Truax Field
PFAS Remedial Investigation
Public Information Meeting

EA Engineering, Science, and Technology, Inc., PBC

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Presentation Topics

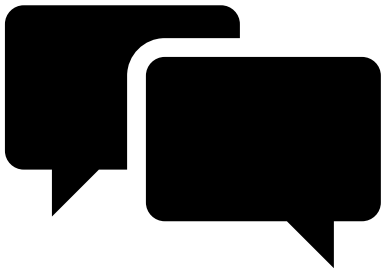
1. Relative Risk Site Evaluation (RRSE)

2. PFAS Remedial Investigation (RI) at Truax Field

Please, save all questions until the end.

Questions to panel members may be asked following each topic or during the closing session outside the theater.

Relative Risk Site Evaluation



What is a Relative Risk Site Evaluation (RRSE)?

The RRSE framework is a methodology used by all Department of Defense (DoD) Components to sequence environmental restoration work (i.e., worst first).

Described in the DoD, *Relative Risk Site Evaluation Primer*, Summer 1997 Revised Edition

Relative Risk Site Evaluation

Within the DoD Component, including the Air National Guard (ANG), RRSE is a requirement for all Environmental Restoration sites and is a tool to assist in sequencing Environmental Restoration work. While it is not the sole factor, it is an important one in the prioritization process.

Relative Risk Site Evaluation

BENEFITS

- The framework provides a common approach among DoD for categorizing sites
- Identifies the most urgent sites so that resources can be focused on higher relative risk projects first
- The rating serves as a basis for discussions with stakeholders
- Periodic ratings (updates) are good indicators of progress in reducing risk

Relative Risk Site Evaluation

What RRSE is not…

- It is not a substitute for either a baseline risk assessment or human health risk assessment.
- It is not a way to halt site progress (i.e., placing a site in response complete or request no further action).
- It is not a tool for justifying a particular action; or lack thereof.

Relative Risk Site Evaluation

The DoD has been identifying all potential sites affected by per- and poly-fluoroalkyl substances (PFAS) for several years.

Relative Risk Site Evaluation

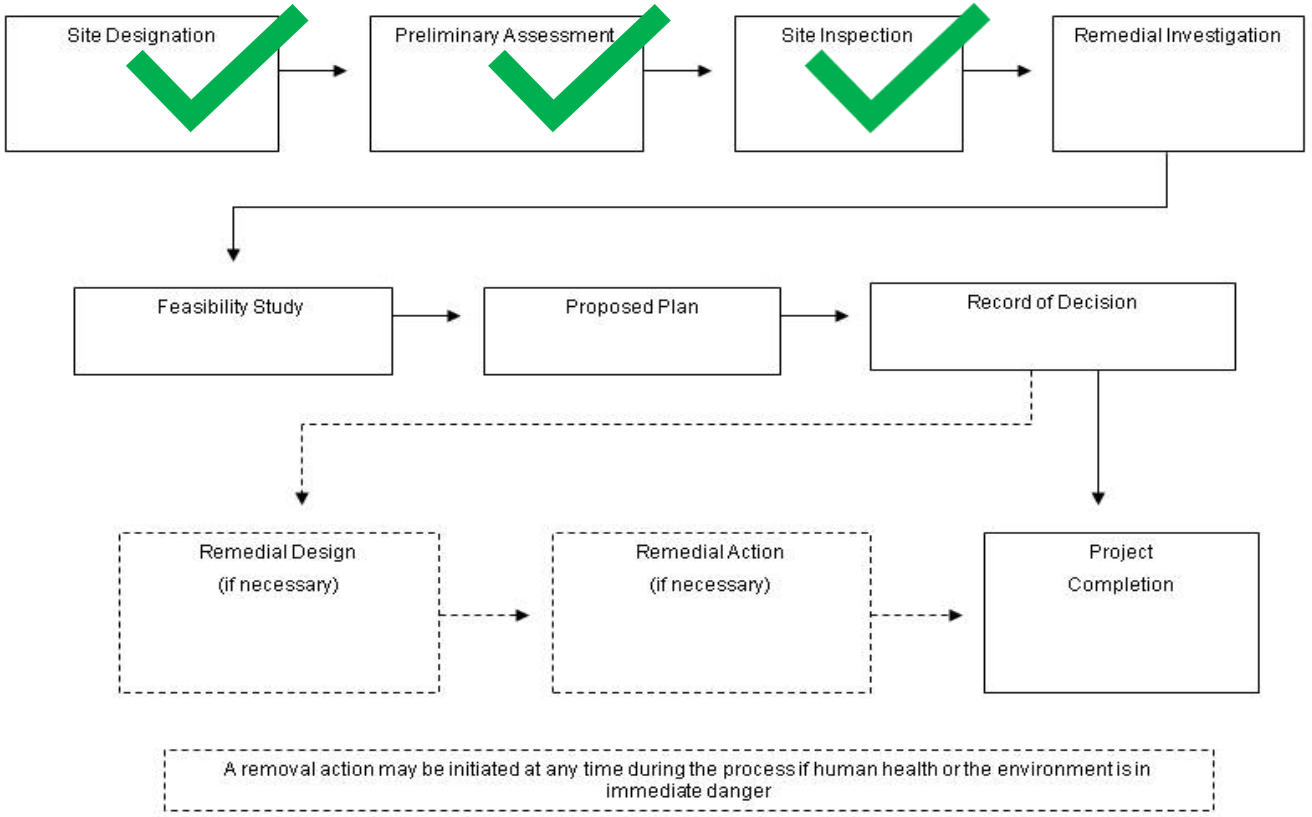
Following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance, The Air Force and ANG are making progress toward cleanup of PFAS contaminated sites.

73 ANG Installations have completed:

- Preliminary Assessment (PA)
- Site Inspection (SI)
- Expanded SI (select installations)

Relative Risk Site Evaluation

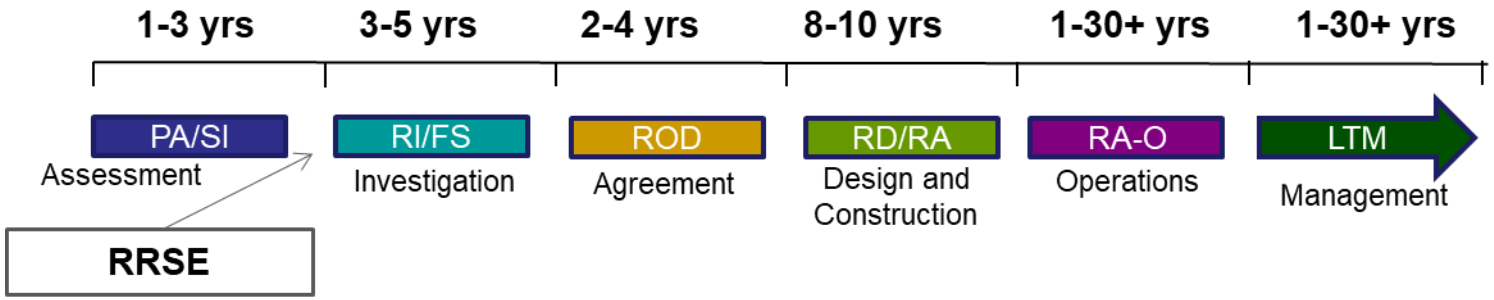
CERCLA Process



Source: lrl.usace.army.mil/Missions/Environmental/CERCLA-Process website. United States Army Corp of Engineers

Relative Risk Site Evaluation

Where is RRSE in the CERCLA Process?



- Installations entering the RI/FS stage of CERCLA
- Uses the highest concentrations found in final documents along with sources, pathways, and receptors compiled into worksheets
- The documented data is used to determine evaluation factors and relative risk categories via RRSE process

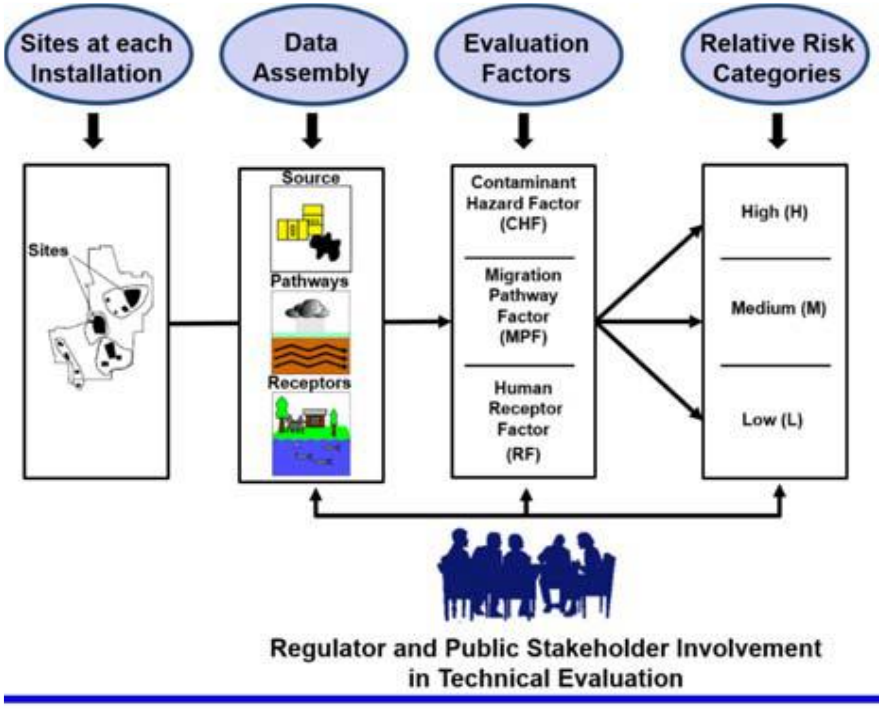
Relative Risk Site Evaluation

ANG Installations are at the beginning of the next, more detailed investigative stage, the Remedial Investigation (RI), to define the nature and extent of PFAS contamination and help determine where further action is needed.

The Feasibility Study (FS), sometimes accomplished in parallel with the RI, is a mechanism for development, screening, and evaluation of remedial action alternatives.

Relative Risk Site Evaluation

In order to help determine which installations take priority for initiating an RI/FS, the RRSE process is occurring, and the review process occurs yearly.



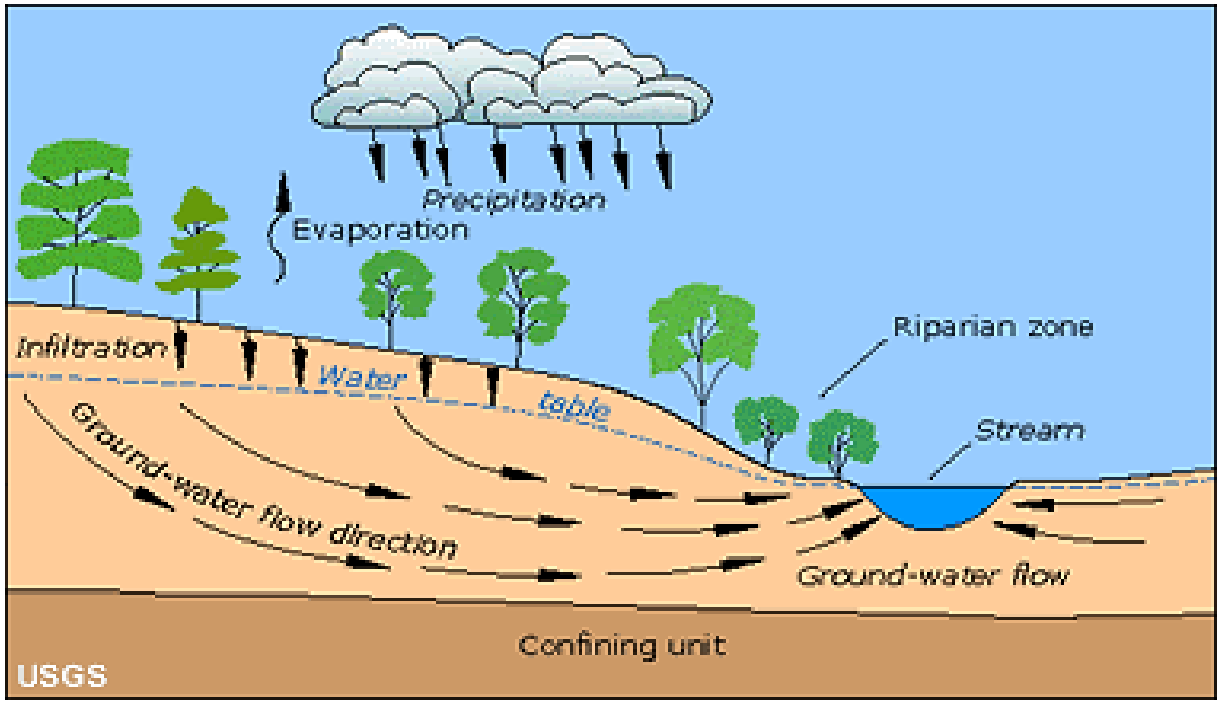
Relative Risk Site Evaluation

RRSE is a tool used across the DoD to group sites based on available data into high, medium, and low categories.

RRSE Summary, Truax Field, Wisconsin	
Overall Site Category	**Site Name**
High	PRL 1, PRL 2, PRL 3, PRL 4, PRL 5, PRL 6, PRL 7, PRL 8, PRL 9
Medium	None
Low	None

Relative Risk Site Evaluation

Each media (groundwater and surface soil) is evaluated using three evaluation factors.



Relative Risk Site Evaluation

The 3 evaluation factors are

- Contaminant Hazard Factor (CHF)
- Migration Pathway Factor (MPF)
- Receptor Factor (RF)

These help to determine and evaluate the observed contaminant magnitude and the source, pathway, and receptor relationships in each affected media

Relative Risk Site Evaluation

Groundwater Worksheet

Contaminant Hazard Factor			
Contaminant	**Max. Concentration (ug/l)**	**Comparison Value (ug/l)**	**Ratio**
A	8.86	0.04	221.5
B	2.26	0.04	56.5
C	0.349	40	-
		Total Ratio	**278.0**

Select Rating based on Total	
Significant (total > 100) High – H	**H**
Moderate (total 2-100) – Medium – M	
Minimal (total <2) – Low – L	

Example

Migration Pathway Factor (MPF)	Select Rating
Evident – High - H Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	**H**
Potential – Medium - M Contamination in the groundwater has moved beyond the source or Insufficient information available to make a determination of Evident or Confined	
Confined – Low - L Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited	

Receptor Factor (RF)	Select Rating
Identified – High – H Impacted drinking water well above comparison value* or existing downgradient drinking water well within 4 miles per SI guidance	**H**
Potential – Medium - M No known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water or source of water for other beneficial use	
Limited – Low - L No known drinking water wells downgradient; and groundwater is not considered to be potential source of drinking water and groundwater is of limited beneficial use	

Groundwater Category (High, Medium, Low)	High

Relative Risk Site Evaluation

The Contamination Hazard Factor (CHF) is determined by dividing the maximum contaminant concentration by the screening value to achieve a ratio. The ratios for each contaminant are totaled to arrive at the CHF.

- Minimal (Low) - CHF less than 2
- Moderate (Medium) – CHF 2 to 100
- Significant (High) – CHF greater than 100

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	39	0.04	975.0
PFOA	0.841	0.04	21.0
PFBS	0.357	0.602	0.6
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**996.6**

Relative Risk Site Evaluation

The Migratory Pathway Factor (MPF) is determined by designating a site as either:

- Evident – contamination is at a point that exposure can occur (i.e., drinking water well)
- Potential – exposure to contamination may happen
- Confined – low possibility of exposure

Migratory Pathway Factor		
Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Relative Risk Site Evaluation

The Receptor Factor (RF) is determined by evaluating whether a receptor has the potential to contact contaminated media:

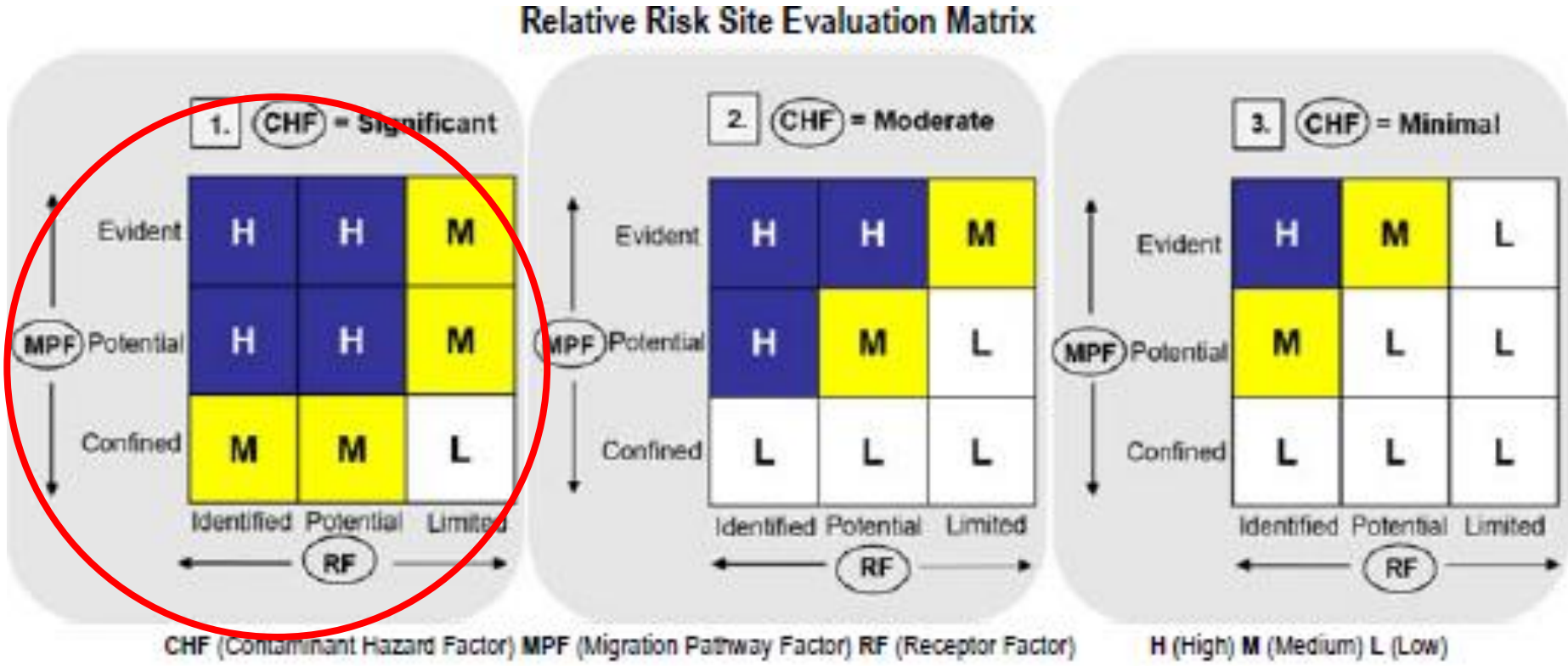
- Identified – when receptors are in contact
- Potential – when receptors may come in contact
- Limited – when there is little or no contact

These correspond to high, medium, and low ratings

Receptor Factor		
Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	H
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	H

Relative Risk Site Evaluation

Each of the three factors are used to assign a media relative risk rating using the “risk” charts



Relative Risk Site Evaluation

First: Select chart 1, 2, or 3 based on the CHF result

Groundwater Worksheet

Example

Contaminant Hazard Factor			
Contaminant	Max. Concentration (ug/l)	Comparison Value (ug/l)	Ratio
A	8.86	0.04	221.5
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C	0.349	40	-
		Total Ratio	278.0

Select Rating based on Total	
Significant (total > 100) High – H	H
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Minimal (total <2) – Low – L	

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Identified – High – H Impacted drinking water well above comparison value* or existing downgradient drinking water well within 4 miles per SI guidance	H
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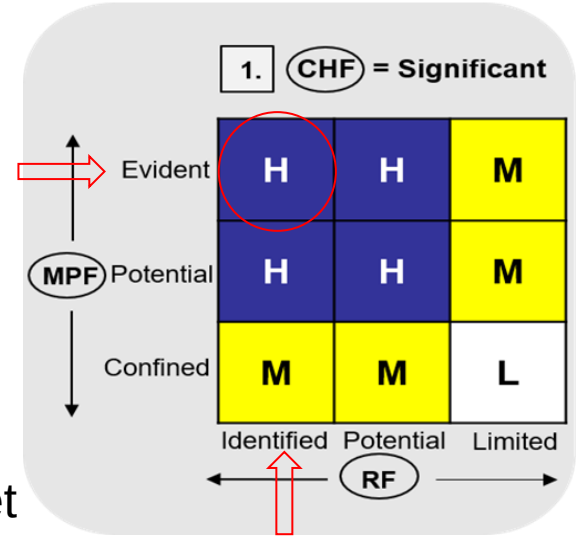
Limited – Low - L No known drinking water wells downgradient; and groundwater is not considered to be potential source of drinking water and groundwater is of limited beneficial use	

Groundwater Category (High, Medium, Low)	High

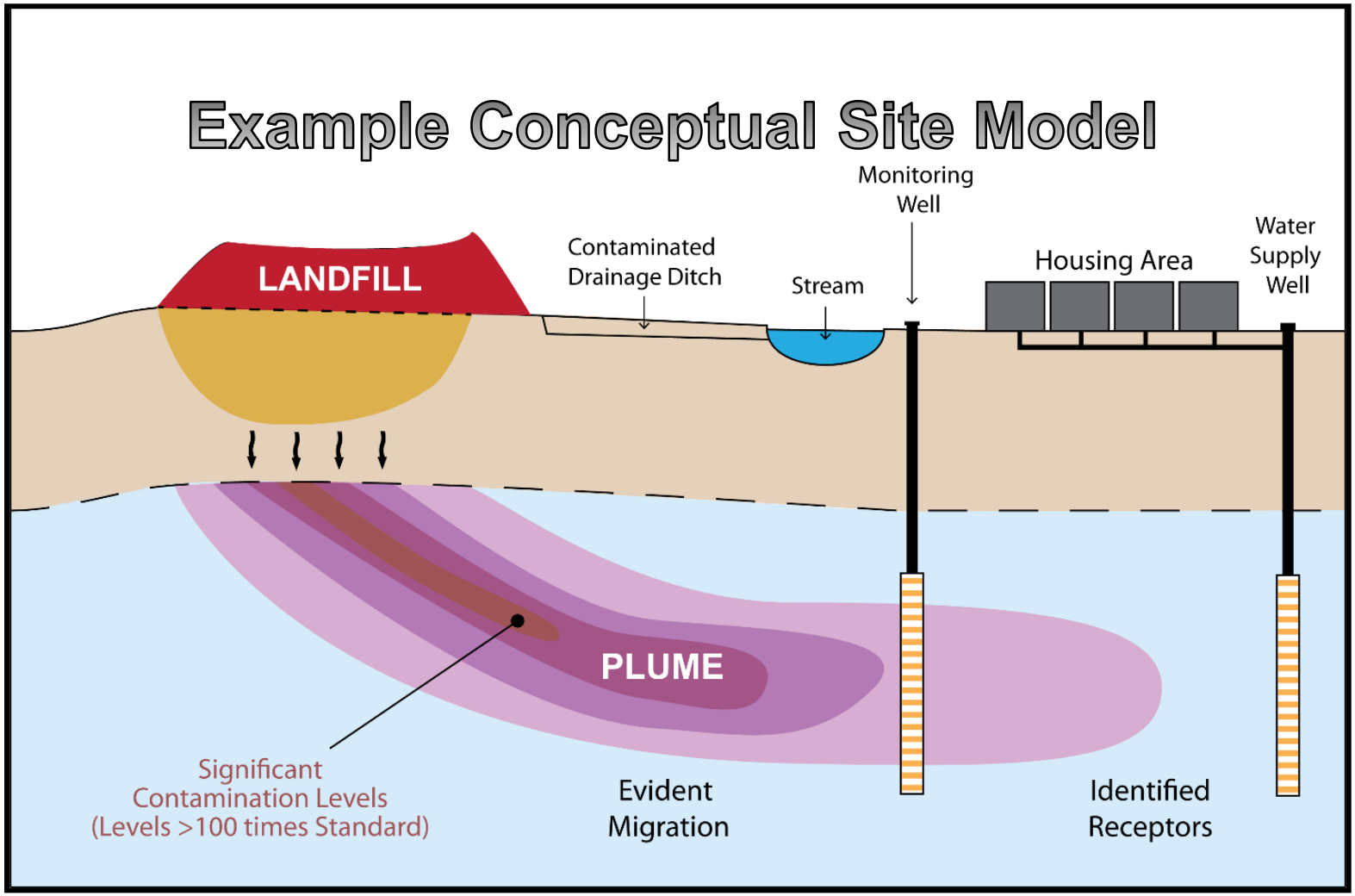


Second:

- The MFP and RF results are used
- Move to the square where the results meet
- That square is the media relative risk

Relative Risk Site Evaluation

High Relative Risk Example



Relative Risk Site Evaluation

To learn more:

Department of Defense, Relative Risk Site Evaluation Primer, Summer 1997 Revised Edition

https://denix.osd.mil/references/dod/policy-guidance/relative-risk-site-evaluation-primer/

Relative Risk Site Evaluation

A major goal of the RRSE Framework includes involvement of regulators and public stakeholders (RABs, public meetings, public notices, etc.).

Communicating openly with stakeholders gives an opportunity to confirm information and work together to provide the most complete RRSE.

RRSE Questions?

PFAS Remedial Investigation

Federal Response to Contaminated Sites

Comprehensive Environmental Response, Compensation and Liability Act of 1980

Also known as CERCLA or Superfund

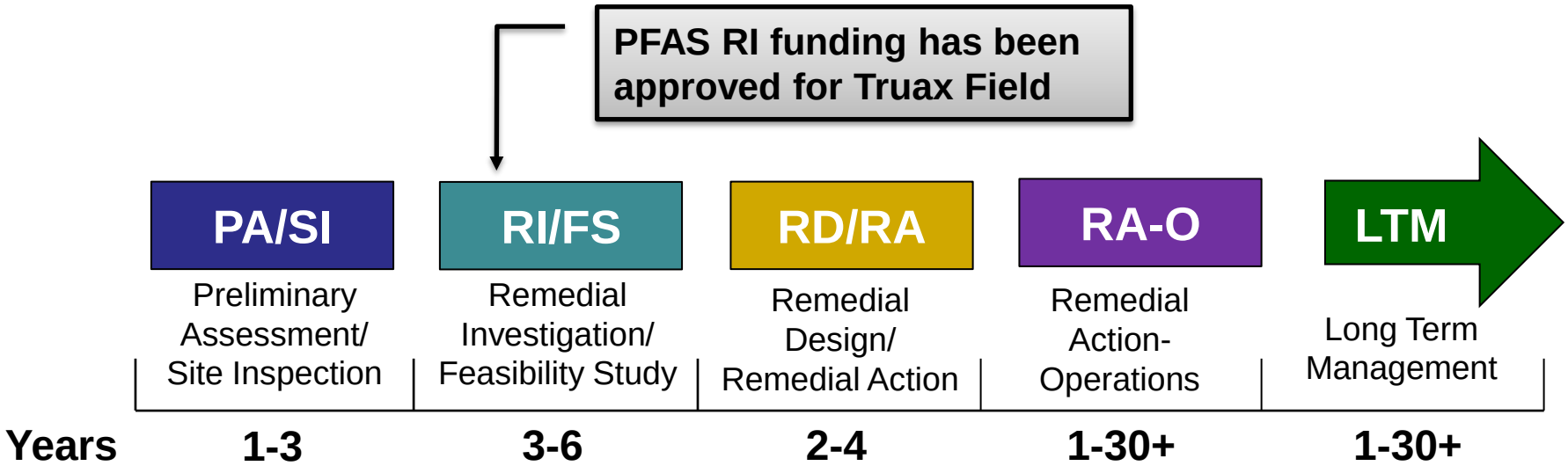
The Department of Defense (DoD) conducts environmental restoration activities in accordance with CERCLA.

Cleanup is conducted under the Defense Environmental Restoration Program (DERP) in accordance with Air Force and Air National Guard policies.

The Environmental Restoration Process

1. **Preliminary Assessment (PA)**
   - Review historical site information
2. **Site Inspection (SI)**
   - Does the site pose a threat?
   - Sample environmental media
3. **Remedial Investigation (RI)**
   - Evaluate nature and extent of contamination
   - Assess risks to human health and the environment
4. **Feasibility Study (FS)**
   - Evaluate potential remedies
   - Evaluate Applicable or Relevant and Appropriate Requirements (ARARs)
   - Evaluate cleanup goals and objectives
5. **Record of Decision (ROD)**
   - Decision document
   - Public comment period
6. **Remedial Design (RD)**
   - Cleanup plan development
   - Engineering and design
7. **Remedial Action (RA)**
   - Construction
   - Removal
   - Operation (RA-O)
8. **Long-term Management (LTM)**
   - Confirmation sampling
   - Natural attenuation
   - Five-Year Reviews
   - Site redevelopment

Environmental Restoration Timeframes



Many factors are considered when moving an environmental project to the next phase of work, including available funding.

Truax Field – PFAS Investigative Process

1. Preliminary Assessment (PA)

- Completed August 2015, PA Report available on BRRTS
- Ten areas of concern were identified where aqueous film forming foam (AFFF) was used or stored on base
- Nine potential AFFF release locations recommended for further study during SI

2. Site Inspection (SI)

- Completed November 2017, SI Report available on BRRTS
- PFAS in soil and groundwater exceeded screening levels at all nine potential AFFF release locations

3. Remedial Investigation (RI)

- Contract awarded in September 2020
- Field work/data collection planned for Spring/Summer 2022
- RI Report expected to be published in 2023

4. Feasibility Study (FS)

- Evaluate potential remedies
- Evaluate Applicable or Relevant and Appropriate Requirements (ARARs)
- Evaluate cleanup goals and objectives

5. Record of Decision (ROD)

- Decision document
- Public Comment Period

6. Remedial Design (RD)

- Cleanup plan development
- Engineering and design

7. Remedial Action (RA)

- Construction
- Removal
- Operation (RA-O)

8. Long-term Management (LTM)

- Confirmation sampling
- Natural attenuation
- Five-Year Reviews

Truax Field – Components of the PFAS Remedial Investigation

Investigative Procedure

- Delineate source areas contributing PFAS at:
  - 10 Potential Release Locations (PRLs)
  - 1993 F-16 Crash Area
- Environmental Sampling
  - Soil
  - Groundwater
  - Surface water
  - Sediment
  - Lysimeters
- High-resolution site characterization (HRSC)
- Permanent groundwater monitoring wells
- On-site laboratory to provide real-time sampling results
- Multi-step, iterative process to define extent
- All procedures developed in close coordinate with Wisconsin Department of Natural Resources (WDNR)

Conceptual Site Model (CSM)

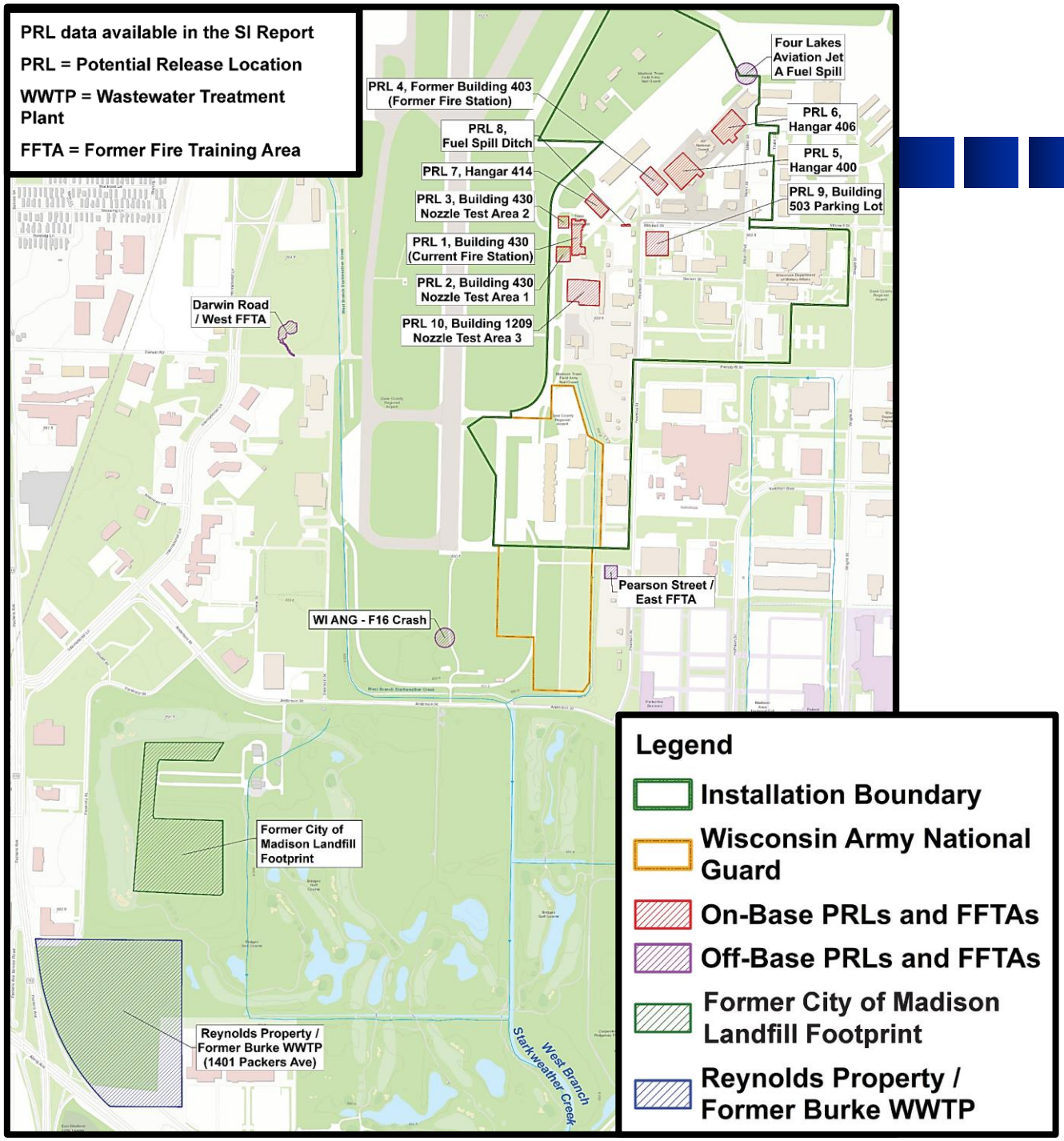
- First developed during the PA/SI and further refined as more study takes place
- Data involved:
  - Ownership and land use history
  - Site features (structures, improvements)
  - Climate
  - Topography
  - Surface water flow
  - Geology
  - Hydrogeology (ground water flow)
- Identify likely sources of PFAS
  - Potential AFFF release locations
- Identify likely migration pathways
  - Downstream surface waters
  - Downgradient aquifers (groundwater)
- Identify receptors (humans, wildlife)
- Final CSM allows for a risk assessment based on a Site Conceptual Exposure Model.

PRL data available in the SI Report

PRL = Potential Release Location

WWTP = Wastewater Treatment Plant

FFTA = Former Fire Training Area



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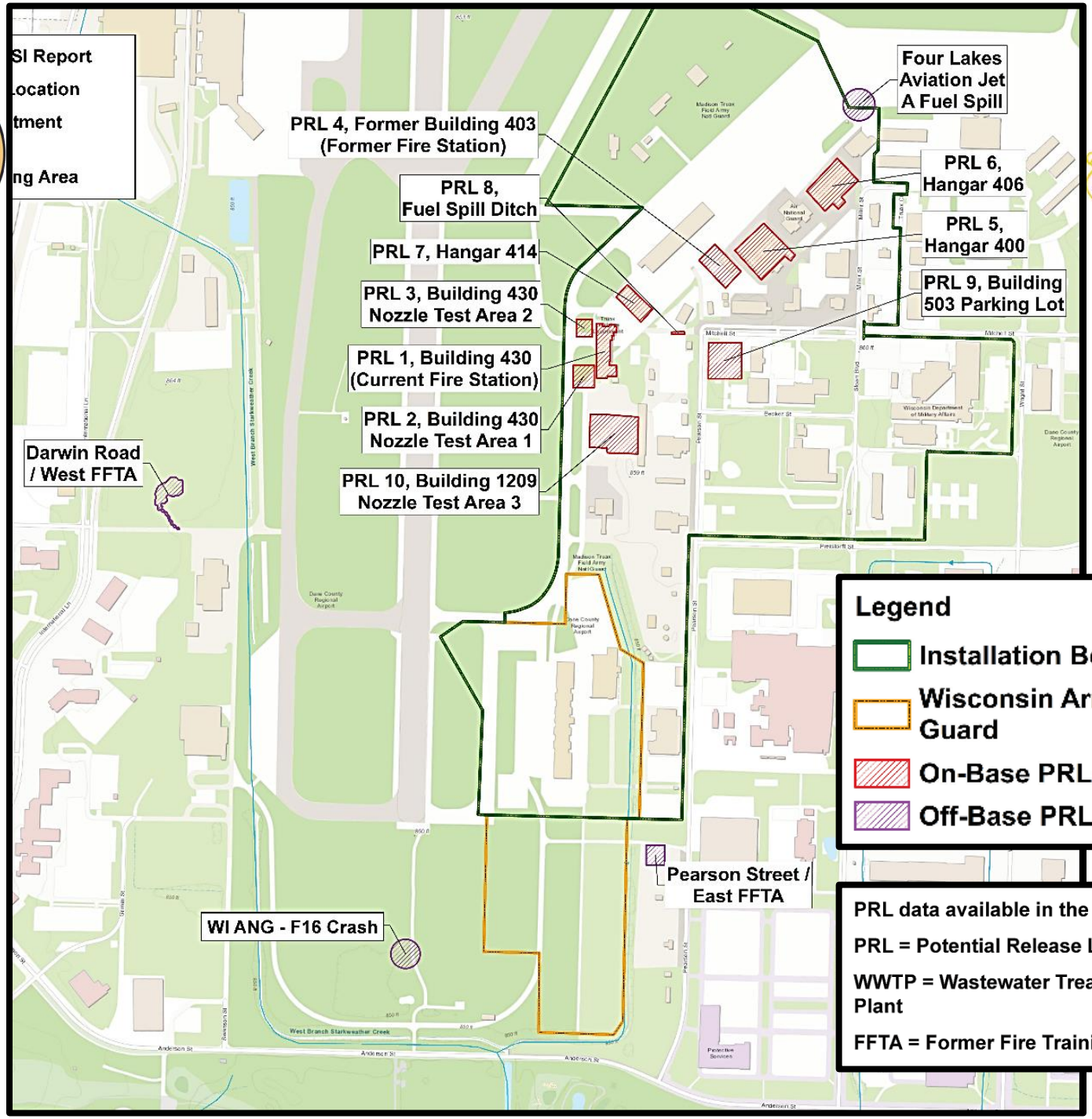
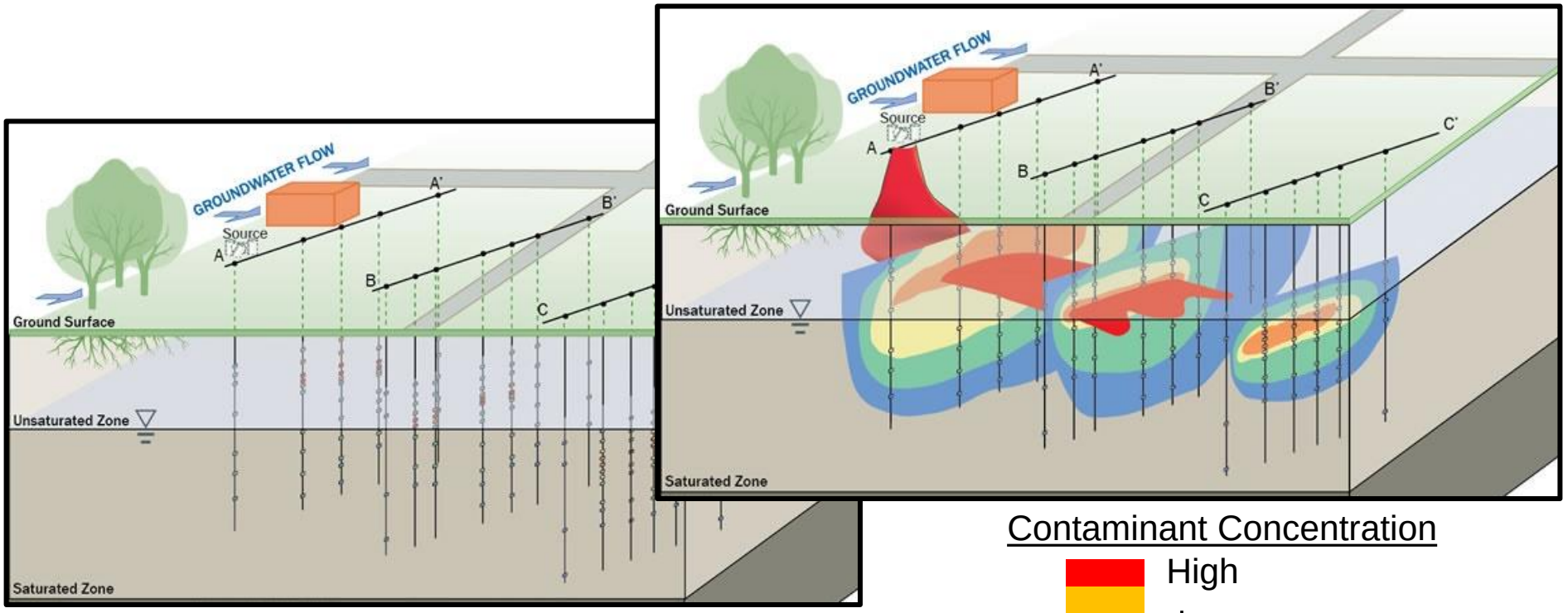


Direct Push Technology (DPT)

Borings allow for multiple purposes:

- Surface soil sampling for PFAS (0 – 0.5 feet below surface)
- Subsurface soil sampling for PFAS (2 – 10 feet below surface)
- Groundwater sampling at discrete depths for PFAS
- High Resolution Site Characterization (HRSC)
  - Identify groundwater flow zones (contaminant transport)
  - Detailed geologic/lithologic data

High Resolution Site Characterization (HRSC)



Surface Water and Sediment Sampling

Grab sampling of water and soil from storm sewers, drainage ditches, and Starkweather Creek to:

Determine extent of transport of PFAS away from Truax Field

Ground Water Monitoring Wells

Install permanent monitoring wells to:

Determine precise ground water flow direction

Allow for regular, ongoing ground water sampling for PFAS

Provide additional geologic/lithologic data

PFAS Remedial Investigation

PFAS RI Questions?

Thank you!

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