Comment 2.**     Further study of incineration of PFAS wastes is warranted

NWRA notes that the discussion on incineration in the CAP is limited, concluding that “[t]hermal decomposition of PFAS by incineration has been proven effective if sufficiently high temperatures are employed.” CAP at 216-17. We therefore recommend that Ecology continue to evaluate the potential risks of PFAS incineration with at least the same level of rigor that it affords to the landfill sector.

### **Comment 3.**     The CAP should avoid including unsupportable and unrealistic estimates of PFAS concentrations in estimating PFAS disposal volumes

The CAP references a report from the Swedish Chemicals Agency (KEMI)<sup>8</sup> that estimates that treated synthetic carpet “contains up to 15% PFAS.” Using this upper-end value, the CAP then estimates “a total of 430,000 metric tons of PFAS landfilled

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<sup>7</sup> Vermont DEC, PFAS, Sanborn Head.

<sup>8</sup> Swedish Chemicals Agency (KEMI) (2015), *Occurrence and use of highly fluorinated substances and alternatives*. Report 7/15.

over a 30-year period.” CAP at 172. The CAP later acknowledges that it received other information that the 15% estimate “is too high” and that a 0.1% value should be used. *Id.* at 174.

Despite the language questioning the KEMI estimate, including this estimate in the CAP raises concern and confusion, and we urge that references using the unrealistically high values be removed. First, many will rely on this study and cite to the upper-end estimate that 430,000 tons of PFAS from carpeting have been landfilled in Washington State over the past 30 years. Second, by suggesting that carpeting could contain PFAS concentrations greater than 0.01%, Ecology has suggested that used carpeting destined for recycling or disposal may be classified as a “dangerous waste” under Washington’s Dangerous Waste Regulations. *See* WAC 173-303-100(6)(d). Moreover, if the concentrations were at the 15% level suggested by the KEMI report, carpeting would be not just a dangerous waste, but would actually qualify as an “extremely hazardous waste” because the halogenated organic compound concentration would exceed 1.0%. *Id.*

**Comment 4.** The best way to reduce PFAS exposure is to eliminate their manufacture, import, and usage

We believe the best course of action is to stop PFAS at their source and support Ecology in their efforts to remove PFAS from consumer products. HB 2658 provides authority to eliminate the use of perfluorinated chemicals in food packaging when acceptable alternatives are available. We encourage Ecology to expand the focus of the CAP to discuss these alternatives, including in products such as food packaging, carpeting, and personal care products. Finally, we encourage Ecology to restrict the use of PFAS in aqueous film forming foams (AFFF) and remove it from storage for proper disposal where possible

**Comment 5.** The CAP should differentiate among different types of landfills and the risks they present

The CAP will benefit from consulting with the landfill industry to gain a better understanding of the different benefits and risks presented by landfills that have historically received PFAS-contaminated wastes. Not all landfills are the same. Different approaches and levels of scrutiny are necessary for different types of landfills, such as unlined landfills, construction and demolition waste landfills, MSW landfills, landfills sited in arid areas, landfills that retain or recirculate leachate on-site, and landfills with landfill gas collections systems.

NWRA therefore requests and encourages Ecology to include our members that are active in the state in discussions related to the further development and implementation of the CAP.

**Comment 6.** The CAP overstates the significance of landfills for overall PFAS exposures.

While we all know that PFAS are in numerous products, it would be helpful to know the amount of PFAS in different materials as well as trends in PFAS usage over time. Ecology states that it will continue to research the makeup of PFAS waste entering and potentially currently stored in landfills. We suggest that Ecology assess the total load of PFAS that are in products broken down by category and providing trends in types of PFAS utilized.

**Comment 7.** The CAP presents an unbalanced assessment of landfills without providing a context to compare with other environmental exposures to PFAS

It is important to place landfills in proper context when examining potential PFAS exposure routes for the general public. While it is true that landfills receive PFAS, this does not equate to any significant public exposure. The public is exposed to PFAS to a much greater degree through multiple other routes and products, such as the dust in their homes and the foods they eat and the consumer products that they purchase. We recommend that the CAP prioritize an assessment of the contribution of various routes of exposure for the average person and prioritize minimizing the most significant of those routes.

Further it is important to recognize that landfills neither produce nor utilize PFAS. Rather, they are “receivers” of traces of PFAS that come into our facilities from manufacturers, businesses, and the general public. As such, instead of portraying landfills as a PFAS generator, the CAP should acknowledge the important role proper landfill disposal of PFAS can have in removing contaminated products and media from the environment. As noted before, landfills will continue to receive and sequester PFAS in MSW so long PFAS are included in consumer and industrial products.

**Comment 8.** The CAP should extend the deadline to allow stakeholders to review EPA’s Interim Guidance

EPA’s Guidance provides valuable information that might inform stakeholders on options available for managing PFAS destruction and disposal. As such, we recommend that Ecology extend the comment deadline further to allow stakeholders an opportunity to review the document prior to finalizing their comments.

NWRA Comments on WA PFAS CAP  
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NWRA appreciates the opportunity to comment on the PFAS CAP and we look forward to continuing to work with your office on this matter. Should you have any questions, please call Anne Germain at 202-364-3724 or e-mail at [agermain@wasterecycling.org](mailto:agermain@wasterecycling.org).

Very truly yours,

A handwritten signature in black ink that reads "Darrell K. Smith". The signature is written in a cursive style and is positioned above a light gray rectangular background.

Darrell K. Smith, PhD  
President & CEO

c:      WRRRA  
         Republic Services  
         Waste Management  
         Waste Connections



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