



IERG Water Seminar 2025

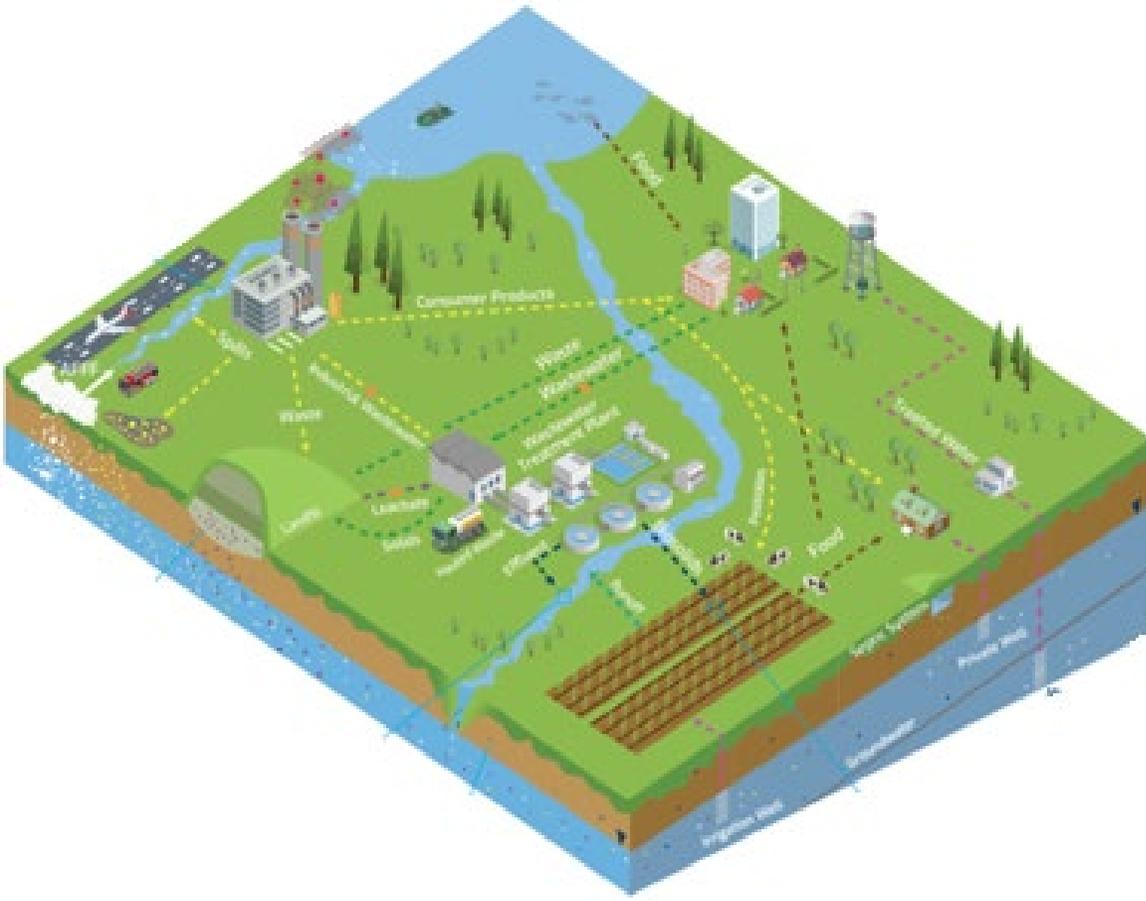
Emerging Technologies + Strategies for Water Quality

9/9/2025

TRCCOMPANIES.COM



Why Do We Need to Be Concerned With PFAS Liability?



Expanding regulatory drivers

- May affect business/site now or in the future
- Need to prepare for and be able to respond to regulations

Many different sources of PFAS

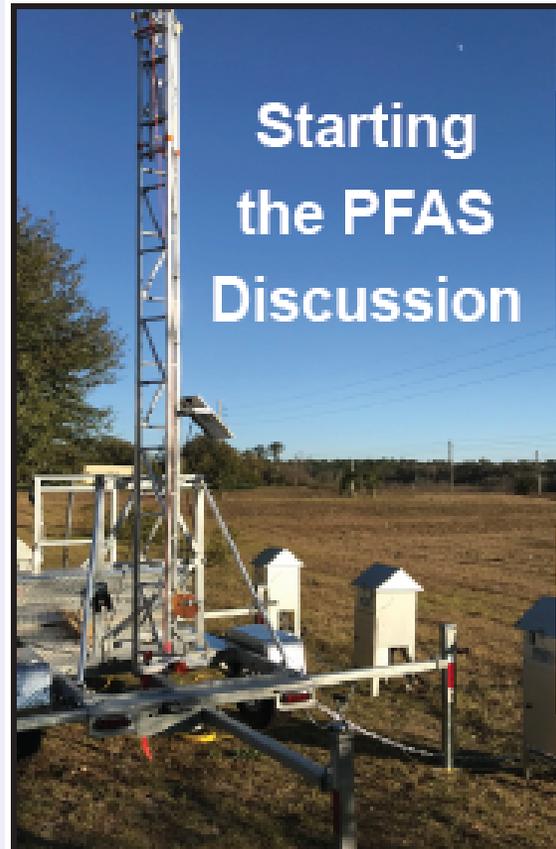
Historical/legacy use of PFAS

Important for buyers, sellers, lenders, investors, and insurers during due diligence

Ultimate liability could depend on specific PFAS in use

Starting the PFAS Liability Discussion



 <p>Starting the PFAS Discussion</p>	Question	Solutions
	Do I have PFAS?	<ul style="list-style-type: none">• Risk management reviews/planning• Site investigations• Water and wastewater testing• Air testing
	Is it really mine?	<ul style="list-style-type: none">• Forensics• Fate and transport modeling• Background sampling
	How much is it going to cost?	<ul style="list-style-type: none">• Risk assessment• Alternative remedies• Cost/scenario modeling
	When will I be done?	<ul style="list-style-type: none">• Regulatory negotiations• Smart closure strategies

How Do You Begin?



Corporate buy-in
and collaboration with
experts on strategy

Designate Corporate
Sponsor

Establish in-house team
to collaborate with
experts

- Company leaders, EHS Managers, Legal counsel

Set goals and
schedules

Approve and
authorize funding for
liability assessment/
management program

Important for company leadership to show visible support for goals and objectives of this program

Nuts and Bolts of PFAS Risk/Liability Assessment



Review facility operations, past use, potential use of PFAS-containing substances

Review regional PFAS data and other publicly available information

Provide understanding of regulatory environment in facility locations

Develop a conceptual risk/process model: sources, migration, exposure

Characterize and prioritize potential PFAS risks

Develop risk management plan: potential mitigation; PFAS-free alternatives

Step 1: Review facility operations, past & potential use of PFAS-containing substances

Comprehensive inventory of materials

- Review safety data sheets
- Sourced domestically or internationally
- Supplier verification statements on PFAS compliance

Section 2. COMPOSITION / INFORMATION ON INGREDIENTS	
Components	CAS Number
Water	7732-18-5
(2-Methoxymethylethoxy) Propanol	34590-94-8
Proprietary mixture of synthetic detergents	No single CAS # applicable
Fluoroalkyl Surfactant	Confidential
Polysaccharide	11138-66-2

Review ingredient list on SDS

Step 1 (continued): Product Review

3. Composition/information on Ingredients

3.1. Mixture

The following component(s) in this product are considered hazardous under applicable OSHA(USA)

Chemical name	CAS No.	weight-%
2-(2-Butoxyethoxy)ethanol	112-34-5	5 - 10
Lauryl Imino Propionate, Sodium Salt	14960-06-6	1 - 5

5.3. Specific Hazards Arising from the Chemical

None known.

Hazardous Combustion Products Carbon oxides **Fluorinated oxides** Nitrogen oxides (NOx), Ox

- No evidence of PFAS in ingredient list
- Review Hazardous Combustion Products Section of SDS

- No evidence of PFAS in ingredient list
- Review Regulation Section of SDS

3. Composition/information on Ingredients

3.1. Mixture

The following component(s) in this product are considered hazardous under applicable OSHA(USA)

Chemical name	CAS No.	weight-%
2-(2-Butoxyethoxy)ethanol	112-34-5	5 - 10
Lauryl Imino Propionate, Sodium Salt	14960-06-6	1 - 5

15.3. US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical name	California Proposition 65
Perfluorooctanoic acid - 335-67-1	Developmental Toxicity
Methylene chloride - 75-09-2	Carcinogen
1,3-Dichloropropene - 542-75-6	Carcinogen

To Whom it May Concern,

To the best of our knowledge after inquiry, PFAS are not used by any of [REDACTED] vendors or suppliers. |

- Supplier verification statements

Site Name:	[Redacted]		
Site Address:	[Redacted]		
TRC Project #:	[Redacted]		
Prepared by:	[Redacted]	Date:	[Redacted]
Reviewed by:	[Redacted]	Date:	[Redacted]
Site Evaluation			
Tier I. Primary PFAS Producers (highest likelihood of PFAS impacts)			
1. Is the site currently or was it historically a fluoropolymer chemical manufacturer (e.g., DuPont, 3M, Chemours)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
2. Is the site currently or was it historically an aqueous film-forming foam (AFFF) manufacturer?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<i>For yes responses, describe the dates of production, products produced, storage location, disposal methods, discharges, and any known releases.</i>			
[Redacted]			
Tier II. Secondary PFAS Users			
PFAS was not likely manufactured, but used, applied, or stored for routine processes or production (moderate to high likelihood of PFAS impacts)			
<i>Is the site currently or was it historically used for any of the following:</i>			
1. Coated cookware manufacturing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
2. Paint, varnish, or sealant manufacturing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
3. Wax coating manufacturing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
4. Plastics or polymer manufacturing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
5. Textile, leather, carpet manufacturing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
6. Metal coating, plating, or etching	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
7. Semiconductor manufacturing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
8. Wire manufacturing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
9. Paper industry (coatings)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
10. Aviation sites (e.g., airports, military installations)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
11. Oil recycling facilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
12. Agricultural facilities (where biosolids or sludge from WWTPs are applied)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
13. Former fire or crash sites (where AFFF used)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
14. Firefighting training operations and fire prevention			
a. Firefighting training centers or fire departments	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
b. Petroleum refineries	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
c. Storage of class B firefighting foams (both civilian and military)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
d. Rail yard, Department of Defense Operations, military installations	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
e. Maintenance and repairs (trucks, equipment, chemical storage)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<i>For yes responses, describe the dates of use, products used, storage location, disposal methods, discharges, and any known releases.</i>			
[Redacted]			

Questions You Need to Answer

PFAS in Due Diligence Screening & Checklist

- PFAS manufactured on site now or previously?
- PFAS used in prior or current operations?
- Where within the process are PFAS being used?
- Any fires on or near the property?
- Is there an airport or military facility near the site?
- Are there wastewater discharges?
- Have you reviewed all safety data sheets?

Step 1 (continued): Review facility operations, past & potential use of PFAS

- **Discharged wastewater to a POTW?**

- If your POTW is part of EPA's Influent POTW Study, consider collecting wastewater samples
<https://www.epa.gov/eg/study-pfas-influent-potws>
- Has state implemented PFAS requirements in NPDES permits?

- **Impacted by CERCLA?**

- Is one of your facilities a PRP in current or closed Superfund site?
- How could you be impacted by use of AFFF at your site and CERCLA reporting?
- Should you switch out AFFF to fluorine-free foam?

- **Impacted groundwater discharged to surface water?**

- **Did the business report under TSCA or TRI?**

- <https://www.epa.gov/system/files/documents/2024-01/list-of-pfas-added-to-the-tri-by-the-ndaa.xlsx>
- <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/tsca-section-8a7-reporting-and-recordkeeping>

- **Impacted by the PFAS MCLs?**

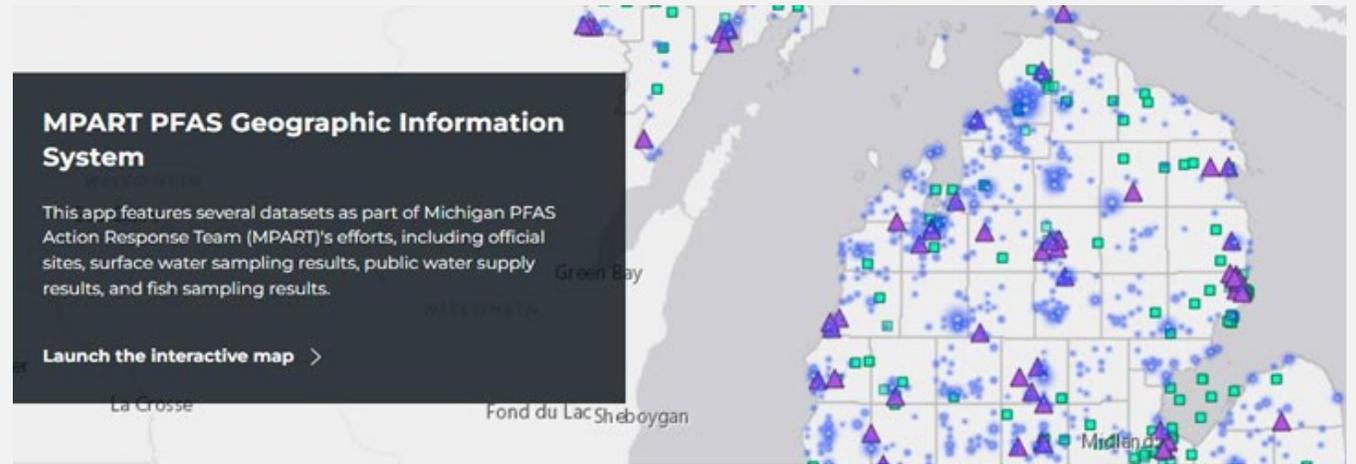
- Is the facility considered a public water supply?
- Impacted groundwater? Is it upgradient or discharging to a drinking water source?

- **Disposing of PFAS containing waste in a landfill?**



Step 2: Review regional PFAS data and publicly available information

- Upgradient sites
- Regional groundwater contamination
- State PFAS databases
- EPA data



PFAS CENTRAL
A PROJECT OF GREEN SCIENCE POLICY

DATA HUB

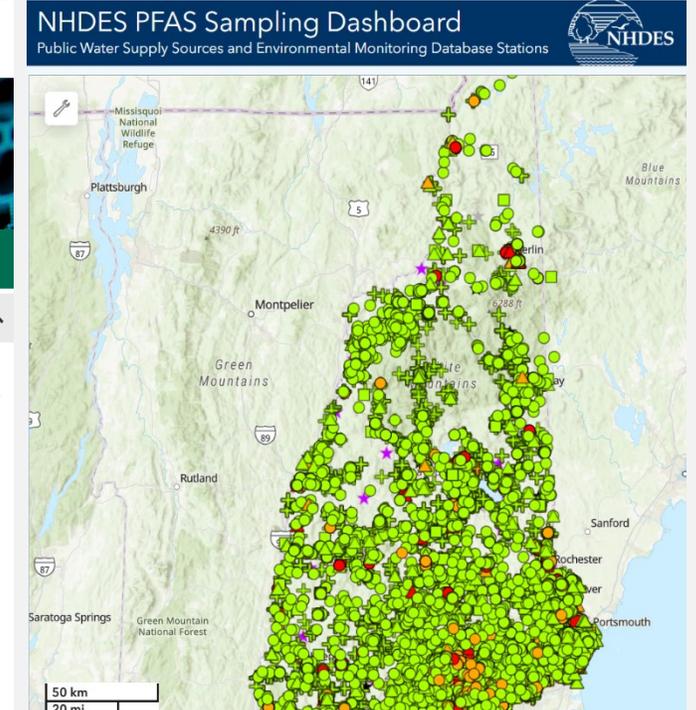
Sources

Manufacturing & Discharge Reporting

Environmental Working Group Suspected Industrial Discharges of PFAS
Map of locations of more than 40,000 industrial and municipal sites (e.g. airports, landfills, waste treatment) that are known or suspected sources of PFAS.

US EPA Enforcement Compliance History Online (ECHO) Water Pollution Search
Calculates and reports facility pollutant discharges in pounds per year or by monitoring period, based on National Pollution Discharge Elimination System (NPDES) permit limit and Discharge Monitoring Report (DMR) data. Data can be filtered by location/watershed, pollutant name (individual) or category (PFAS), industry, and facility name.

US EPA Enforcement Compliance History Online (ECHO) Facility Search - Enforcement & Compliance Data
Compiles information about industrial and municipal facilities' compliance with federal, state, local, and tribal environmental agencies regulating clean air, clean water, hazardous waste, and toxic substances. Search by location, facility type, pollutant, environmental justice and more. TIP: Use list of NAICS codes associated with PFAS uses (Table 3) as facility search criteria.



Step 3: Provide understanding of regulatory environment in facility locations

Current and future regulations and legislation

Current and future product bans

Consistency in regulatory reporting

Drinking water & groundwater standards

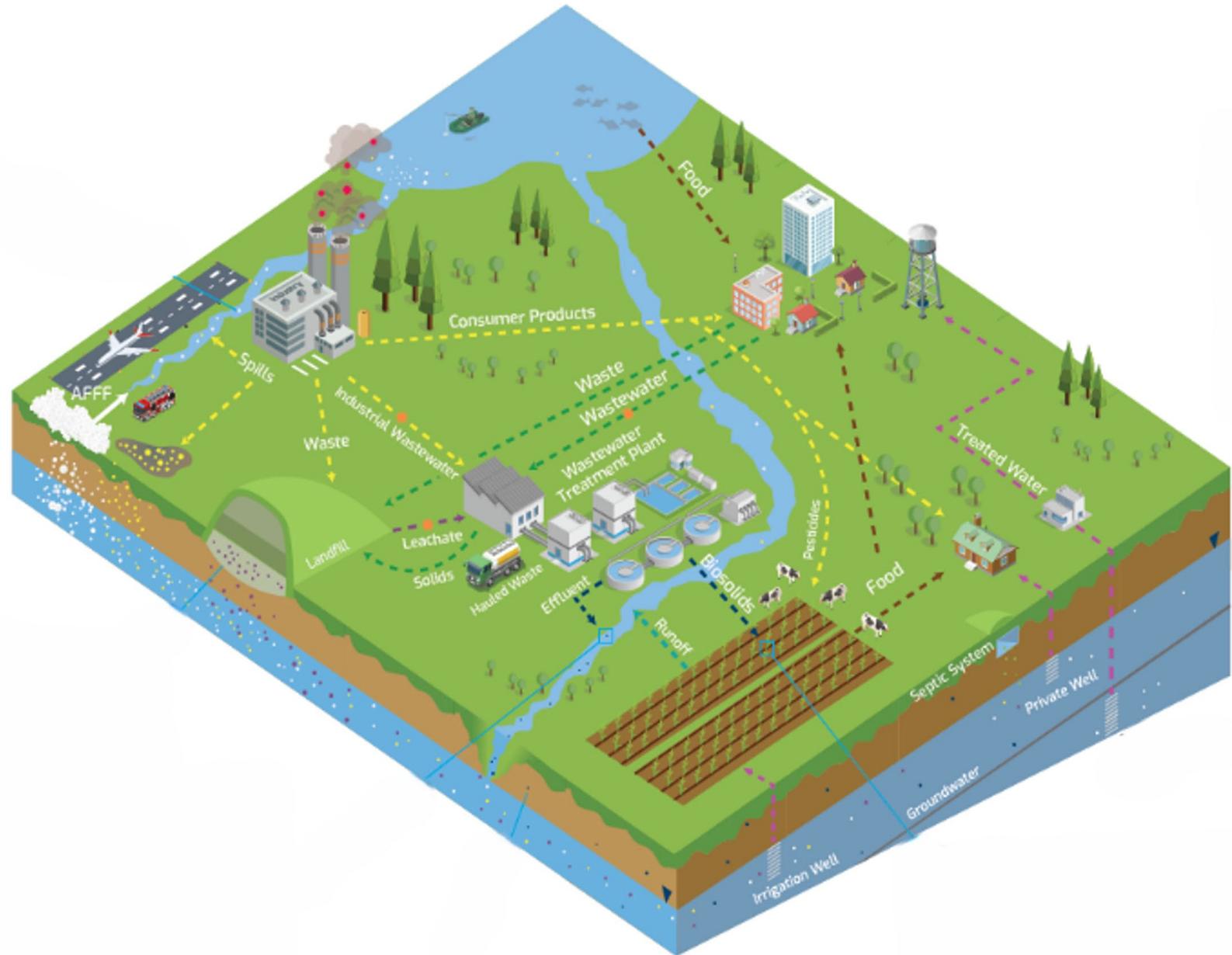
Wastewater and stormwater discharge

EPA Information Collection Requests: Chromium, Textile, Landfill

Options for PFAS waste disposal

Step 4: Develop Conceptual Risk or Process Model

- General facility description
- Potential sources
- Migration routes through operations
- Downgradient liabilities
- Human and environmental exposure pathways



Step 5: Characterize and Prioritize Potential PFAS Liability

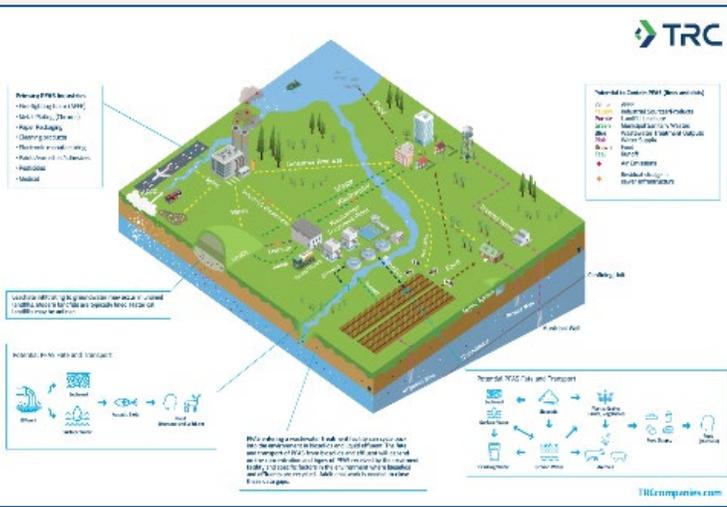
Develop risk ratings using gathered information

Quantify liabilities

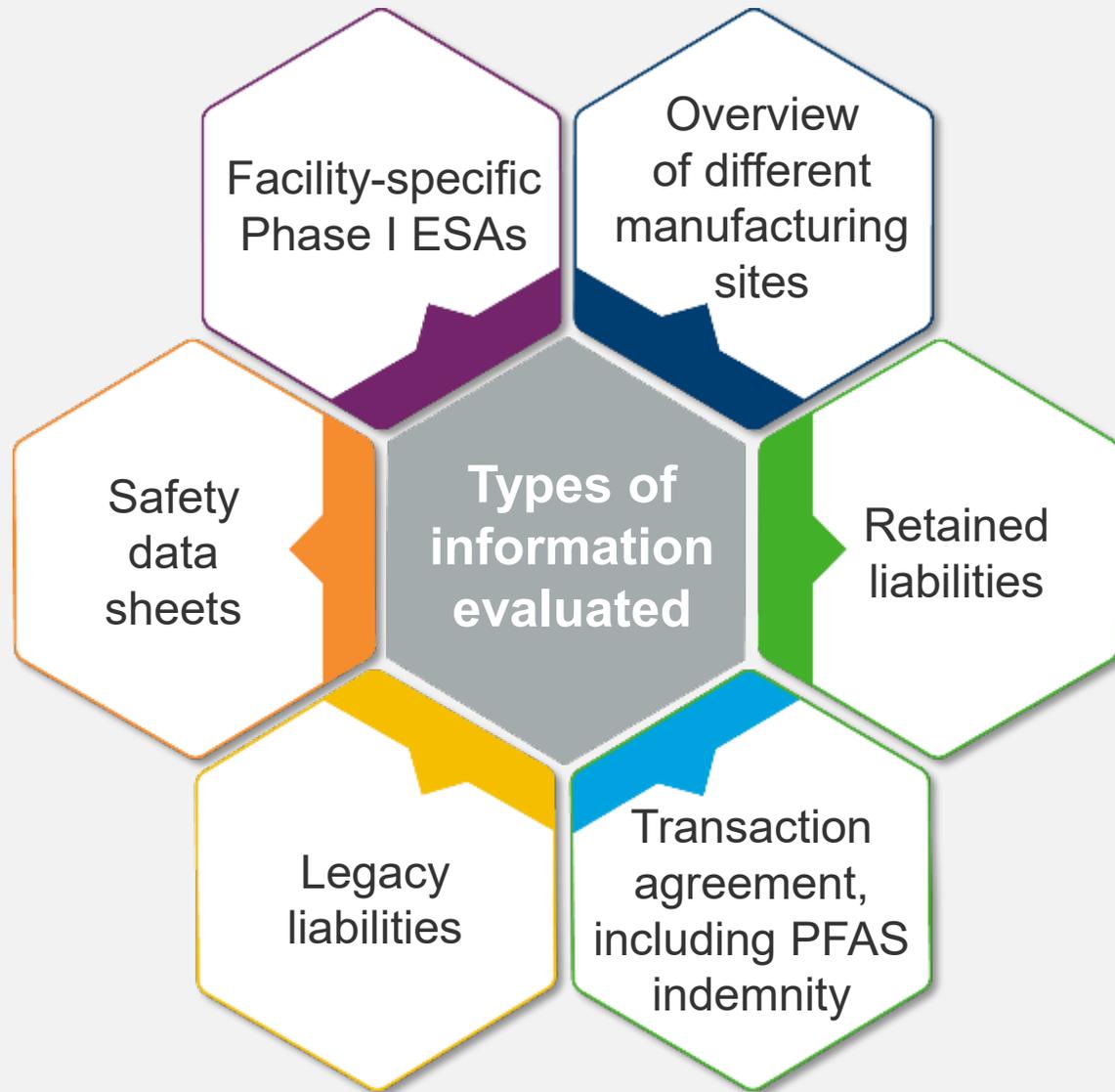
Move onto risk management, if appropriate

TRC Business Confidential
TRC Internal Use Only

Site Name:			
Site Address:			
TRC Project #:			
Prepared by:		Date:	
Reviewed by:		Date:	
Site Evaluation			
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PFAS Risk Evaluation Example



PFAS Risk Evaluation

(low, medium, or high-risk classification)

- Chemistry of products manufactured at each site/facility
- Likelihood of fluorinated chemistries to cause PFAS risk
- Are identified fluorinated organic chemicals classified as PFAS (OECD/EPA/state/ECHA definitions)
- Volume of fluorinated product used in production
- Status of on-going remediation at site/facility
- Results of PFAS evaluations in Phase I ESAs
- PFAS indemnities in transaction agreement, including definition of PFAS

Step 6: Develop PFAS Risk Management Plan



Summaries of where PFAS risks lie



Strategies and actions to manage risks



Potential mitigation actions to reduce or eliminate PFAS



Goal-oriented sampling plans



Source identification approach



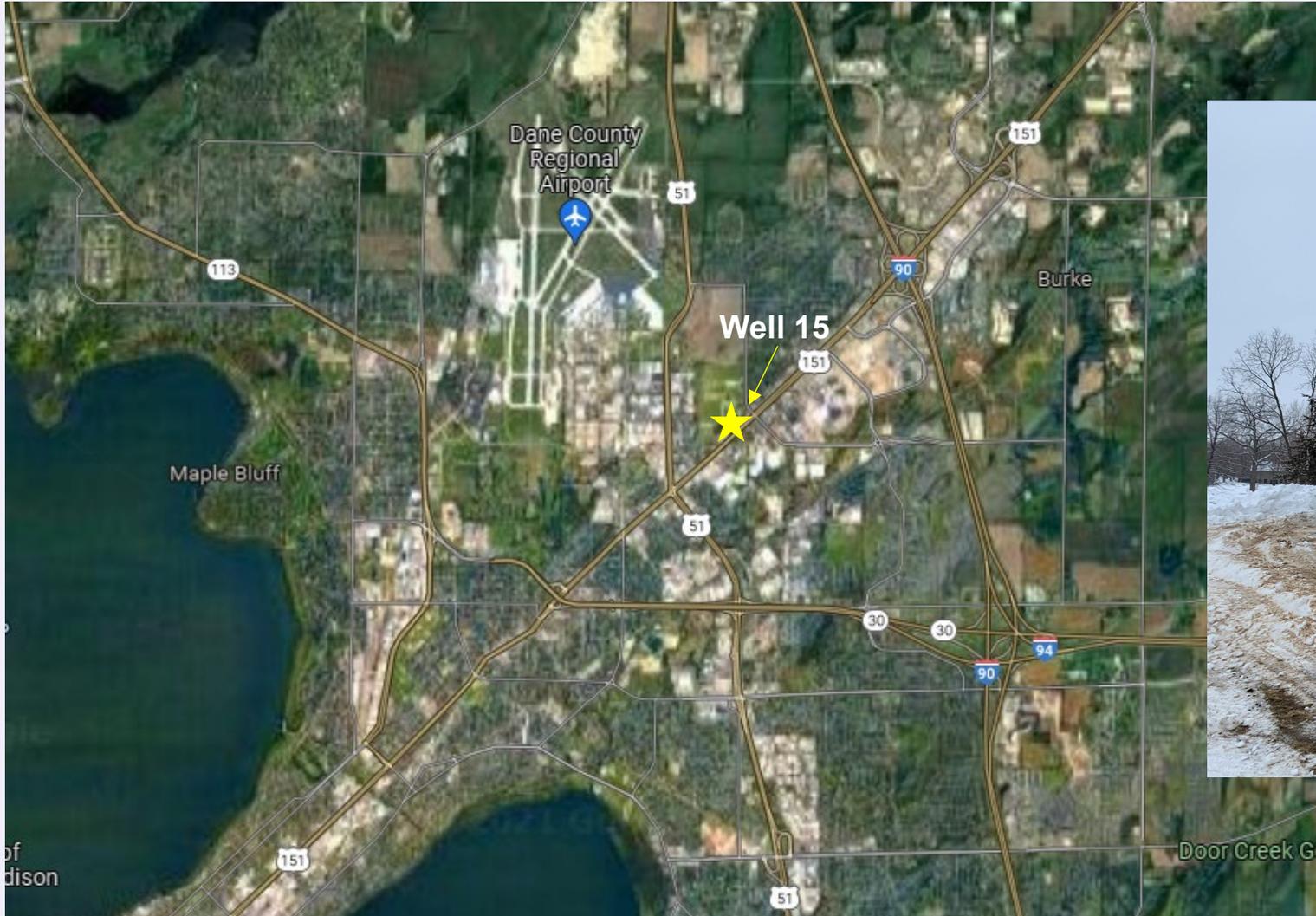
Review of historical insurance



Communications and public relations

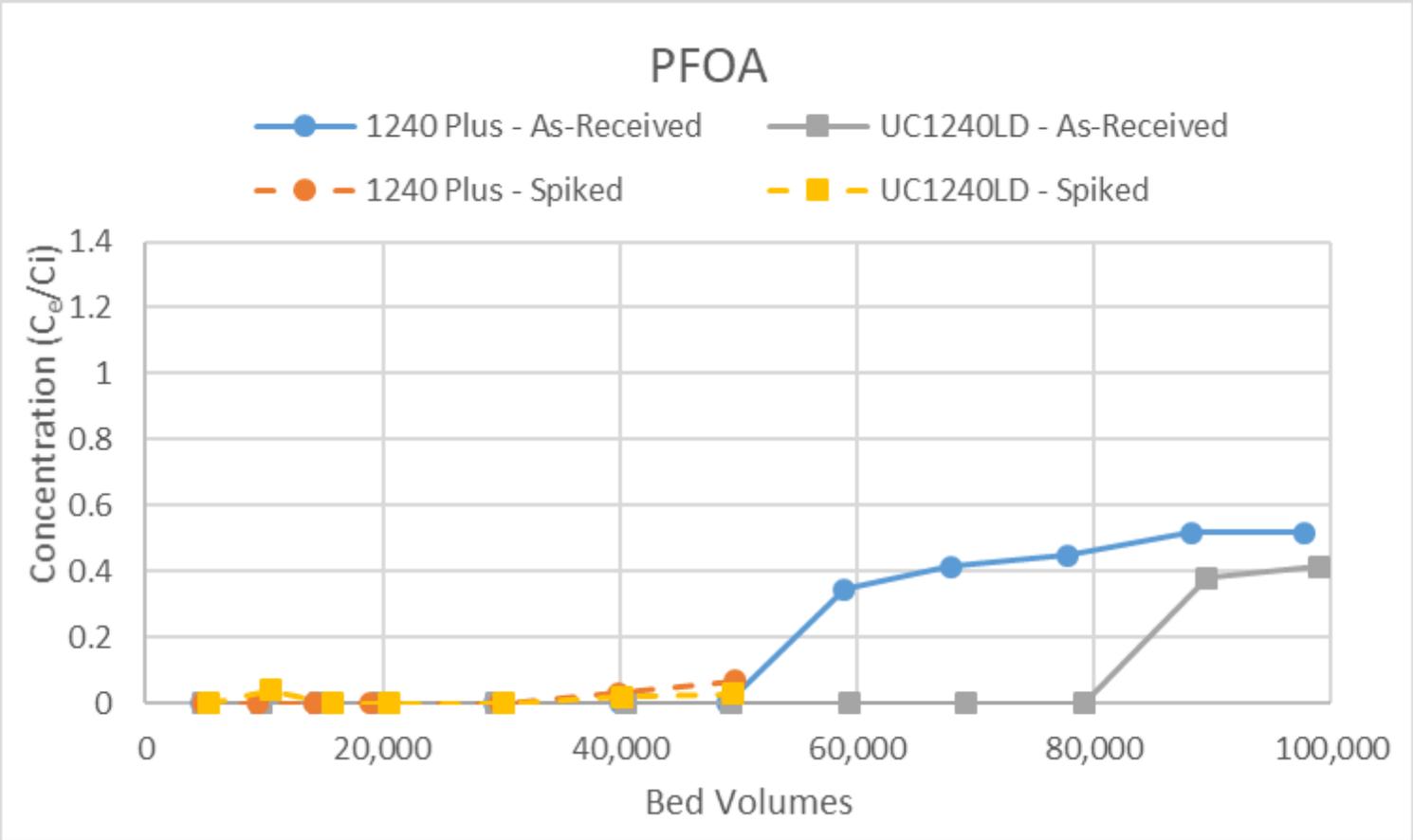


Case Study #1: Public Water Supply Feasibility Study





Case Study #1: Public Water Supply Feasibility Study





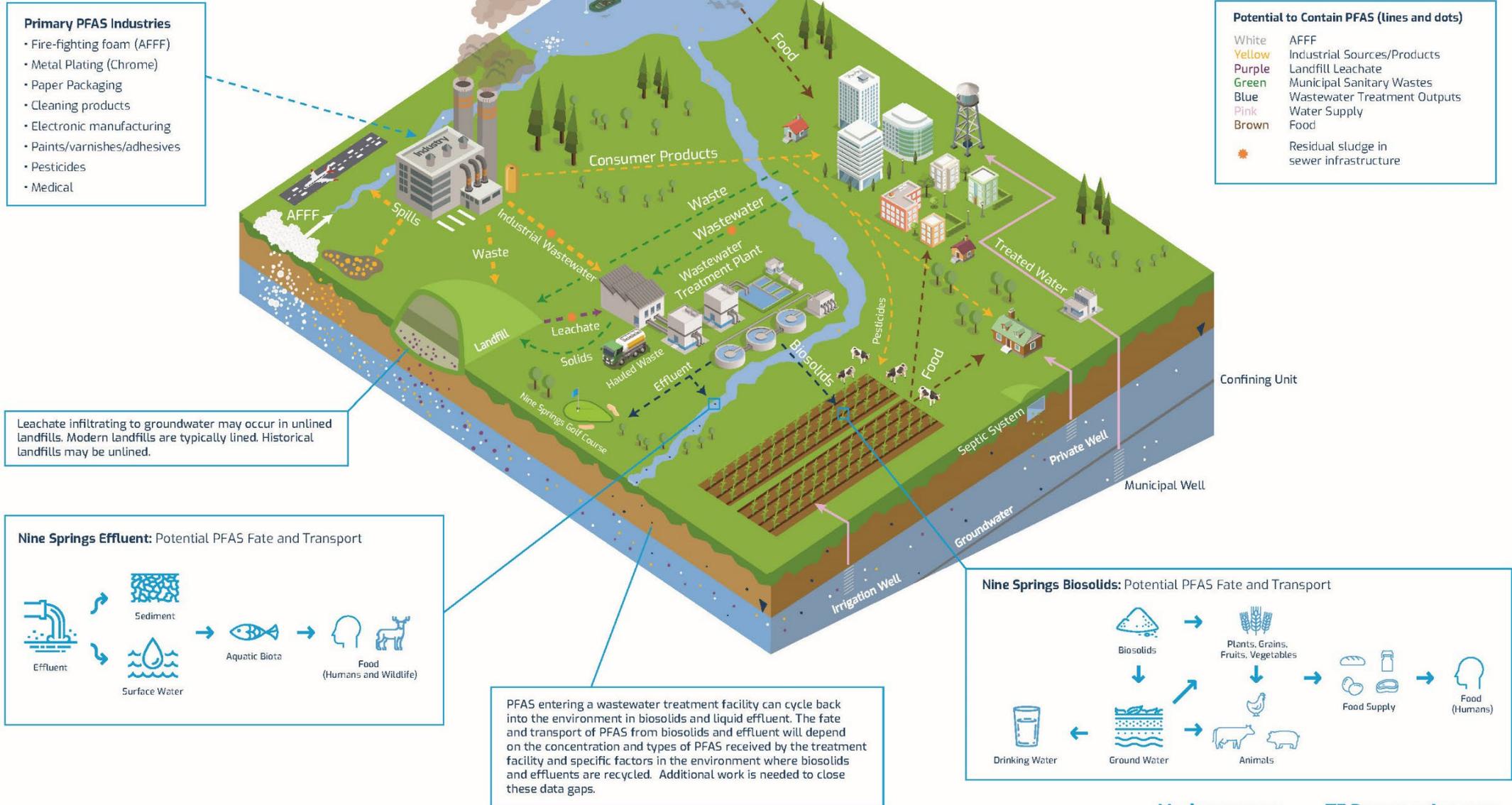
Case Study #2: POTW PFAS Consulting



FIGURE 2

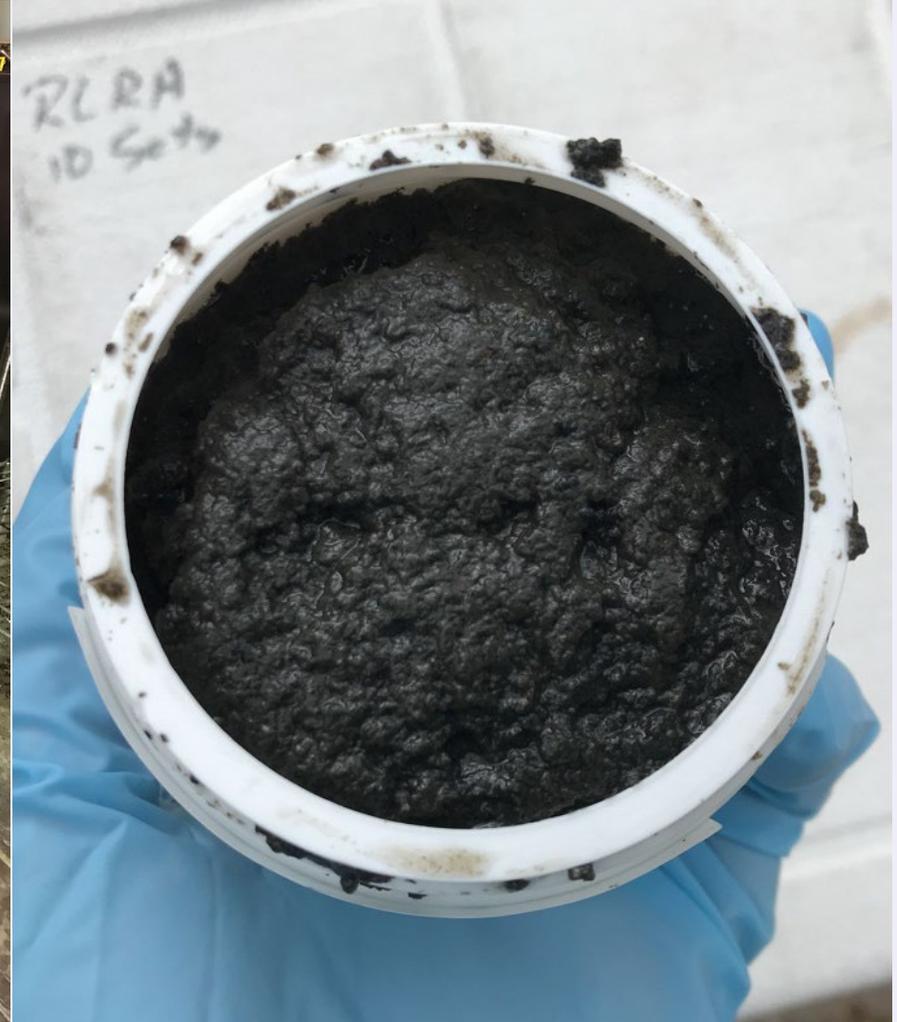
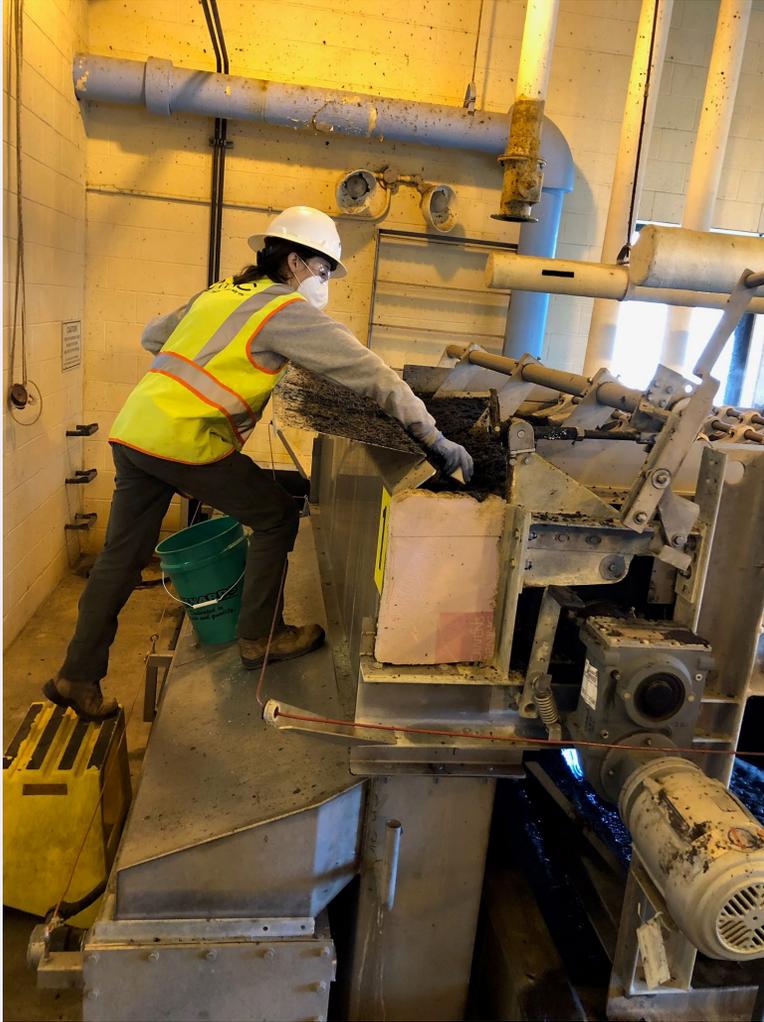
Nine Springs Wastewater Treatment Plant Conceptual Site Model

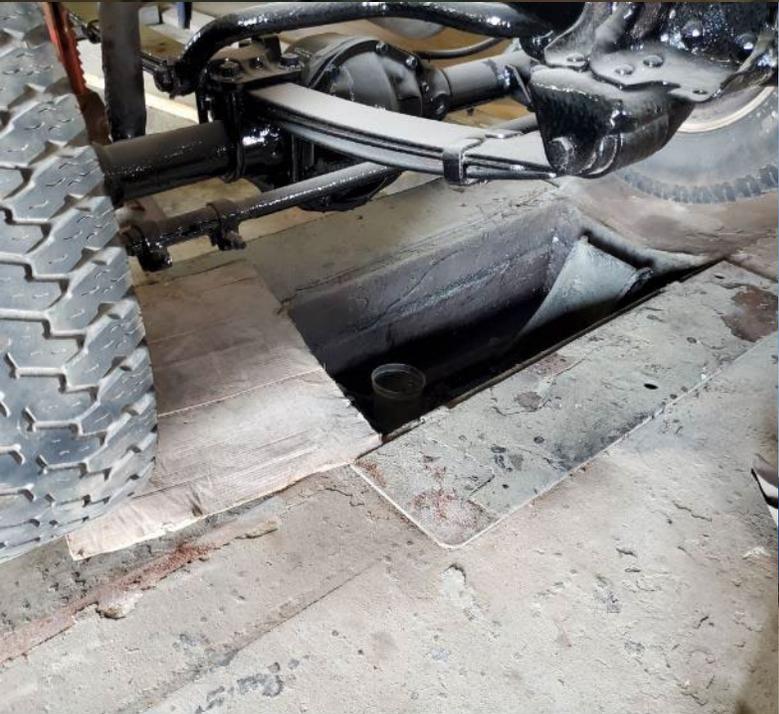
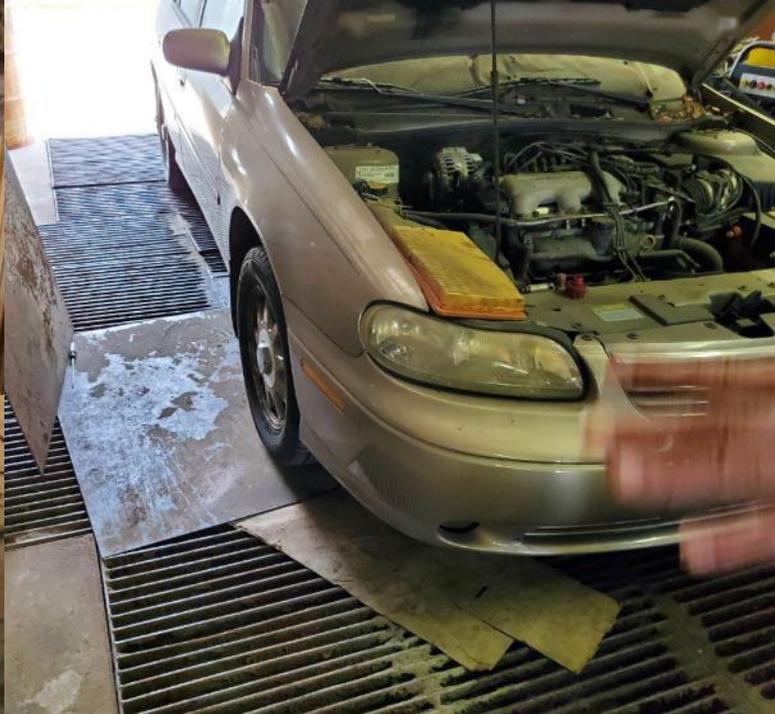
Madison Metropolitan Sewerage District





Case Study #2: POTW PFAS Consulting





Case Study 3: Transactional Due Diligence

Case Study 3: Transactional Due Diligence



Sample Type	Groundwater
Sample ID	PW-1
Sample Date	8/11/22
Parameters ⁽¹⁾	
PFAS (ng/L)	
Perfluorobutanoic acid (PFBA)	6.9
Perfluoropentanoic acid (PFPeA)	4.0
Perfluorohexanoic acid (PFHxA)	3.5
Perfluoroheptanoic acid (PFHpA)	2.6
Perfluorooctanoic acid (PFOA)	5.4
Perfluorononanoic acid (PFNA)	0.27 J
Perfluorobutanesulfonic acid (PFBS)	5.1
Perfluoropentanesulfonic acid (PFPeS)	0.46 J
Perfluorohexanesulfonic acid (PFHxS)	4.5
Perfluorooctanesulfonic acid (PFOS)	6.3
Perfluorooctanesulfonamide (FOSA)	1.7 J

Thanks!



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