Addressing PFAS in Stormwater– Regulatory and Compliance Considerations for Utility Operators

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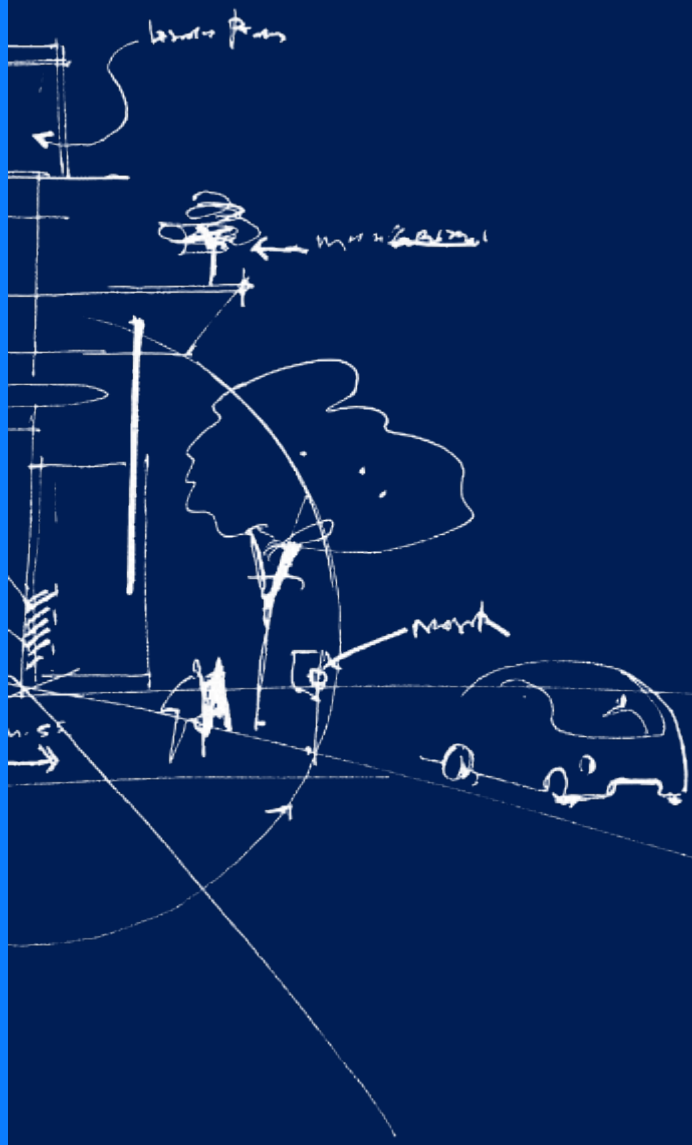
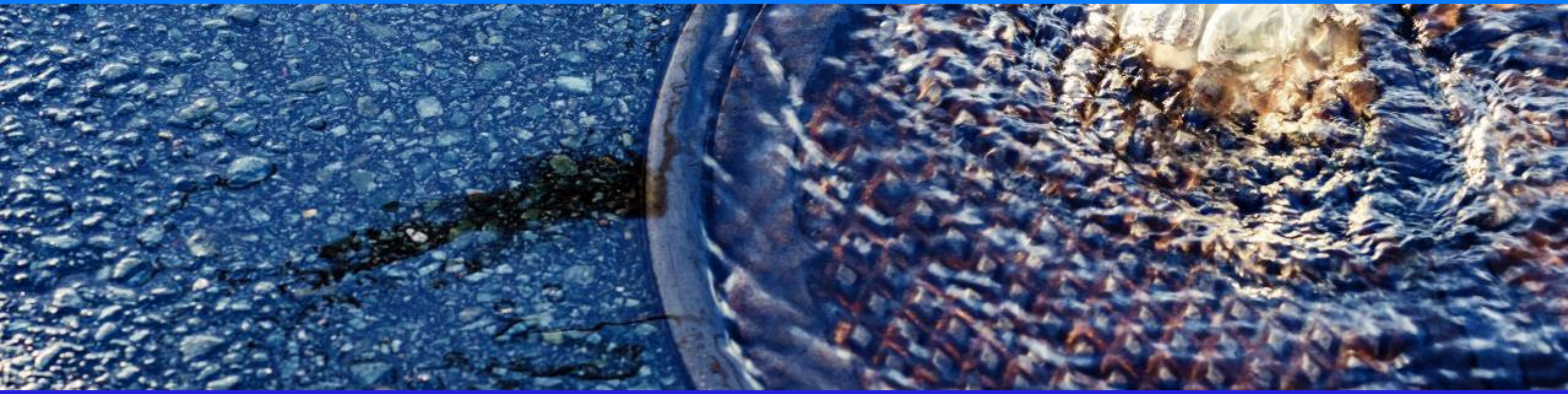
Agenda

- PFAS Implications of the draft EPA 2026 Multi-Sector General Permit
- Select state requirements for PFAS in stormwater
- Potential best management practices to prevent PFAS in stormwater
- Wrap up and Recommendations



PFAS in Stormwater

- Managing stormwater is becoming essential in addressing per- and polyfluoroalkyl substances (PFAS) contamination in the environment. The U.S. Environmental Protection Agency (EPA) and various states are leveraging National Pollutant Discharge Elimination System (NPDES) permits to control PFAS discharges at their source. Monitoring requirements help gather data on PFAS sources and quantities.
- In the draft 2026 Multi -Sector General Permit, the EPA has identified industrial sectors with potential PFAS exposure to precipitation, highlighting increased regulatory focus on stormwater as a pathway for PFAS contamination. Several states have proactively integrated PFAS management and monitoring requirements into their NPDES permit programs.
- As these regulatory efforts expand, industries should:
  - Stay informed and prepared to comply with evolving permit requirements
  - Understand the implications of PFAS sampling and analytical monitoring
  - Implement best management practices to minimize PFAS exposure
  - Explore stormwater treatment technologies to reduce and remove PFAS contaminants
- This presentation will provide utility operators with:
  - Insights into the latest regulatory developments
  - Best management practices for mitigating PFAS risk in stormwater discharges
  - Practical strategies for compliance



PFAS Implications of the Draft EPA 2026 Multi -Sector General Permit

Proposed 2026 NPDES MSGP for Stormwater Discharges

- **Permit Overview**
  - Proposed permit that would cover stormwater discharges from industrial facilities in areas where EPA is the NPDES permitting authority
    - (December 13, 2024 Federal Register, docket ID EPA-HQ-OW-2024-0481)
  - The proposed 2026 MSGP, when finalized, will replace the 2021 MSGP.
- **New PFAS Requirements**
  - Indicator monitoring of PFAS – The 2026 MSGP proposes a new provision that requires certain operators to conduct "report-only" indicator analytical monitoring for PFAS quarterly, beginning in the first full quarter of permit coverage.
- **Links:**
  - Link to MSGP Fact Sheet: https://www.epa.gov/system/files/documents/2024-12/proposed-2026-msgp-fact-sheet.pdf
  - Link to EPA MSGP Webpage: https://www.epa.gov/npdes/stormwater-discharges-industrial-activities-epas-proposed-2026-msgp

PFAS Indicator Monitoring

The Draft 2026 MSGP proposes a new provision that requires certain operators to conduct “report-only” indicator analytical monitoring for PFAS quarterly, beginning in the first full quarter of permit coverage.

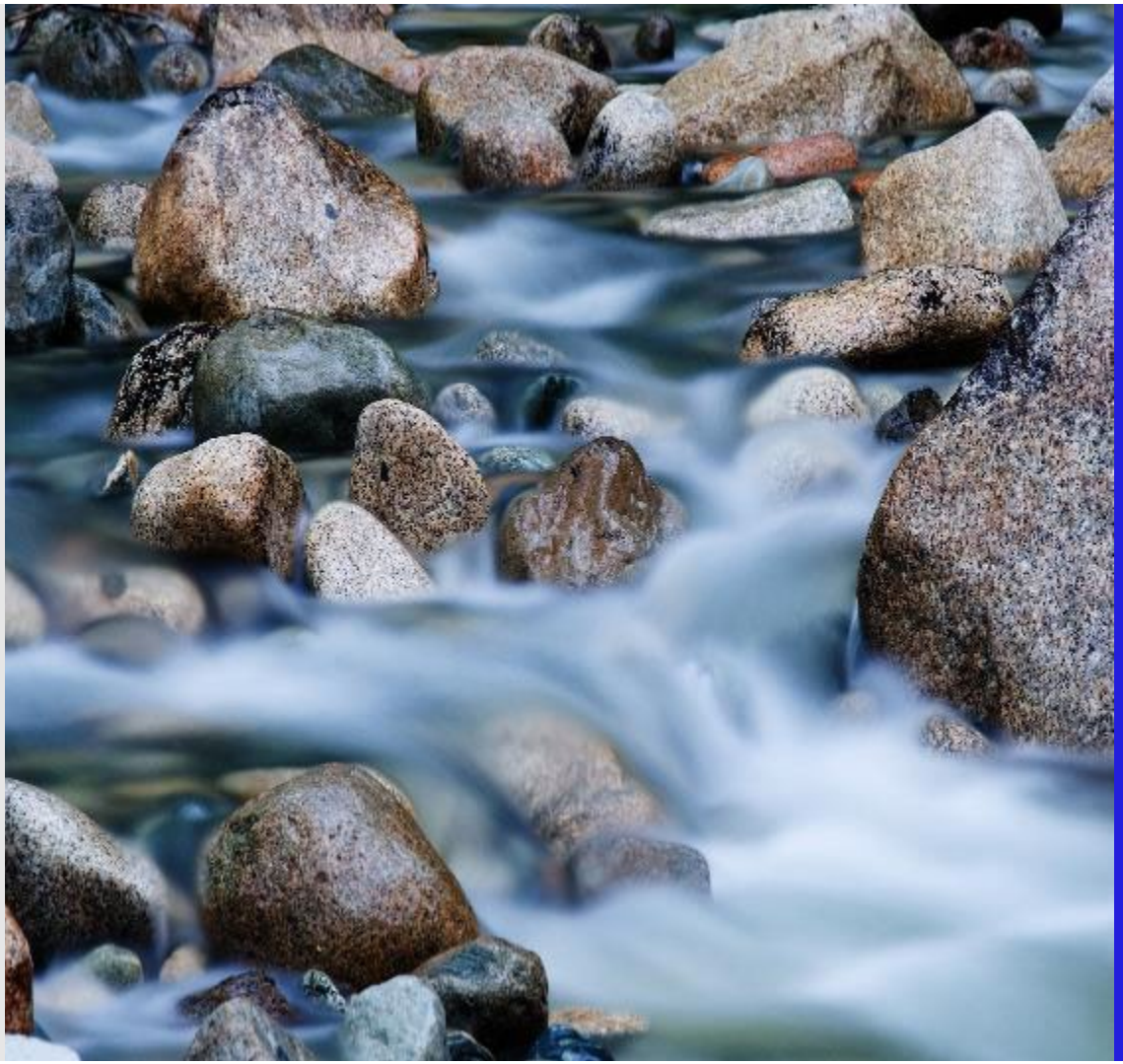
Monitoring applies to the 40 PFAS compounds listed in EPA Method 1633, Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids and Tissue Samples by LC/MS/MS (EPA 2024c). Samples must be analyzed using EPA Method 1633.

Indicator monitoring is “report-only” and does not have a benchmark threshold or baseline value for comparison, nor does it require follow-up actions. The requirement to comply with applicable water quality standards still applies.

Failure to conduct and report indicator monitoring would be a permit violation.

The Purpose of PFAS Indicator Monitoring

- PFAS indicator monitoring data will provide a baseline and comparable understanding of the quality of industrial stormwater discharge concerning PFAS at these facilities.
- The EPA plans to use the indicator monitoring data collected to:
  - conduct an initial quantitative assessment of the levels of PFAS in industrial stormwater,
  - further identify industrial activities with the potential to discharge PFAS in stormwater,
  - and inform future consideration of potential PFAS benchmark monitoring for sectors with the potential to discharge PFAS in stormwater.



Sectors for PFAS Indicator Monitoring

- The proposed MSGP has a new provision that will require certain sectors that are likely to have industrial activities with the potential to expose stormwater to PFAS to conduct quarterly "report-only" monitoring for PFAS for the entire term of the permit.

Sectors:

A – Timber Products	I – Oil and Gas Extraction	P – Land Transportation and Warehousing	V – Textile Mills, Apparel,. And Other Fabric Product Manufacturing, Leather and Leather Products	AA – Fabricated Metal Products
B – Paper and Allied Products	K Hazardous Waste Treatment, Storage, or Disposal Facilities	R – Ship and Boat Building and Repairing Yards	W – Furniture and Fixtures	AB – Transportation Equipment, Industrial or Commercial Machinery
C – Chemicals and Allied products	L – Landfills, Land Application Sites, and Open Dumps	S – Air Transportation Facilities	X – Printing	AC – Electronic, Electrical, Photographic, and Optical Good
D – Asphalt paving and Roofing Materials and Lubricants	M – Automobile Salvage Yards	T – Treatment Works	Y – Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries	
F – Primary Metals	N – Scrap Recycling Facilities	U – Food and Kindred Product	Z – Leather Tanning and Finishing	

Sectors NOT required to conduct PFAS Indicator Monitoring

- E: Glass, Clay, Cement
- G: Metal Mining
- H: Coal Mines
- J: Mineral Mining
- O: Steam Electric Generation
- Q: Water Transportation

Select State Requirements for PFAS in Stormwater

States with PFAS Requirements in Stormwater

- Approaches on how to address PFAS in stormwater vary from state to state
  - Few states have surface water quality standards (SWQS) for PFAS.
  - Permit writers have the ability to use best professional judgement (BPJ) to apply practice-based controls.
  - Some states are collecting PFAS monitoring data from certain sectors. Other states are identifying facilities that must conduct PFAS monitoring by screening permit application data based on a case-by-case basis
- States discussed in this presentation
  - Colorado
  - Maryland
  - Michigan
  - Washington
  - Wisconsin

Colorado PFAS Monitoring

- Colorado's industrial stormwater general permit (COR900000) has requirements for PFAS monitoring for facilities with increased risk of PFAS discharge in 12 industrial sectors: A, B, C, E, K, L (except landfills that only accept coal ash), N, O, P (SIC 5171 only), S (only Part 139 airports or airports where PFAS-containing foam has been stored, used, or released), AA, and AC.
  - Quarterly PFAS monitoring without benchmarks for all subsector facilities in sectors K and L (except landfills that only accept coal ash)
  - For other sectors, once four quarterly samples have been collected and analyzed permittees may discontinue sampling
- Monitoring for PFAS may be applied to substantially identical outfalls.
- Permittees may be exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS.
- Links:
  - Link to General Permit COR900000:
  - https://oitco.hylandcloud.com/cdphermpop/docpop/docpop.aspx?KT647_0_0_0=COR900000&doctypeid=1242&ToDate=06/01/2024&FromDate=05/29/2024
  - Link to Colorado Department of Public Health and Environment Industrial Stormwater
  - https://cdphe.colorado.gov/renewal-industrial-stormwater-general-permit#:~:text=The%20COR900000%20permit%20requires%20facilities,Perform%20inspections.

Colorado Practice Based Effluent Limits

PFAS Storage and Release Practices

- Must prevent or minimize the contribution of PFAS-containing materials to stormwater discharges

- If using PFAS-containing foams for emergency fire-flighting, must evaluate if non-PFAS-containing forms may be used. The results of this evaluation must be documented in the Stormwater Management Plan (SWMP). If PFAS-containing forms are anticipated to be used, must develop procedures to prevent or minimize releases to stormwater

- Identify sources of PFAS associated with industrial activities that may be exposed to stormwater or are located outside and document the location, quantity, method of storage and current disposal practices (if any) in the SWMP.

- Implement controls measures to prevent or minimize discharge of the identified materials.
  - Measures for containing materials within storage handling areas
  - Spill prevention and response procedures that prevent or minimize discharge of PFAS-containing materials to wastewater, stormwater or surface water.
  - Disposal of PFAS-containing material must be done through legal means

Maryland

- Under Maryland's PFAS Action Plan, the state implemented a voluntary survey for PFAS source identification from industrial facilities regulated under the general permit
- Maryland's industrial stormwater general permit includes a provision:
  - **PFAS Source Identification**: All facilities must identify potential PFAS sources and address them in their Stormwater Pollution Prevention Plan (SWPPP).
  - **Monitoring Requirements** : monitoring is required if PFAS-related impairments are identified in the receiving water.
  - **Case-by-Case Permit Requirements**: New permit requirements will be determined on a case-by-case basis for industrial dischargers (surface, groundwater or stormwater) with reasonable potential to violate water quality for PFAS.
- Link to Maryland General Discharge Permit website
  - https://mde.maryland.gov/programs/permits/watermanagementpermits/pages/stormwater.aspx

Michigan

- Michigan developed surface water quality values for five PFAS compounds (PFOS, PFOA, PFBS, PFNA, and PFHxS). The state has and implemented a compliance strategy to address PFAS from industrial facilities, including stormwater discharges.
- Michigan uses a screening approach for facilities regulated under the state's NPDES industrial stormwater (ISW) permitting program.
  - Prioritized facilities are facilities with known use of PFAS-containing products and suspected elevated concentrations of PFAS in stormwater due to PFAS concentrations in groundwater, process industrial wastewater, soils, and/or surface waters associated with the facility.
  - Examples of prioritized facilities: solid or hazardous waste landfills with leachate, remediation of a contaminated site, or if AFFF has been used at the site.
  - Prioritized facilities are required to conduct a PFAS Short-Term Stormwater Characterization Study (STSWCS) to collect samples from all stormwater discharge points.
    - If results from the STSWCS indicate that a discharge exceeds applicable criteria, the facility will be required to implement actions to reduce concentrations of PFAS in their stormwater discharges.
    - This may include a Source Investigation and Identification Plan (SIIP) (if needed), a Pollutant Minimization Program (PMP), ongoing monitoring, a Project Performance Certification (PPC), and the potential for a PMP Status Report and Updated PMP
- https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Programs/WRD/NPDES/ISW-ID-PFAS-Compliance-Strategy.pdf?rev=baec480fdddc4ca29567e8640e2fe047&hash=D3563F5D74421A4019A8FF7E69CAACC5
- https://www.michigan.gov/egle/about/organization/water-resources/industrial-stormwater/isw-pfas
- https://www.michigan.gov/egle/about/organization/Water-Resources/npdes/pfas-related-to-npdes

Washington

- Washington's Industrial Stormwater General Permit requires certain facilities to conduct quarterly, report -only PFAS sampling at stormwater and groundwater discharge points.
  - These facilities include air transportation facilities and waste management and remediation services, including, but not limited to, landfills, transfer stations, open dumps, and land application sites (with some exceptions).
- The state will use the collected data to determine if the pollutants listed need to be included in the next permit and develop benchmarks based on the data received and water quality criteria.
- Link to Washington Industrial Stormwater General Permit website
  - https://ecology.wa.gov/regulations-permits/permits-certifications/stormwater-general-permits/industrial-stormwater-permit#permit

Wisconsin

- Wisconsin has implemented surface water quality criteria for PFOS and PFOA.
  - Surface Waters that Supply Drinking Water – 20 ug/L PFOA
  - Surface Waters that do not Supply Drinking Water - 95 ng/L PFOA
  - All Surface Waters – 8 ng/L PFOS
  - https://dnr.wisconsin.gov/topic/PFAS/WaterQuality.html
- PFOS and PFOA monitoring is included in select Wisconsin Pollutant Discharge Elimination System (WPDES) permits
  - If the Wisconsin Department of Natural Resources (DNR) determines that the effluent may contain PFOS or PFOA, monthly sampling is required

- Monitoring will be required in the first two years in those WPDES permits. The DNR reviews the data to evaluate if the effluent has the reasonable potential to exceed the applicable PFOS and/or PFOA criteria.
  - Permit will be modified to include the development and implementation of a PFOA/PFOS Minimization Plan.
  - Source reduction is a first step toward reducing levels of PFOS and PFOA in the effluent rather than requiring treatment up front.
    - https://apps.dnr.wi.gov/water/wsSWIMSDocument.ashx?documentSeqNo=359044298
  - At the closure of the PFOA/PFOS Minimization Plan component of the WPDES permit, if the discharge still has reasonable potential to exceed the water quality standards for either or both parameters, the permittee will need to design and install treatment to address the remaining concentrations above the applicable PFOS and PFOA criteria

Potential Best Management Practices to Prevent PFAS in Stormwater

Best Management Practices

- Pollution prevention measures to prevent PFAS from discharging with stormwater at facilities can include:
  - **Eliminating PFOS and PFOA-containing AFFFs:** Substitute with available alternatives and require immediate clean-up where AFFFs have been used
  - **Source identification and inventory**
    - source water
    - legacy contamination,
    - equipment and parts which utilize products like Teflon®,
    - chemicals/additives used in manufacturing or maintenance activities which contain small amounts of PFOS and/or PFOA
    - electronic components – batteries, capacitors, connectors, cables
    - cleaning products, nonstick coatings, paint, polishes, pesticides
    - coatings for solar panels and wind turbines
    - lithium-ion batteries and fuel cells for energy storage
  - **Eliminating or substituting of raw material/chemical additives**
  - **Optimizing operations and maintaining good housekeeping practices:** avoid accidental discharges
  - **Decontaminating or replacing equipment:** where PFAS products have historically been used.
  - **Segregation of PFAS containing material:** to prevent exposure to the environment
  - **Clean-up of historical contamination**
  - **Diversion and other measures:** prevent discharges via storm sewer systems
  - **Document in SWP3**: Document sources of PFAS including location, quantity, method of storage, disposal and control measures

Wrap-Up and Recommendations

PFAS Facility Evaluation

- Are PFAS used at this facility? Consider industrial uses, pest management, emergency (fire) response.
- Have PFAS historically been used at the facility?
- Can any PFAS-containing products be reduced or eliminated?
- Is there known PFAS contamination at the site?
  - Does contaminated groundwater intersect with storm water?
- Have PFAS been disposed of in on-site landfill?
- Does the site have PFAS analytical data that can be reviewed?
- Does source water for cooling contain PFAS?
- What are the BMPs in place?

  - https://www.epa.gov/system/files/documents/2023-07/PFAS-BMP-Fact-Sheet.pdf

The Present and the Future

- Federal and State Regulatory agencies are requesting information about PFAS in stormwater during NPDES permitting and compliance
- Federal and State are collecting PFAS data – some are more focused on certain sectors than others
  - Monitoring
    - Regulatory agencies are collecting data to determine next steps
  - Identify sources of PFAS
  - Implement BMPs
- Just because your facility is not included today does not mean it won't be in the future! Be prepared

Questions?

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https://www.jacobs.com/what-we-do/environmental/pfas-and-other-emerging-contaminants

Thank you!