**LOWRY LANDFILL SUPERFUND SITE TECHNICAL ADVISORY GROUP (LLSF TAG)**
**LOWRY LANDFILL SUPERFUND SITE CITIZENS' ADVISORY GROUP (LLSF CAG)**
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April 3, 2025

**TO:**
Lee Zelden, Administrator U.S. Environmental Protection Agency (EPA)
Cyrus Western, Regional Administrator, Region 8 EPA
Jamie Miller, Regional Project Manager, EPA Superfund Division Region 8
Linda Kiefer, EPA Regional Project Manager, Lowry Landfill Superfund Site

**Re: Request for the Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) to investigate, identify and regulate PFAS sources suspected of originating at Lowry Landfill Superfund Site (LLSS) using the Imminent Hazard, Enforcement and Emergency Authorities in CERCLA and other Statutes.**

**EPA Finalizes Groundbreaking Rule to Regulate Two PFAS under CERCLA**
On April 19, 2024, the U.S. Environmental Protection Agency EPA signed the highly anticipated *final rule designating two types of PFAS as hazardous substances* under Section 102(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

It is because the EPA plans to focus its enforcement efforts on those entities that have played a significant role in releasing or exacerbating the spread of PFAS into the environment, calling them "major PRPs" that the LLSF CAG/TAG is requesting that EPA follow directives in the 2024 David M. Uhlmann, EPA Assistant Administrator for Enforcement and Compliance Assurance Enforcement Policy Memorandum. *The memorandum provides "direction to all EPA enforcement and compliance staff about how EPA will exercise its enforcement discretion under CERCLA in matters involving PFAS, just as EPA exercises enforcement discretion regarding other hazardous substances."*

The LLSF CAG/TAG requests that EPA;

1) Require Waste Management (WM) to test for PFAS in the LLSS Unnamed Creek and in the LLSS off-site plume,
2) Require WM to test for and investigate who is responsible for PFAS contamination in private wells, in Murphy Creek, Cole Creek and Sand Creek using CERCLA, RCRA and Clean Water Act authorities to regulate follow-up studies and corrective actions,
3) Once the technical data is available, sponsor a meeting to include LLSF CAG/TAG, CDPHE, Arapahoe County Commissioners and other interested public to discuss the data and provide a forum to discuss next steps in enforcing the Imminent Hazard, Enforcement and Emergency Authorities Act under CERCLA.

Research and testing indicate that both the plume traveling north from LLSS, and in the Buckley groundwater flow traveling N/NE from Buckley meet and mix at the confluence of Coal Creek and Murphy Creek and from there travel north into Sand Creek. There are numerous domestic wells that have been identified along/in the path of the groundwater flow from north of LLSS at Quincy and Gun Club Road all the way to 6th and Airport Boulevard within Buckley's 4-mile study area. (Maps included)

We understand that Buckley is working to identify PFAS and to find technologies to keep PFAS from impacting off-site waterways, but EPA has not required WM, 45-year Operator of LLSS, to assure that there is no PFAS in the SF mass and the LLSS off-site plume in which the groundwater flows north into the Coal Creek Confluence and eventually into Sand Creek.

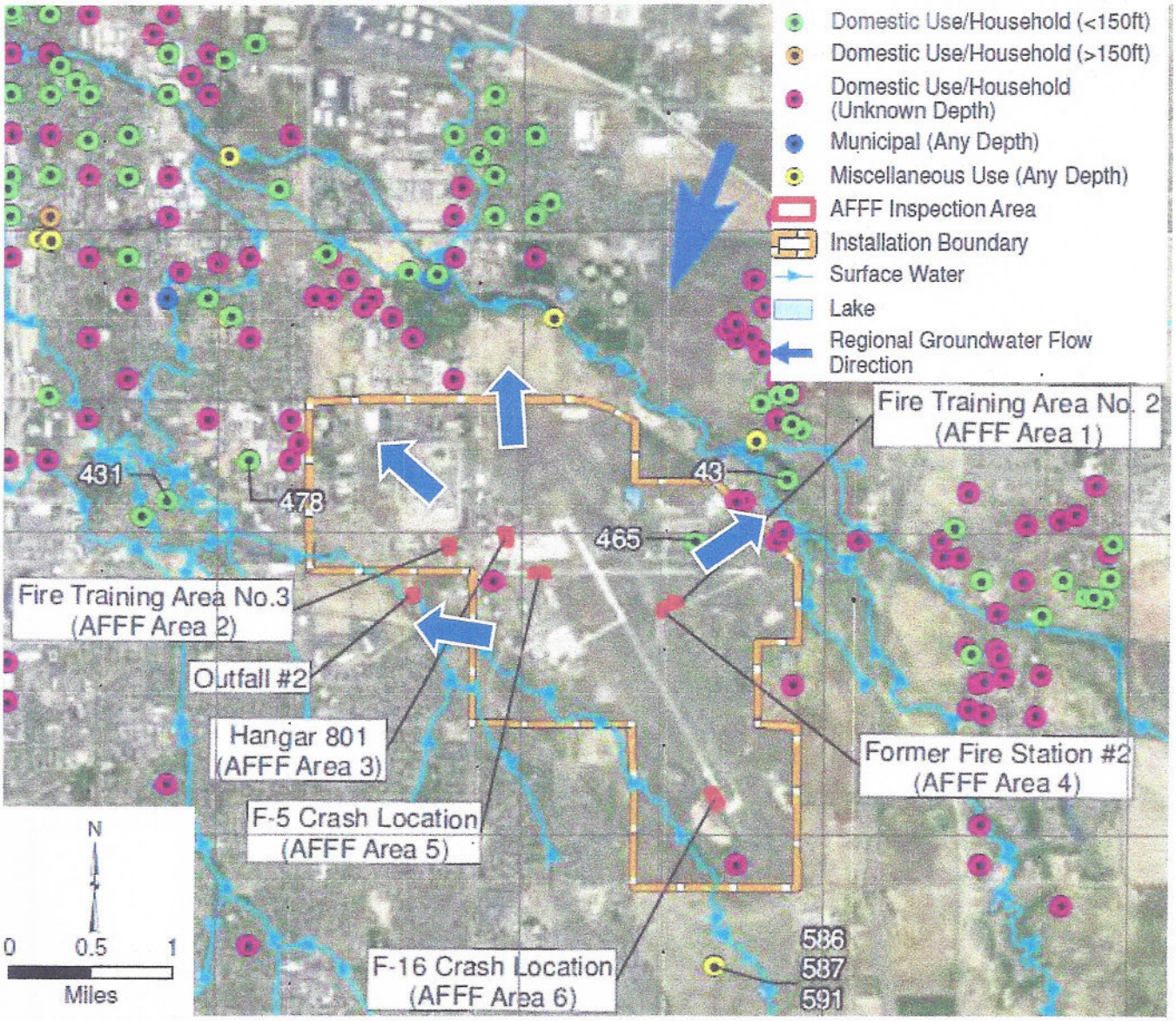
Confluence Murphy Creek, Coal Creek into Sand Creek


LLSS 4 Miles South

Buckley Base July 21, 2020 Groundwater Study

BEM ARCADIS

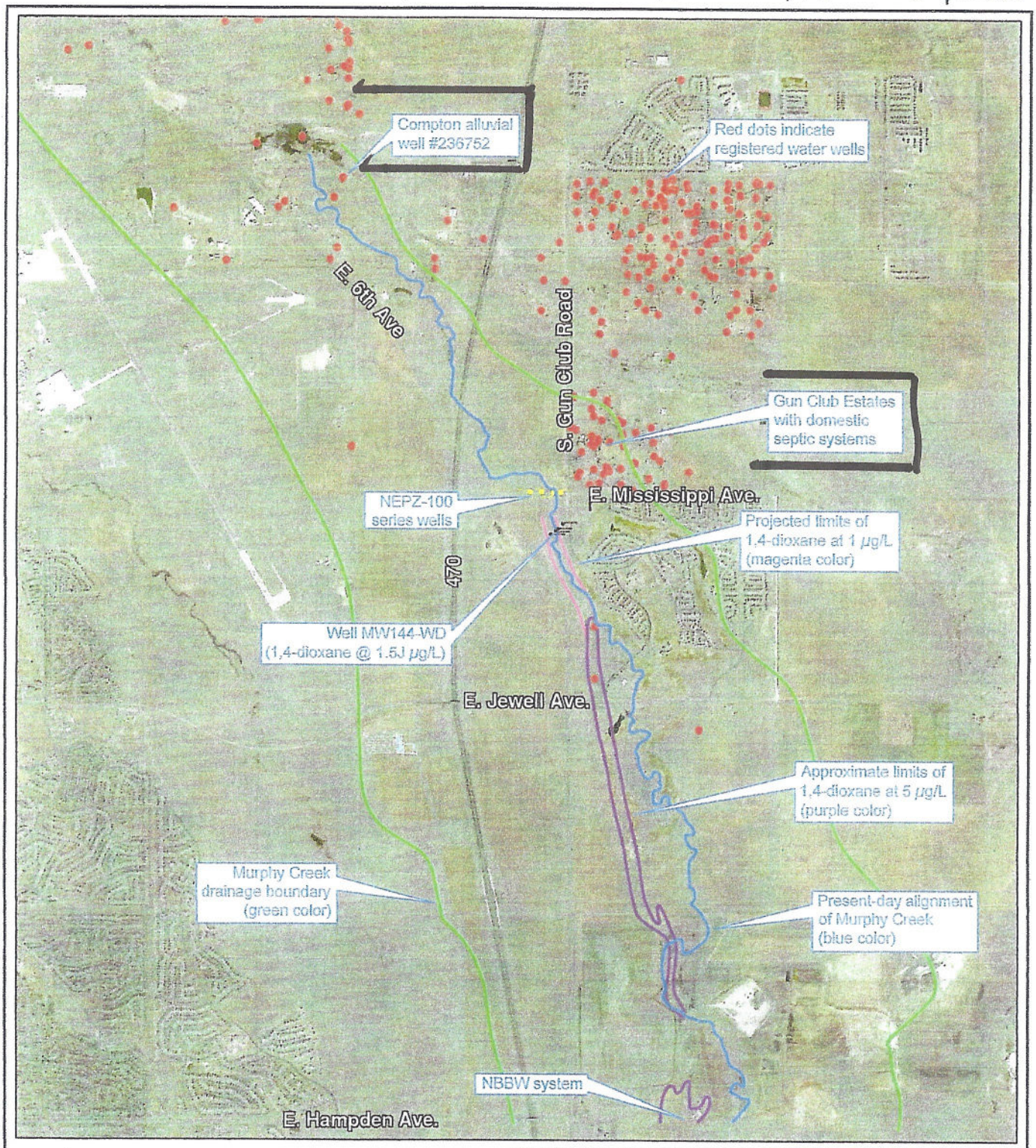
**Buckley Base July 21, 2020 Groundwater Study**




**Buckley Domestic Well Identification**

BEM ARCADIS

Off Site 1,4-dioxane plume




Red dots are private wells

1 0 1
SCALE IN MILES

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Figure 3
General Vicinity Map
North End Groundwater Investigation
Lowry Landfill Superfund Site, Colorado

EMSI Engineering Management Support, Inc.

M:\clients\EMSI\LOWRY\2016\CLLEAN-Resonse to Comments\Figs3_2-North End GW Invest.dwg-Fig 3 02/23/2016 4:13PM

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## AREAS OF PFAS CONCERN REQUIRING AGENCY ATTENTION

**PFAS bioaccumulates and is linked to cancer, immune system damage, and developmental issues— *these are risks that justify immediate investigation under CERCLA's Imminent Hazard Provisions.***

**Buckley and PFAS**

Highlighting Buckley's role in a national reckoning with PFAS contamination, an Air Space Base 2018 Site Investigation (SI) concluded that Aqueous Film Forming Foam (AFFF) use at Buckley had resulted in off-site PFAS contamination, raising concerns for both military personnel and nearby communities, especially those relying on private wells.

Buckley, with oversight by the CDPHE, through the Installation Restoration Program (IRP), has openly responded to the health risks linked to PFAS exposure by testing water wells within a one to four-mile radius of the base to determine risk and an investigation of treatment methods. Buckley has established a Federal Restoration Advisory Board (RAB) with impacted citizens participating in technical meetings.

In 2021, Buckley established an off-base focus area (within 4 miles in a downgradient direction) through review of the Conceptual Site Model (CSM) to include hydrological and hydrogeological data (i.e., local and regional groundwater flow directions, vertical and horizontal gradients, potentially impacted water-bearing zones, and surface water features) ***along with drinking water well distribution and construction details***. Based on the technical evaluation completed by the Buckley, the selected focus area represented the most likely area for possible impact from AFFF releases from on-base sources.

Sixty-two (62) properties were surveyed, categorized as follows:
- 25 properties were determined to utilize a well for drinking water and were sampled
- 9 properties were connected to municipal water and/or did not contain a well
- 25 properties were unresponsive
- 3 properties denied access for sampling

The expanded SI gathered information about 24 PFAS compounds from 25 domestic wells but focused on the three for which there are federal regulatory screening levels or criteria. At that time, the EPA had established a Lifetime Health Advisory (LHA) of 70 nanograms per liter (ng/L) which is applicable to PFOA and PFOS individually, or in combination if both chemicals are present in concentrations above the limit of detection.

"PFOS/PFOA was not detected in 20 of the 25 samples. In total, 11 wells had detections related to PFOS/PFOA or PFBS: four wells with both PFOS/PFOA and PFBS detections, one well with only PFOA/PFOS detections, and six wells with only PFBS detections.

**Waste Management, 45 Year Operator at LLSS and PFAS**

The Lowry Landfill Superfund (LLSF) Site, located near Aurora, Colorado, has been a focal point of environmental concern for decades due to its containment of more than 138 million gallons of toxic waste in 85 unlined trenches which are located directly over four major State of Colorado water sources.

In 2019, due to the uncertainty of the "containment" of the 85 unlined chemical pits, the LLSF CAG Technical Advisor (TA) urged the EPA to consider updated geophysical studies recommended by the U.S. Geological Survey (USGS) in a peer-reviewed CDPHE White Paper, which revealed a suspected growth fault—a type of geological fault that the hydraulic effect of the growth fault endures over time – near the LLSS, which has

raised questions about the stability of the bedrock containing the hazardous materials. These recommendations aimed to better characterize the fault and assess its potential impact on the contaminant plume, given that existing data was over 20 years old and limited.

The EPA dismissed the CDPHE White Paper and USGS recommendations, as noted in their response to the LLSF CAG TA, suggests a reluctance to reopen or expand investigations at the site. Their position was that the site, being in the Operation and Maintenance (O&M) phase with Institutional Controls in place, did not warrant a study or further assessment. This stance reflects a view that the current containment measures—such as slurry walls, landfill covers, and groundwater extraction trenches—are sufficient and functioning as intended.

However, the EPA's tone shifted in its May 10, 2023, letter to Dan Harrington of Civitas Resources, a company proposing to hydraulically fracture (frack) 166 wells near and potentially under the LLSF Site as part of the Lowry Ranch Comprehensive Area Plan. In that letter, the EPA expressed significant concern that fracking could *induce microfractures in the bedrock layer beneath the landfill, risking a "catastrophic release" of hazardous substances into groundwater.*" This warning explicitly tied the potential environmental harm to liability under the CERCLA. Under CERCLA, Civitas could be held responsible for cleanup costs and damages if their activities cause or contribute to the release of hazardous substances, regardless of negligence—a principle known as strict liability.

This apparent contradiction—dismissing calls for updated fault studies while warning Civitas about bedrock stability—suggests a complex regulatory stance. The EPA may be confident in the site's current containment under static conditions but wary of external disturbances like fracking, which introduces dynamic pressures and seismic risks. Fracking involves injecting high-pressure fluids to fracture rock, a process known to induce microseismic events have linked such activities to induced seismicity, amplifying concerns about fault reactivation near the LLSF Site.

In 2023, CDPHE requested that WM test the LLSS chemical mass for PFAS. WM, with support from EPA, openly refused the CDPHE request. WM, with support of EPA, has publicly stated to the Arapahoe County Commissioners that there is "No indication that Lowry Landfill Superfund Site has or will have PFAS present within the Site". DACWPF was created to comply with RCRA, in 1980, to receive the toxic waste that had been going into the LLSS. Therefore, both sites received the same toxic waste. PFAS must be assumed to be in both sites unless proven otherwise by testing. Without comprehensive testing data based on current science, regulatory developments, and the specifics of the LLSS, *the following WM claims lack evidence:*

1. **"No indication that Lowry Landfill Superfund Site has or will have PFAS present within the Site":**
    - This assertion is questionable without comprehensive testing data. PFAS compounds, known for their persistence and mobility, are commonly associated with landfills due to the disposal of consumer products and industrial waste containing these chemicals. The Lowry Landfill, operational since the 1960s, accepted a wide range of municipal and Front Range industrial waste, making it plausible that PFAS-containing materials were disposed of there. While historical records may not explicitly list PFAS, their widespread use since the 1940s suggests potential presence, especially in leachate or groundwater plumes migrating off-site. EPA has identified PFAS contamination at numerous Superfund sites nationwide, and without specific testing at LLSS, WM's claim lacks evidence.

2. **"No environmental regulatory framework for PFAS":**
    - This is outdated. As of April 2024, the EPA designated PFOA and PFOS—two prevalent PFAS compounds—as hazardous substances under CERCLA, establishing a clear regulatory

framework. This designation mandates reporting of releases above certain thresholds and enables the EPA to pursue cleanup actions. Additionally, the EPA's February 2024 proposed rules under RCRA aims to list nine PFAS compounds as hazardous constituents, further expanding regulatory oversight. Colorado has also taken steps to address PFAS, with CDPHE monitoring and regulating these chemicals in drinking water and other media. WM's statement does not reflect these developments.

3. **"Conflating Lowry Landfill with DACWPF":**
    - While WM is correct that the Denver Arapahoe Chemical Waste Processing Facility (DACWPF) and LLSS are distinct sites, this does not negate the need to investigate PFAS at LLSS. *In December 2020 CDPHE Permit Review, PFOA was detected in the primary sump at 301 nanograms per liter (ng/L) and PFOS was detected at 430 ng/L. The Annual report also presents analytical detections of PFOA, PFOS, and PCE in the secondary leachate collection system. PCE was found at concentrations ranging from 5.5 to 9.0 ug/L in the secondary sump. PFOA was detected at111 ng/L and PFOS was detected at 61 ng/L in the secondary sump. These PFOA and PFOS detections in the secondary sump were identified in December 2020, the first time this sump had been sampled for those compounds."*

4. **2003, EPA identifies an off-site plume of new Chemical of Concern (CoC) that had traveled at least three miles north of the LLSS POC.**
    - Although the chemical plume was proven to originate at the LLSS, WM did not follow CERCLA rules investigating the off-site plume and EPA did not require WM to conduct a CERCLA required Remedial Investigation (RI) of the plume and the new CoC, that was identified as 1,4-dioxane.
    - The finding of a new CoC required, under CERCLA, a new Remedial Investigation (RI) that included the establishment of new Applicable Relevant and Appropriate Requirements (ARARs) and new Remedial Action Objective (RAOs) for the new CoC. EPA has been managing the three-mile-long off-site plume using the 1984 ROD for the LLSS.
    - It is because there is one confirmed CoC, 1,4-dioxane, and one unconfirmed new CoC, PFAS, in the three-mile-long off-site plume traveling from the LLSS Site that the LLSF CAG/TAG is requesting a new RI to establish appropriate ROD, ARARS and RAOs.

5. WM, with approval from EPA, claims that if the LLSS water going through the Water Treatment Plant (WTP) contains PFAS, *"it will not matter because the water goes through the carbon filter."* This assertion is questionable, and WM should provide the test data to confirm the claim. LLSS has given no proof that it is complying with the standards or testing required to assure that PFAS are being contained by its single carbon filter. Also, the water from the WTP is disposed of into Denver and City of Aurora Sewar systems. The waters are then used for watering public areas, and in the City of Aurora Purple Water uses. It needs to be confirmed that the water is safe for public exposure.

## *JUSTIFICATION*

***The LLSF CAG/TAG is requesting that the EPA and CDPHE use CERCLA's Imminent Hazard, Enforcement, and Emergency Response Authorities, with RCRA Corrective Action and Clean Water Act Rules as follows:***

**CERCLA Authorities:**

- **Imminent and Substantial Endangerment Section 106 (c) of CERCLA:** If PFAS releases from LLSS and Buckley intermingle, it threatens hundreds of domestic wells in the area, the EPA can issue orders or pursue judicial action to compel responsible parties (e.g., WM 45-year operator) to investigate and mitigate the hazard. The mixing of LLSS and Buckley plumes at Coal Creek and Murphy Creek, flowing into Sand Creek, strengthens the case for an imminent threat to downgradient water users.

- **Superfund Investigation:** As a Superfund site, LLSS falls under CERCLA's purview. The EPA can expand its investigation to include PFAS, especially given Buckley's documented AFFF use and the potential for off-site migration. LLSF CAG/TAG evidence of plume convergence supports a request for updated sampling within the 4-mile Buckley study area and along the LLSS plume path.

- Under CERCLA, EPA plans to exercise its CERCLA enforcement at parties who have played a significant role in releasing or exacerbating the spread of PFAS into the environment. EPA has made clear that it reserves its right to pursue enforcement against ***any*** party that may have **contributed to PFAS contamination, particularly where EPA finds a potential imminent and substantial endangerment.**

- Important to note, **the Policy does not exempt parties from reporting PFAS releases under CERCLA.**

**RCRA Corrective Action Authorities:**

- **Hazardous Constituents Listing:** The EPA's February 2024 proposed rule seeks to add nine PFAS compounds (including PFOA and PFOS) to RCRA's hazardous constituents list (Appendix VIII). While not yet finalized, this would enhance the EPA's authority to require investigation and cleanup at RCRA-regulated facilities with solid waste management units (SWMUs) that release these substances. DADS includes SWMUs tied to historical waste disposal, this rule could apply once finalized.
- **Corrective Action Scope:** The companion RCRA rule clarifies that the EPA can address releases of any substance meeting the statutory definition of hazardous waste, even if not yet listed. This broadens the agency's ability to tackle emerging contaminants like PFAS at facilities under RCRA oversight. If WM's operations at DADS involve RCRA-regulated units, encourage more corrective action that includes LLSS to assess PFAS risks to groundwater and wells.
- **Application to LLSS:** Although LLSS is primarily a CERCLA site, any overlap with RCRA-regulated activities (e.g., waste management by WM) could trigger corrective action obligations. ***The LLSF CAG/TAG is requesting this dual authority to ensure comprehensive testing.***

Respectfully,

Bonnie L. Rader

Bonnie L. Rader, LLSF CAG Chair

G. Thomas Kraus

G. Thomas Kraus, MD, LLSF CAG Co-Chair