

Communicating Risk to Achieve Successful Environmental Restoration



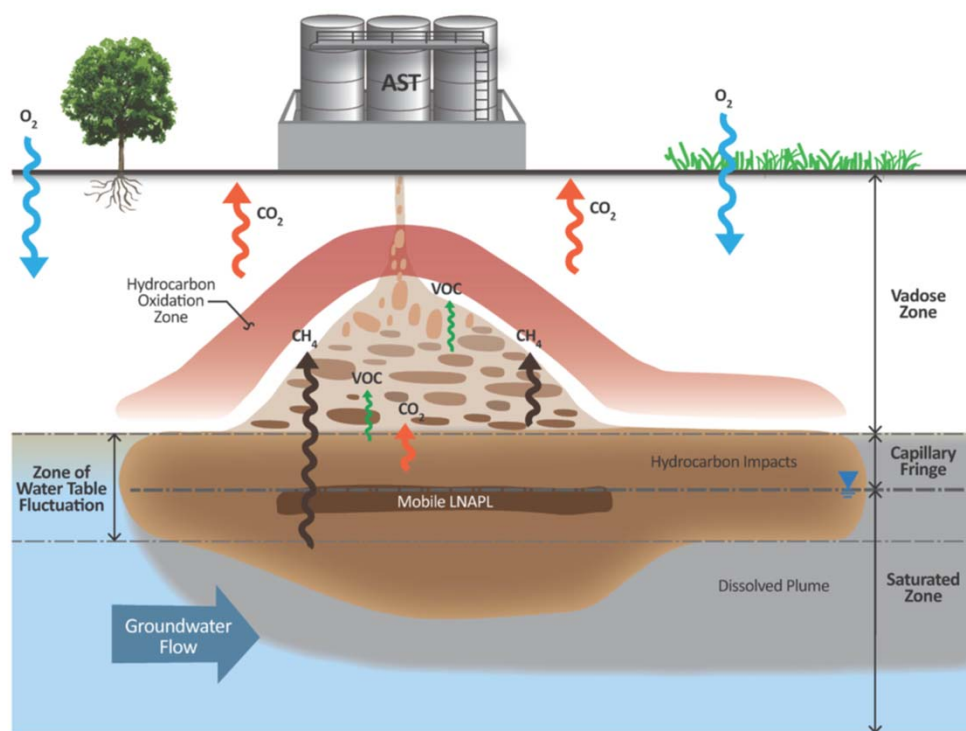
Reshaping LNAPL Management Policies by Better Defining Risk



Presented by:
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Presentation Overview

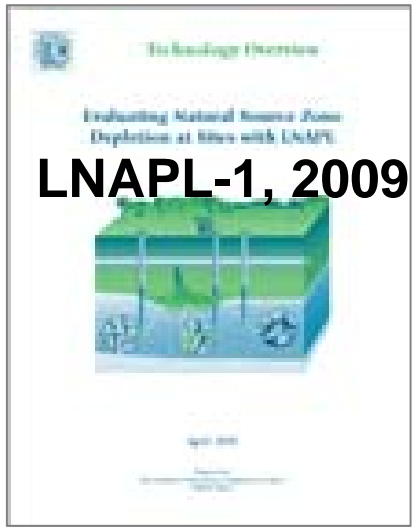
- ITRC and LNAPL
- The Work
- The Results



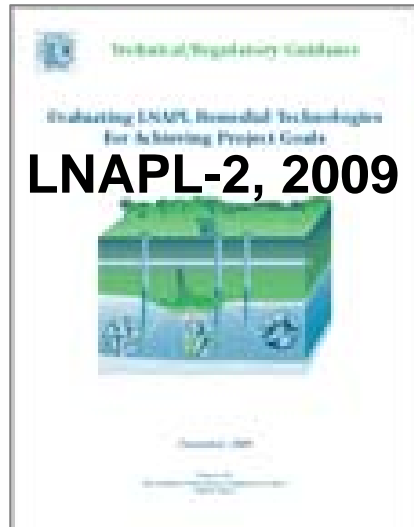
ITRC's History as LNAPL Solution Provider



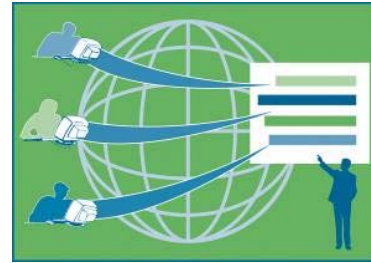
ITRC and LNAPL



LNAPL-1, 2009



LNAPL-2, 2009



Online Training



In-person Training

New Guidance LNAPL-3, 2018

LNAPL Update HOME

Search this website ...

Navigating this Website

- 2 LNAPL Regulatory Context, Challenges, and Outreach
- 3 Key LNAPL Concepts
- 4 LNAPL Conceptual Site Model (LCSM)
- 5 LNAPL Concerns, Remedial Goals, Objectives, and Technology Groups
- 6 LNAPL Remedial Technology Selection

Welcome

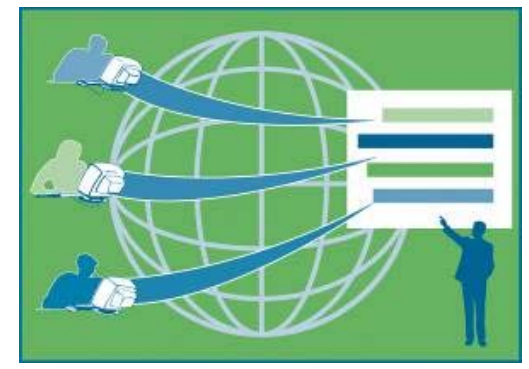
Light Non-Aqueous Phase Liquid (LNAPL) Site Management: LCSM Evolution, Decision Process, and Remedial Technologies (LNAPL-3)

1. How to Use the Document

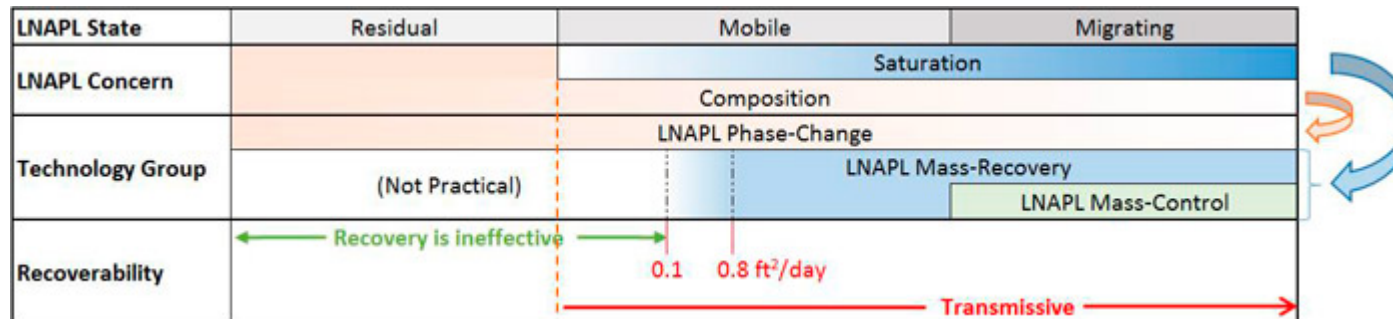
In 2009, ITRC published [LNAPL-1: Evaluating Natural Source Zone Depletion at Sites with LNAPL](#) (ITRC 2009a).

Light Non-Aqueous Phase Liquid (LNAPL)

New 3-part Online Training Series

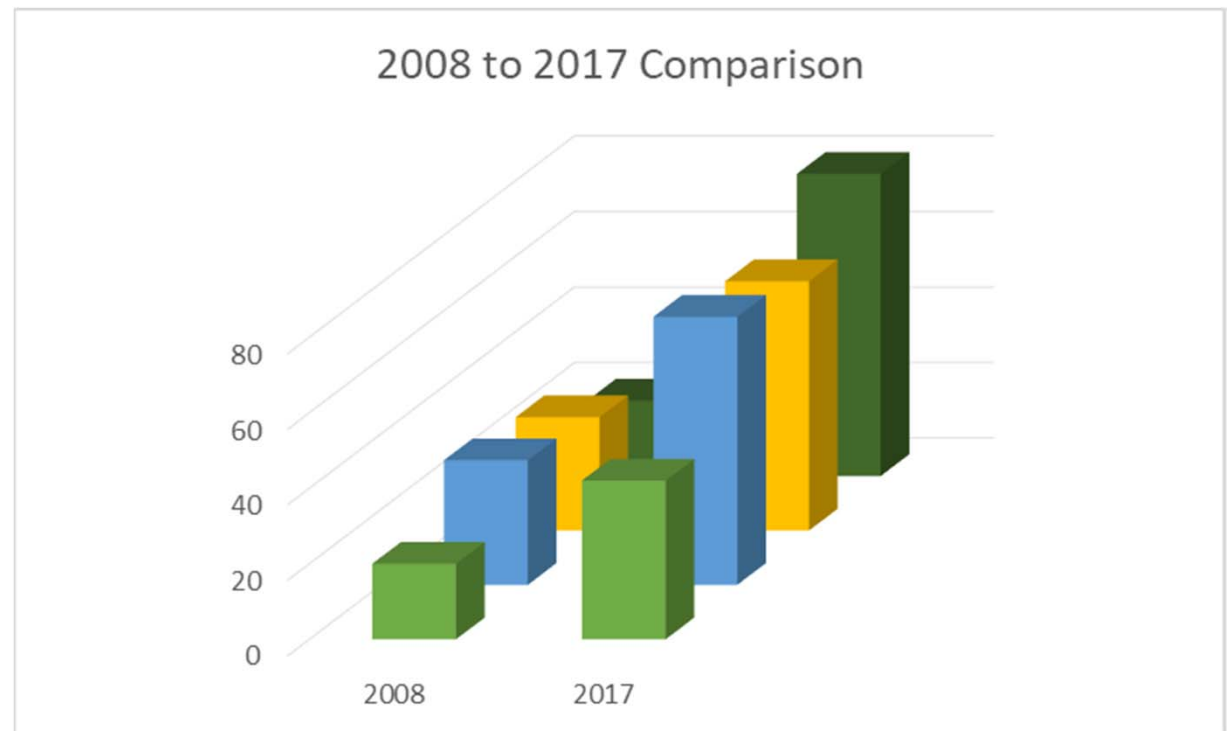
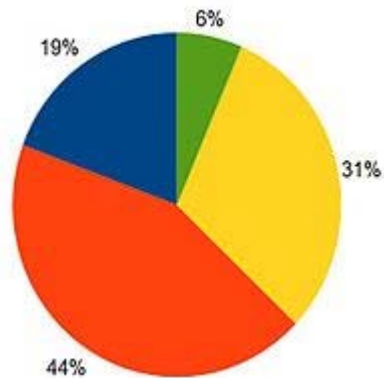


Reshaping LNAPL Management Policies by Better Defining Risk



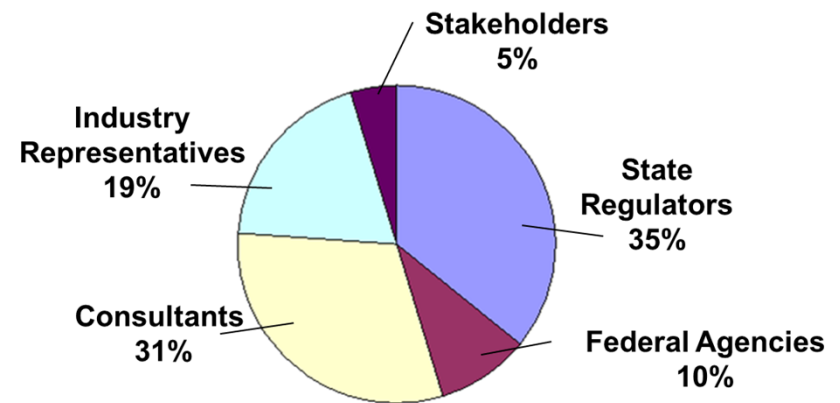
- Here is what our abstract proposed to address the question: *In 2008, ITRC conducted a nationwide survey of implementing agencies to gauge and summarize the state of LNAPL management... a new survey was sent out in 2016 to the state implementing agencies in order to assess any changes in LNAPL management strategies.*

Reshaping LNAPL Management Policies by Better Defining Risk



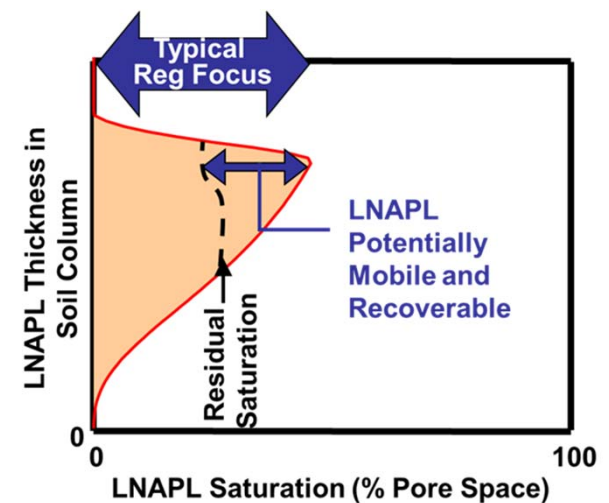
LNAPL-1 and LNAPL-2

- Original documents were published in 2009
 - LNAPL is present at thousands of sites
 - State regulatory agencies have a backlog of LNAPL sites that are not effectively approaching an endpoint, i.e., no further action (NFA)
 - LNAPL poses technical and regulatory challenges



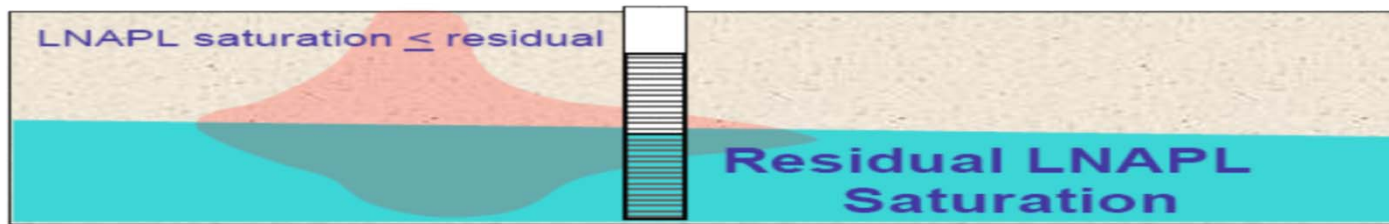
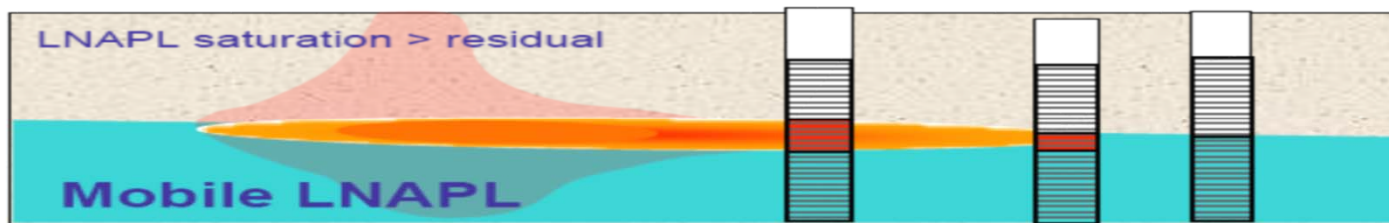
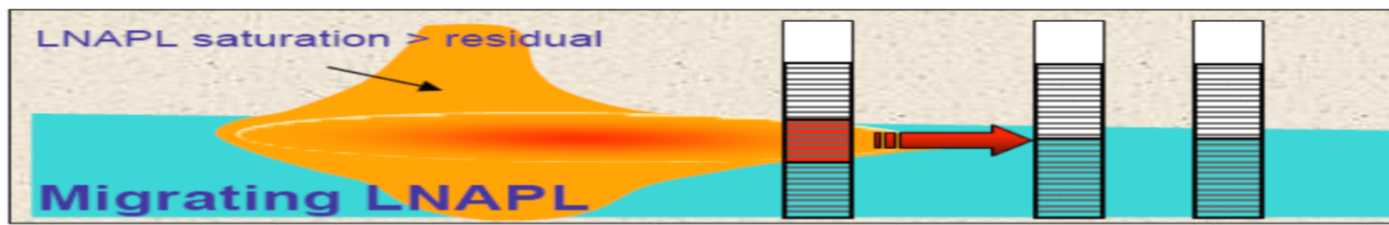
LNAPL-2

- Focused on setting remedial goals and selecting appropriate technologies to achieve the goals by:
 - Introducing key concepts
 - Presenting a decision-making framework
 - Presenting a technology screening process
 - Reviewing accepted LNAPL technologies based on their abilities to address LNAPL concerns



LNAPL Concerns

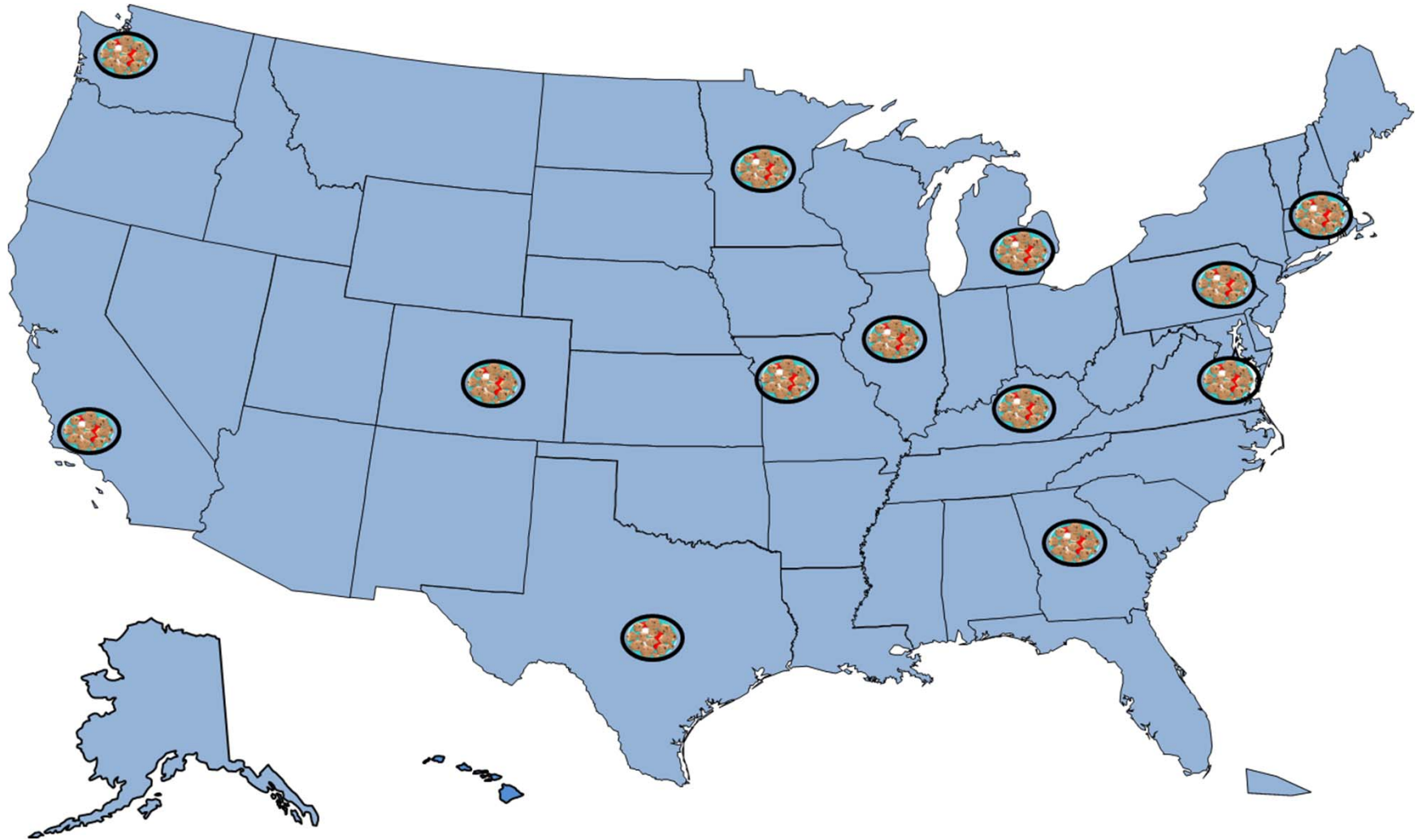
LNAPL State	Residual	Mobile	Migrating
LNAPL Concern		Saturation	
		Composition	
Technology Group	(Not Practical)	LNAPL Mass-Recovery	
			LNAPL Mass-Control
Recoverability	← Recovery is ineffective →	0.1	0.8 ft ² /day
		Transmissive →	



The Work

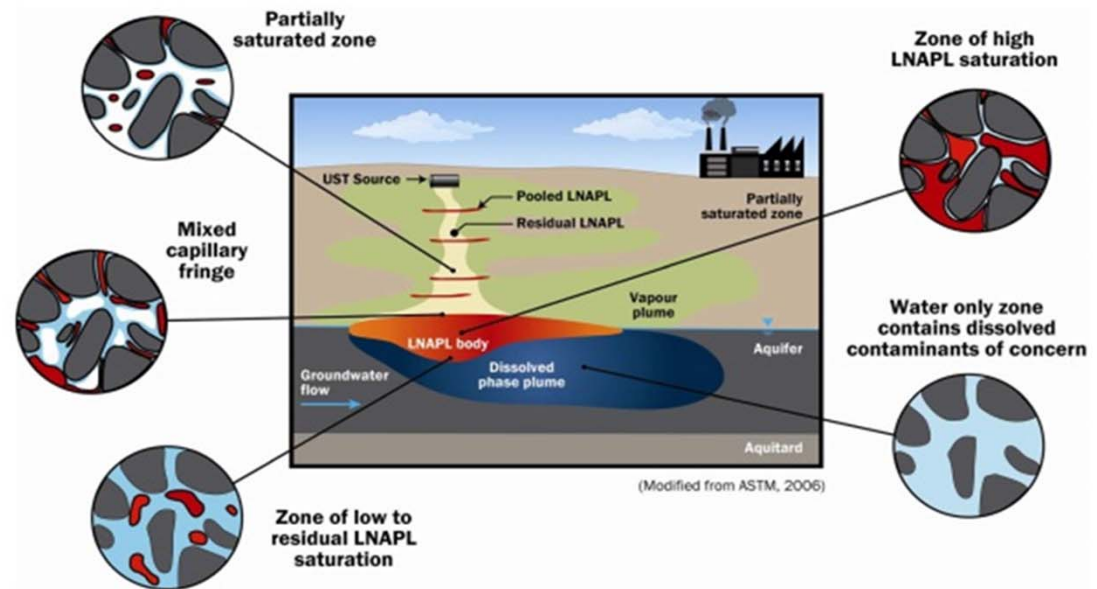
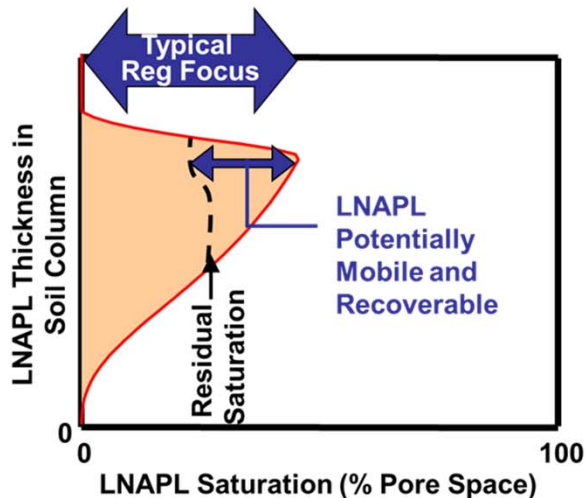
Classroom Training Locations

The Work



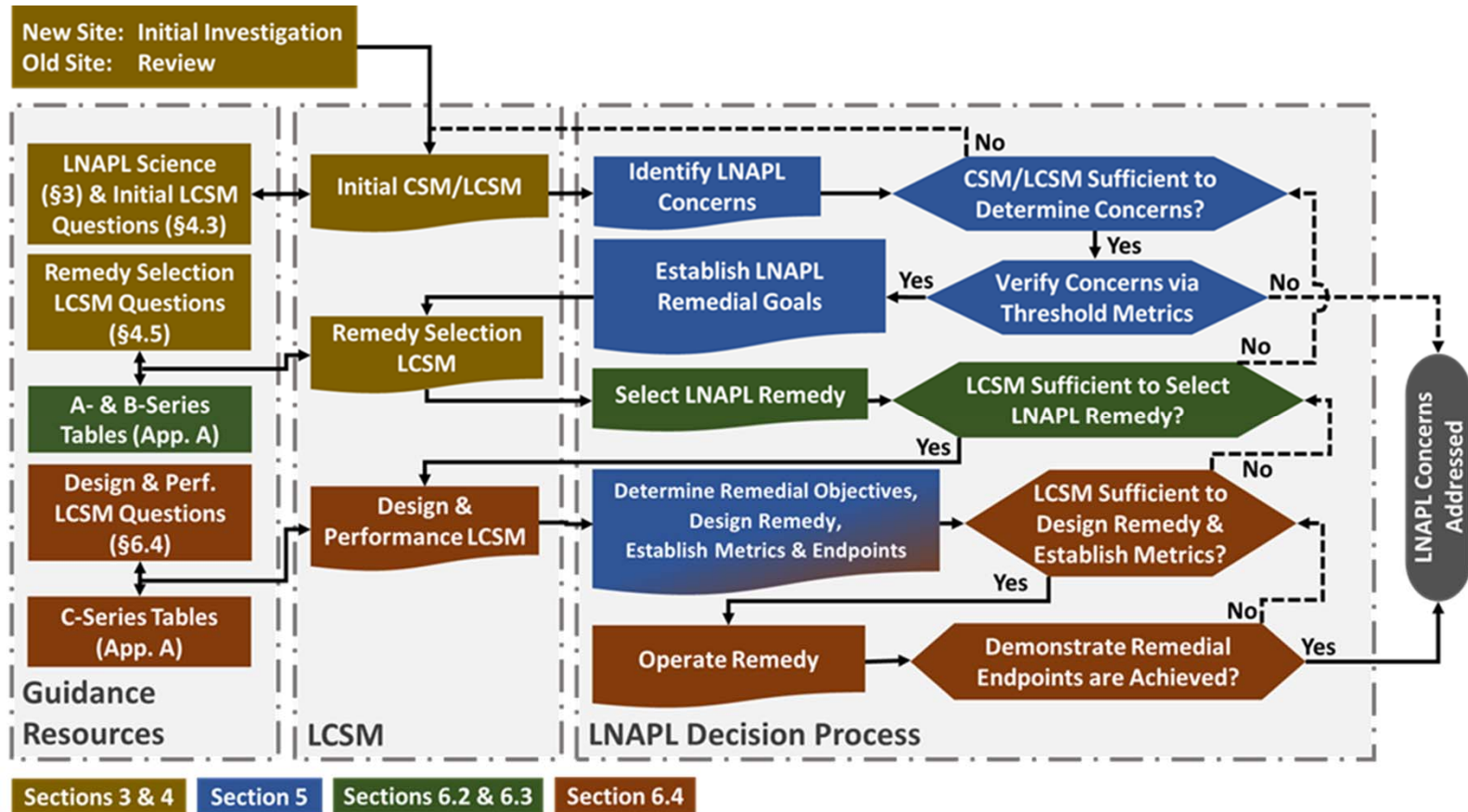
ITRC LNAPL Internet-Based Training

- 2010 - 2017: LNAPL Online Training
- Over 17,000 practitioners participated in the trainings



LNAPL-3: LCSM Evolution, Decision Process, and Remedial Technologies

The Work

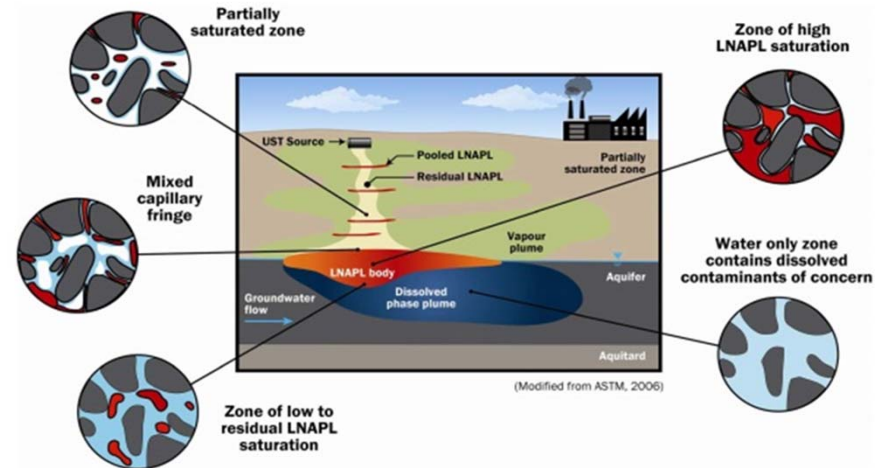
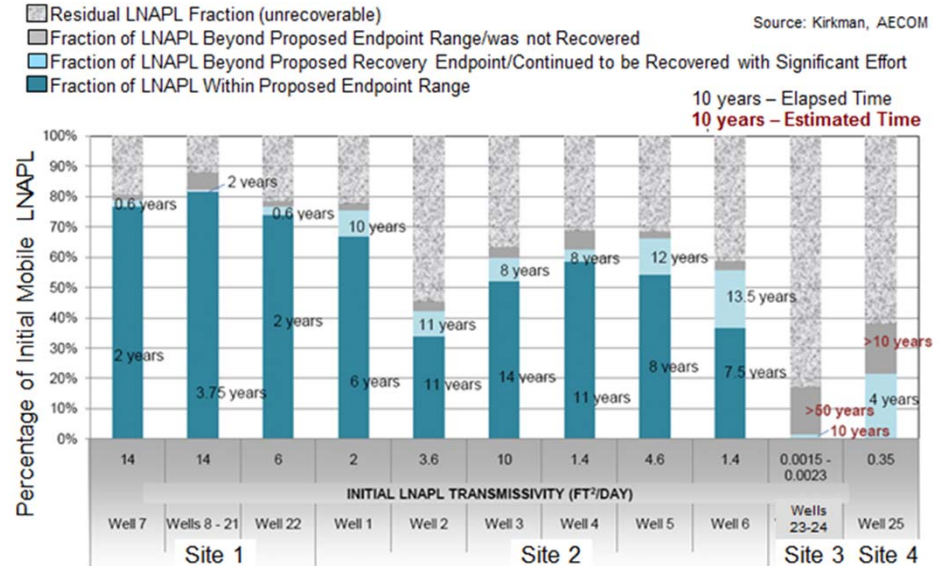


ITRC LNAPL Update Changes



The Work

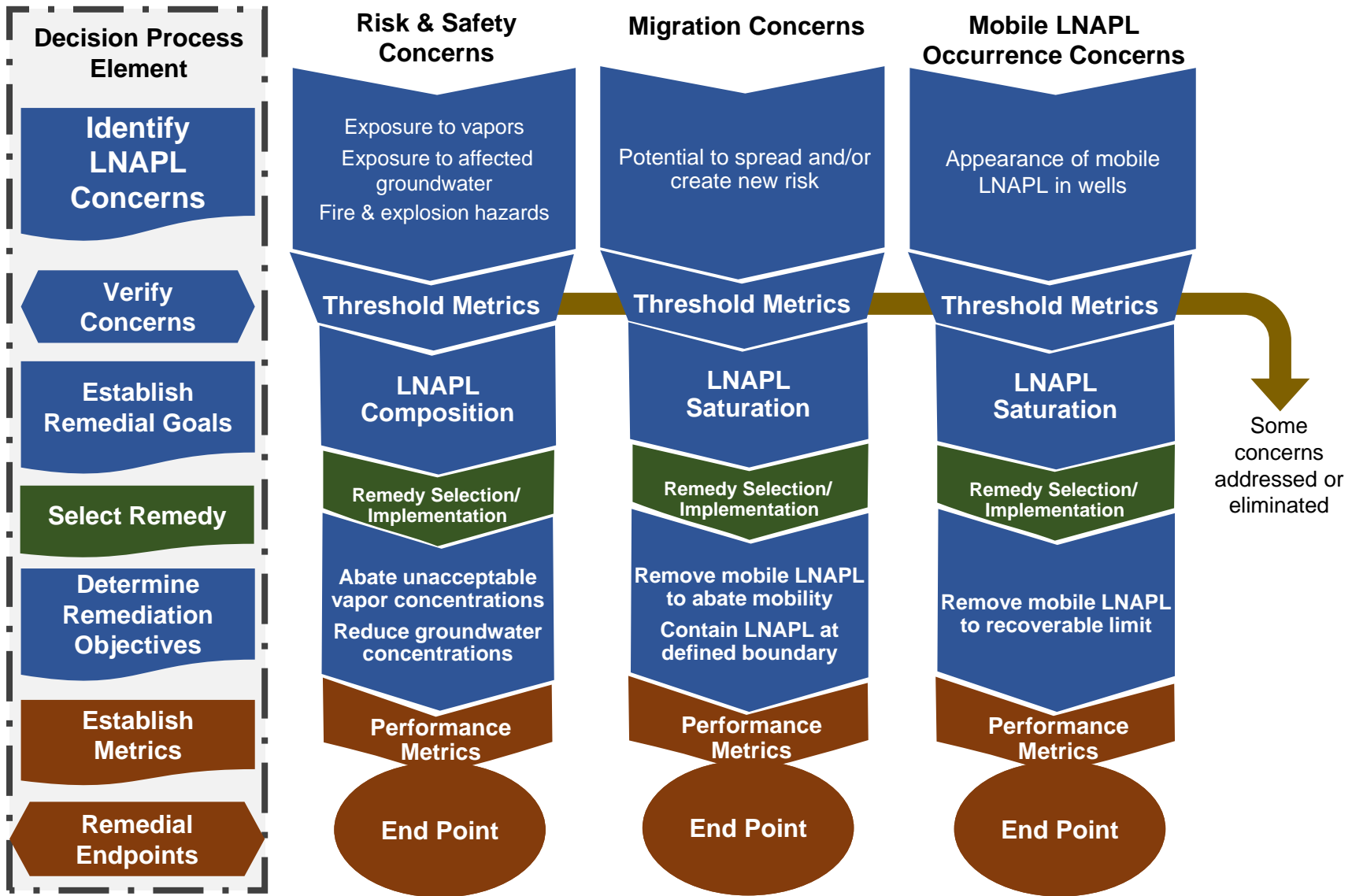
- Expansion of LNAPL Key Concepts
- Development of a LNAPL Conceptual Site Model (LCSM) Section
- Emphasis on identifying SMART objectives
- Additional practical knowledge of Transmissivity (Tn) and Natural Sources Zone Depletion (NSZD)
- New Appendix on Sheens and Fractured Rock



Reshaping LNAPL Management Policies by Better Defining Risk



The Results

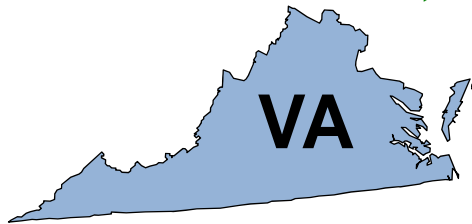


About Those Surveys

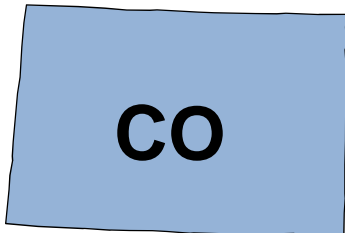
- The 2008 survey really informed what needed to be covered in the 2009 guidance.
 - LNAPL-1 and LNAPL-2 substantially addressed the need.
 - The training reinforced and expanded on the guidance.
- The 2016 survey assessed the state of the practice and informed the 2018 guidance.

Reshaping LNAPL Management Policies by Better Defining Risk

Examples: ITRC LNAPLs guidance used or referenced in the development of current or draft state guidance



- ▶ Virginia Department of Environmental Quality references ITRC LNAPL guidance documents in its Storage Tank Program's Closure Evaluation of Sites with Free Product (DEQ Guidance Document #LPR-SRR-03-2012, December 28, 2012)



- ▶ Colorado Department of Labor and Employment Division of Oil and Public Safety revised its guidance to incorporate concepts from ITRC training courses and guidance documents.
<http://www.coworkforce.gov/petroleumguidance/>

Changing Mindsets

- Classroom conversations
- 2016 survey results
- Over 19,000 practitioners in the trainings
- The conversation you have today relative to ten years ago
- LNAPL-3 is the most thorough and up to date guidance ITRC has issued on the topic.

Reshaping LNAPL Management Policies by Better Defining Risk



- The team was always listening
- Over 20 states have updated their policies on LNAPL management
- Over 19,000 practitioners trained by the team
- When you know better, you do better

Questions

Questions?

