

ITRC Hydrocarbon Training Scenario Exercise Matrix



Category / Subcategory	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Learning Objectives
	Glacial - AST Gasoline Site	Glacial - Pipeline Diesel Site	Fluvial - Refinery / Brownfield Site	Fluvial - UST Gasoline Site	Saprolite / Shallow Bedrock - UST Gasoline Site	
Release and Exposure Information						
Emergency Response (e.g., LEL exceedance, odors/vapors, water tastes or smells funny, etc.)	Yes (touches on)	No	No	No	No	Scenario 1: Odor issues addressed in initial scenario
Land Use (e.g., residential, industrial, mixed use)	Mixed	Mixed	Casino	Mixed	Mixed	
Source Characterized (e.g., soil, GW, LNAPL)	Soil, LNAPL	LNAPL	LNAPL, Soil, GW	LNAPL, Soil, GW	Soil, LNAPL	
Potential Migration Pathways	PVI, GW	PVI, GW	PVI, GW, Stream	PVI, GW, Stream	PVI, LNAPL to GW	
LNAPL Identification/Delineation	Yes	Yes	Yes	Yes	Yes	LIF, LNAPL indicators (PID, boring log notes, shake tests, etc.)
Confined vs Unconfined (e.g., diagnostic gauge plot evaluation)	Unconfined	Unconfined	Semiconfined	Unconfined	Unconfined	
LNAPL Migration Assessment Conducted (mobile or residual)	Yes	Yes	Yes	Yes	Yes	
LNAPL Recoverability Assessment	Yes (Tn data provided)					
Source Identification/Delineation	Yes	Yes	Yes	Yes	Yes	
Composition: Gasoline vs. Diesel	Gasoline	Diesel	Weathered Gasoline	Gasoline & Diesel	Gasoline & Diesel	Scenario 5: Starts out w/ gasoline; diesel introduced at the end
Groundwater Data	BTEX, TPH	BTEX, TPH	BTEX, TPH	BTEX	BTEX, Naphthalene	
Soil Data	PID	PID	BTEX, TPH	BTEX, TPH, PID, LIF	BTEX, TPH	
Expanding/Advancing Plume	Expanding	Expanding	Expanding	Expanding	Expanding	
Soil Gas Indicators (O ₂ , CO ₂ , CH ₄ , aliphatics)	Yes	Yes	Yes	Yes	Yes	Scenario 5: Data package 2
Tier 1 - Screening						
Site Type (UST/AST vs. Industrial)	UST/AST	Industrial	Industrial	UST/AST	both?	Scenario 5: Commercial source migrating into residential, possible secondary source
Precluding Factors	Yes	Yes	Yes	Yes	Yes	
Soil Type (e.g., desert soil, peat)	Mixed	Mixed	Mixed	Mixed	Mixed	
Fuel Type	Gasoline	Diesel	Leaded Gasoline	Gasoline & Diesel	Gasoline	
Expanding/Advancing Plume	Expanding	Expanding	Expanding	Expanding	Expanding	
Preferential Pathways (e.g., utility corridor, fractured bedrock)	Utilities	Utilities, Pumping Wells	Elevator Shaft, Sewer	Utilities	Utilities, Stormwater Drains	
Inclusion Zones	Yes	Yes	Yes	Yes	Yes	
LNAPL	Yes	Yes	Yes	Yes	Yes	
Dissolved Phase	Yes	Yes	Yes	Yes	Yes	
Bulk TPH Data Exceed Screening Levels in:	GW	GW	Soil, GW	Soil	GW	
Identified LNAPL Concerns (saturation, composition, other)	Saturation & Composition	Saturation & Composition	Saturation & Composition	Saturation & Composition	Saturation & Composition	Section 5: Decision making process
Tier 2/3 - Additional Investigation						
Data Collected?						
Soil Gas	Yes	Yes	Yes	Yes	Yes	
Subslab	Yes	Yes	Yes	Yes	Yes	
Indoor Air	Yes	No	Yes	Yes	No	
TPH Compositional Analysis (indicators, fractions) Conducted?	Yes	Yes	Yes	Yes	No	Chromatographs
Polar Metabolite Analysis Conducted?	Yes	Yes	Yes	Yes	No	
Saturation: Is the LNAPL Migrating?	Yes	Yes	Yes	Yes	No	Plume stability demonstrations
Saturation: Is the LNAPL Recoverable?	No	No	No	No	Yes	Tn as a recovery threshold
Risk Assessment / Risk Management						
PVI Screen Out Using Screening Distance?	No	Yes	No	No	Yes = Commercial No = Residential	
Are PVI Risks Acceptable?	No	Yes	No	No	No	
If no, Which Risk Management Strategies Implemented (e.g., vapor mitigation / remediation / IC / EC)?	Remediation Mitigation	None	Vapor Mitigation	Vapor Mitigation	Vapor Mitigation	Discuss Options Only
Are Fractionated TPH Risks Acceptable?	Yes	No	No	No	No	
Are LNAPL Concerns Validated?	Yes	No	Yes	Yes	Partially	