



UST Removal for Dummies:
***How to Remove a UST...With a Guy Wire Anchored Inside
the Tank!***

Geosyntec Consultants

June 27, 2018

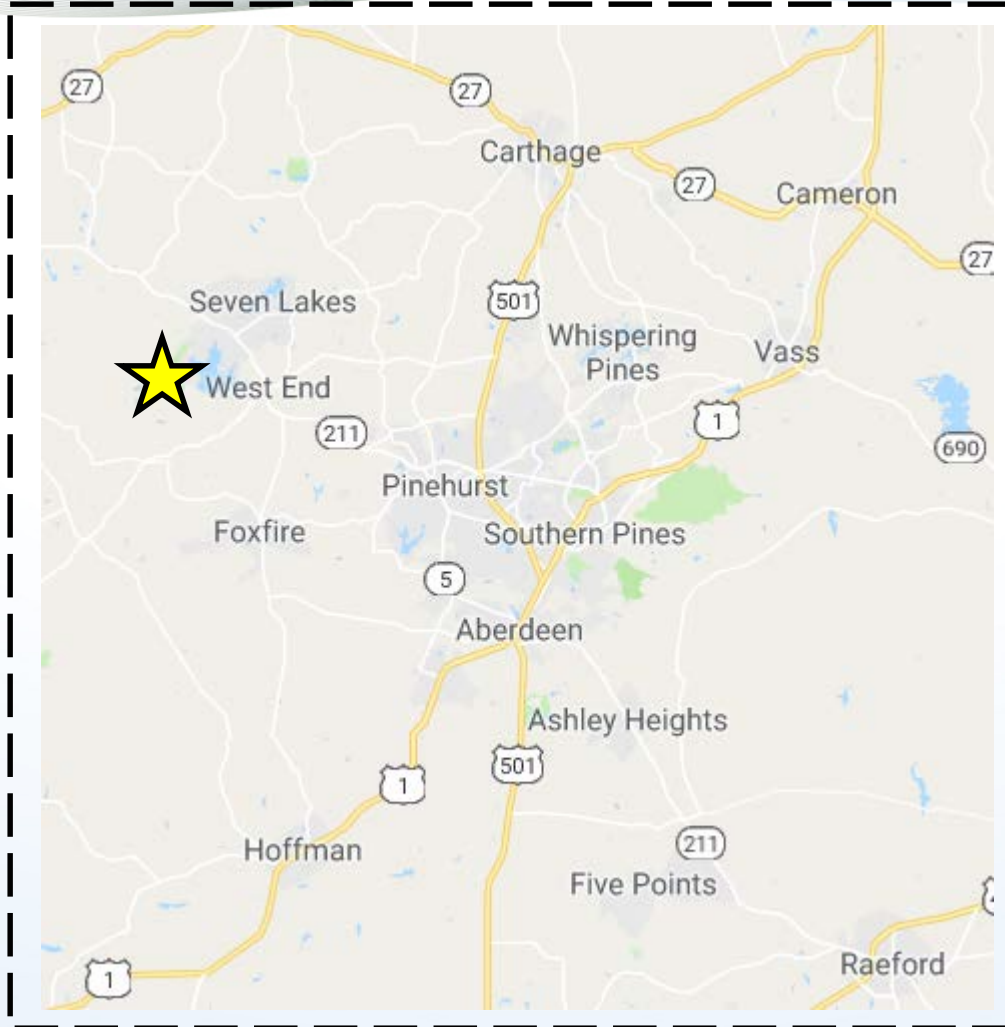
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- Environmental Preliminary Site Assessment (PSA)
 - Environmental file review
 - Geophysical Investigation
 - Soil Boring Investigation

- Former Stanley Furniture manufacturing facility
 - West End, North Carolina

- Inactive Hazardous Sites Branch facility
 - Contaminated groundwater identified above NC 2L Groundwater standards (e.g., benzene, tetrachloroethene)

- 1) Determine if environmental impacts are likely within the proposed study area
- 2) If environmental impacts are identified, provide consultation on proper material handling
 - Minimize waste generation; maintain efficient operations; avoid construction delays
- 3) Feasibility of removing USTs prior to roadway construction
- 4) Based on the above, provide a recommendation for the property acquisition process:
 - Fee simple (i.e., NCDOT purchases the property outright)
 - Permanent easement [i.e., NCDOT purchases an easement on the applicable property(s) to facilitate roadway completion]



- 1) Soil boring analytical data was innocuous
- 2) Geophysics identified five “possible” USTs

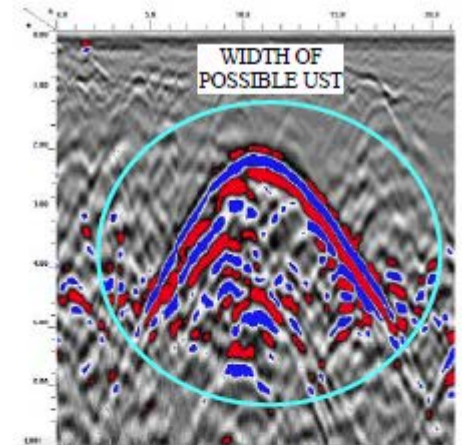
Typical Metallic UST Characteristics

- Distinct hyperbolic reflectors ===== ✓
- Distinct isolated lateral reflectors =====➔

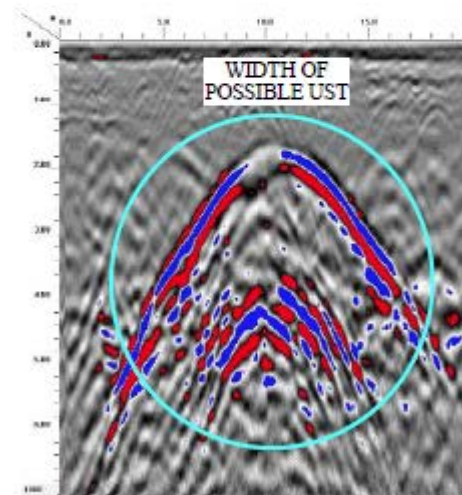
Contrasting Evidence

- Re-bar interference =====➔ ✓
- Large diameter fire hydrants in vicinity =====➔ ✓
- Unknown riser pipes in vicinity =====➔

Result: “Possible” USTs

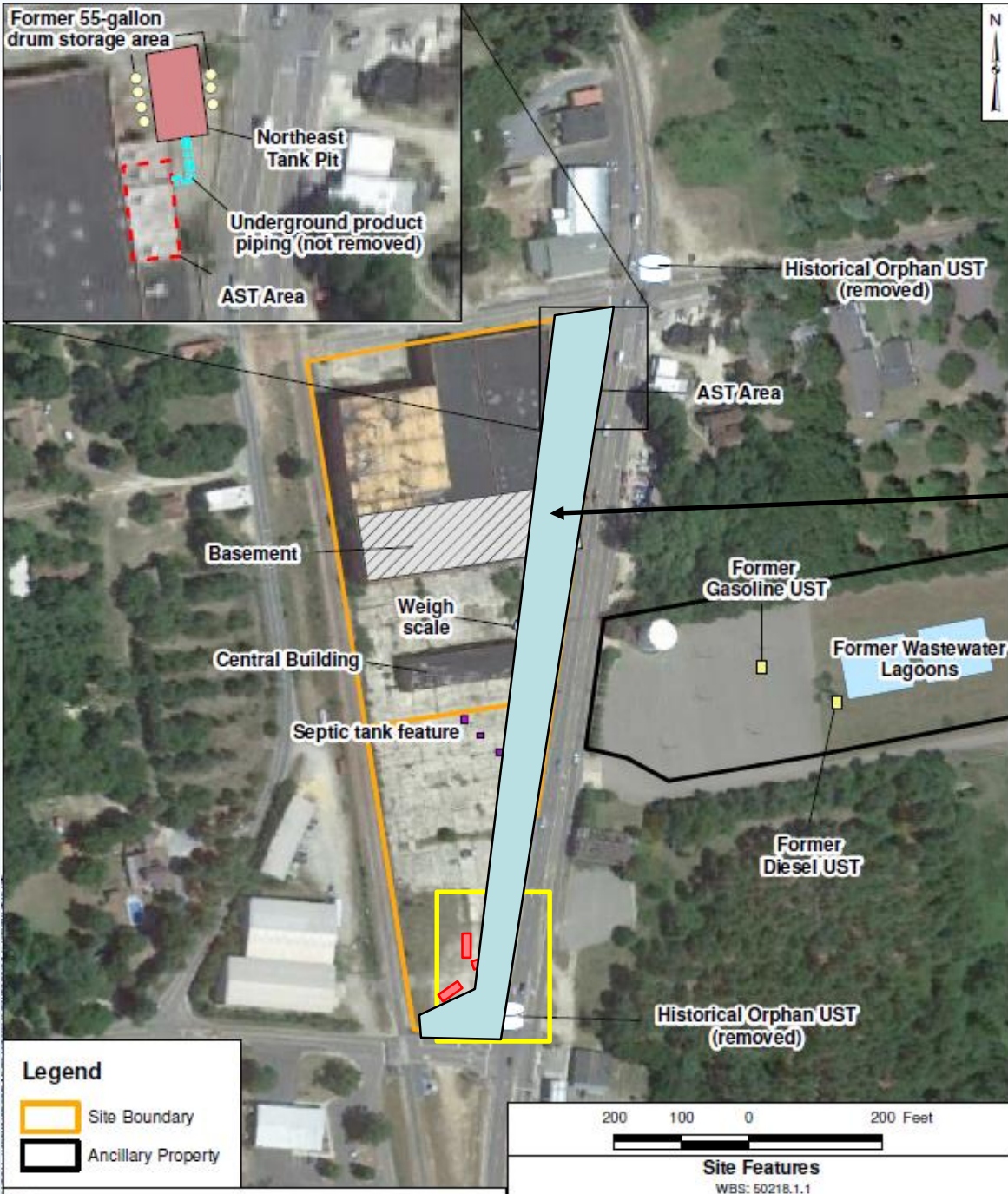


GPR TRANSECT 7 (T7)

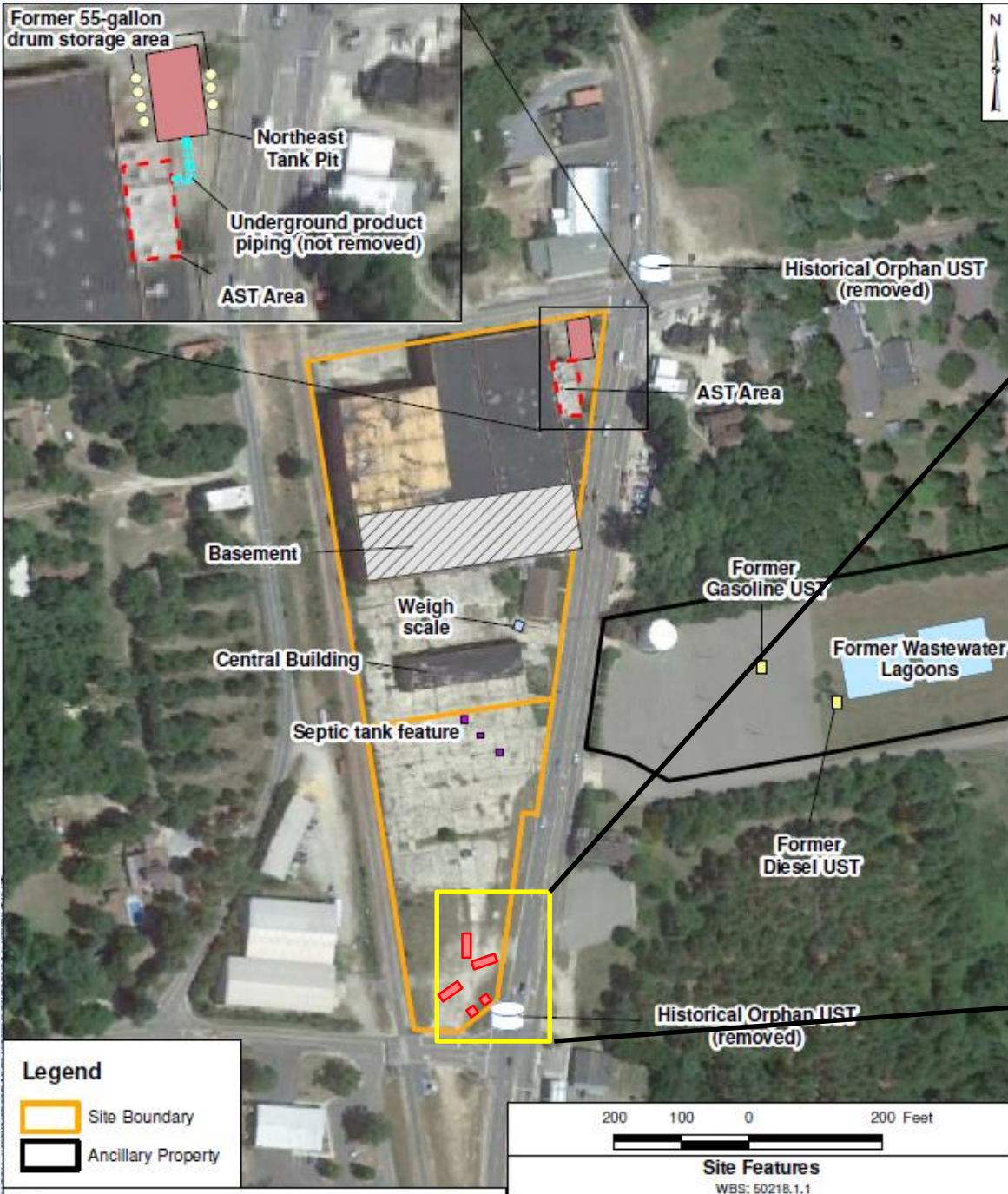


GPR TRANSECT 8 (T8)

Site Layout



Site Layout





“UST-1”

- 3-ft thick concrete with 1-inch re-bar

“UST-2” and “UST-3”

- Fire loop water line
- 8-inch and 6-inch diameter, respectively

UST-4

- Geophysics indicates 10-ft by 5-ft

UST-5

- Geophysics indicates 8-ft by 8-ft

“UST-4”



Test Pits to Identify Possible USTs: “UST-4”



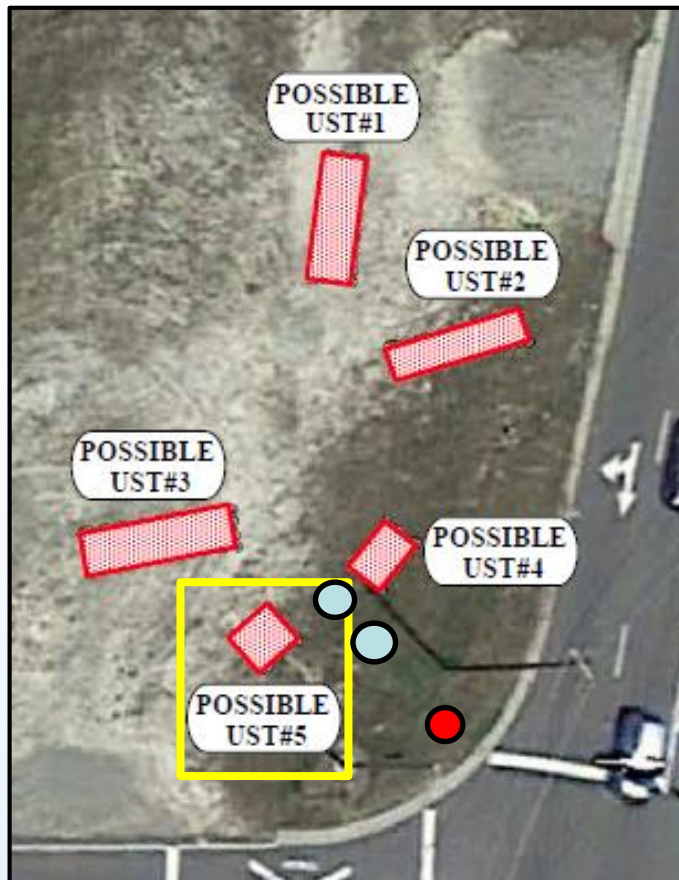
Test Pits to Identify Possible USTs: “UST-4”



Test Pits to Identify Possible USTs: “UST-4”



“UST-5”



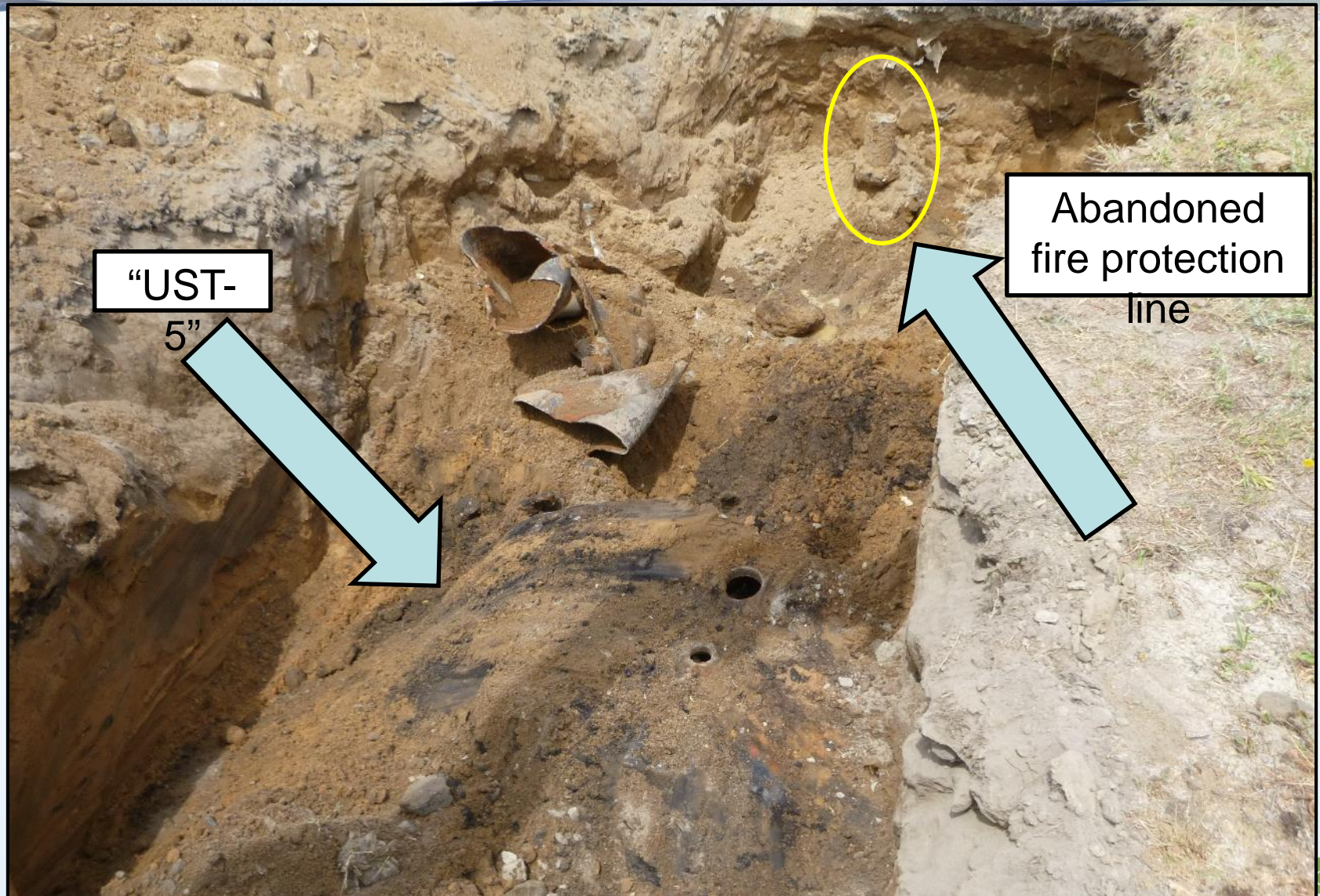
Legend

- Guy wire
- Power pole

Test Pits to Identify Possible USTs: “UST-5”



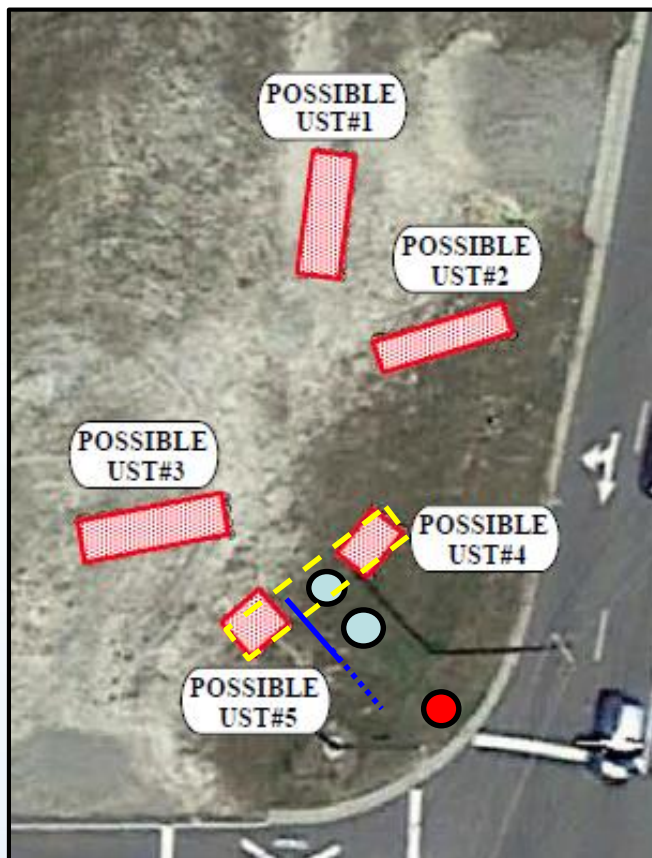
Test Pits to Identify Possible USTs: "UST-5"



Test Pits to Identify Possible USTs: “UST-5”



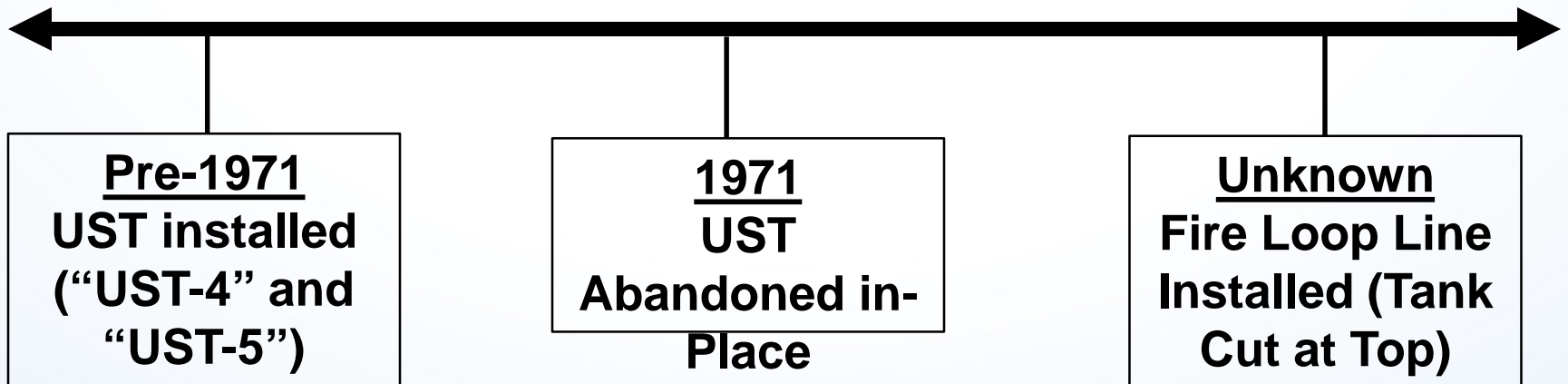
“UST-4” and “UST-5” = 1 UST



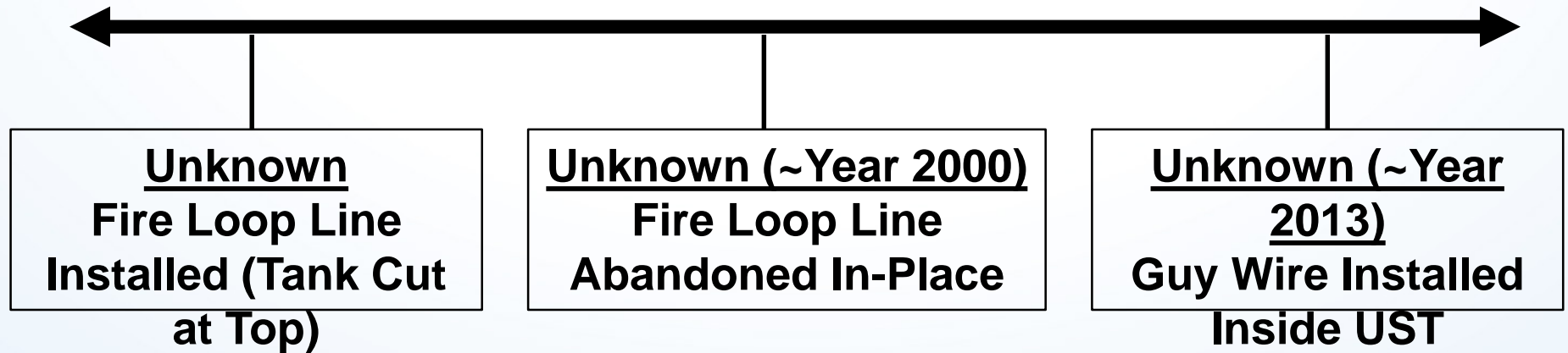
Legend

- Guy wire
- Abandoned Water line
- Power Pole

Possible Timeline



Possible Timeline

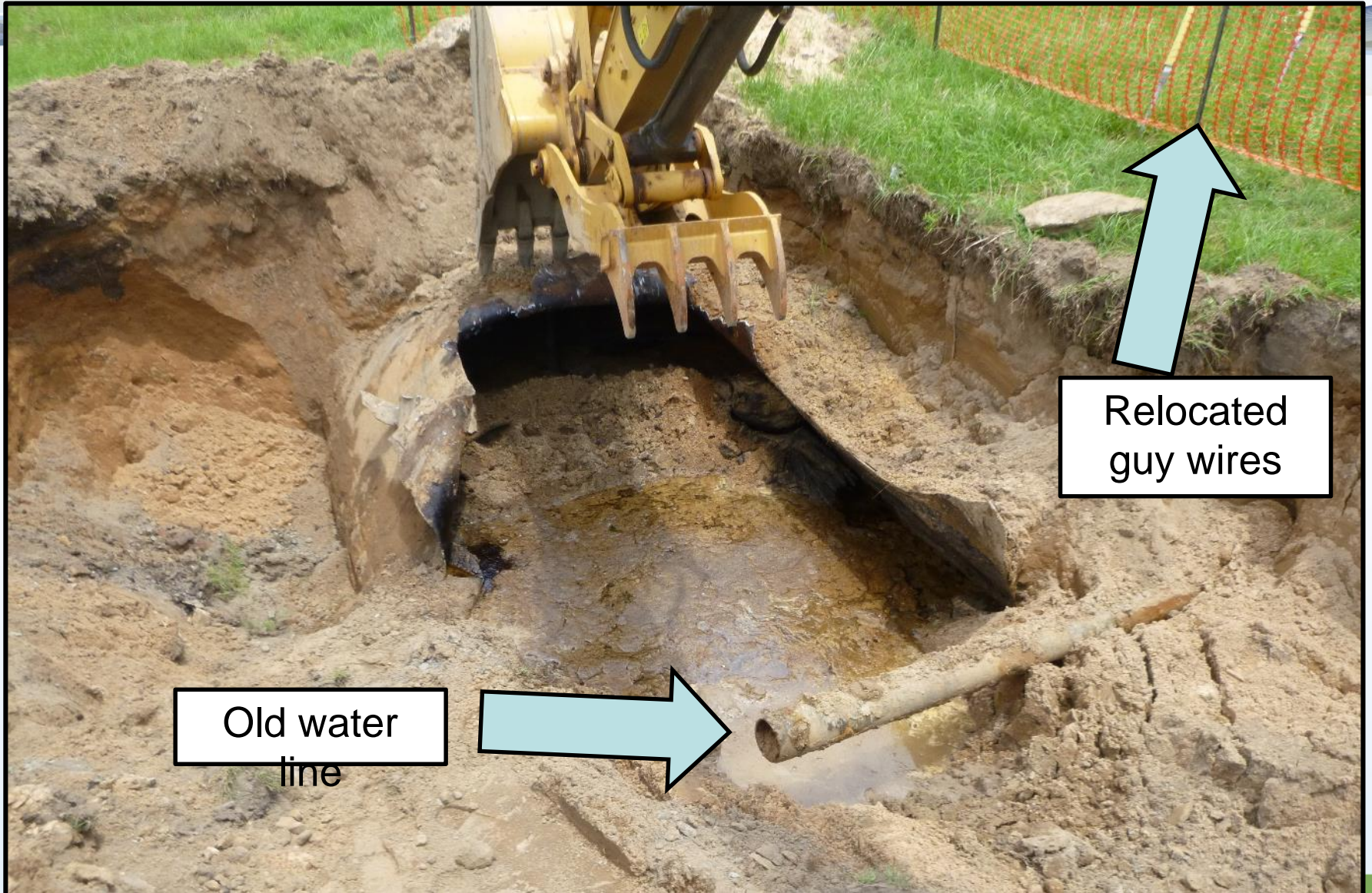


- Primary Concern: Guy wire anchored through the tank. Stop Work
- Duke Energy personnel visit Site and provide two options, each entailed guy wires pulling tension in the same direction:
 1. Move guy wires closer to the power pole; or
 2. Move guy wires farther from power pole (i.e., over the excavation)
- **Chose Option 1: Move guy wires closer to the power pole.**
- Duke Energy was unwilling to re-anchor the guy wires at opposing angles off the power pole

Guy Wires and Proposed Relocation



- Backfill overburden soils
 - Leave Site
- Await guy wire relocation



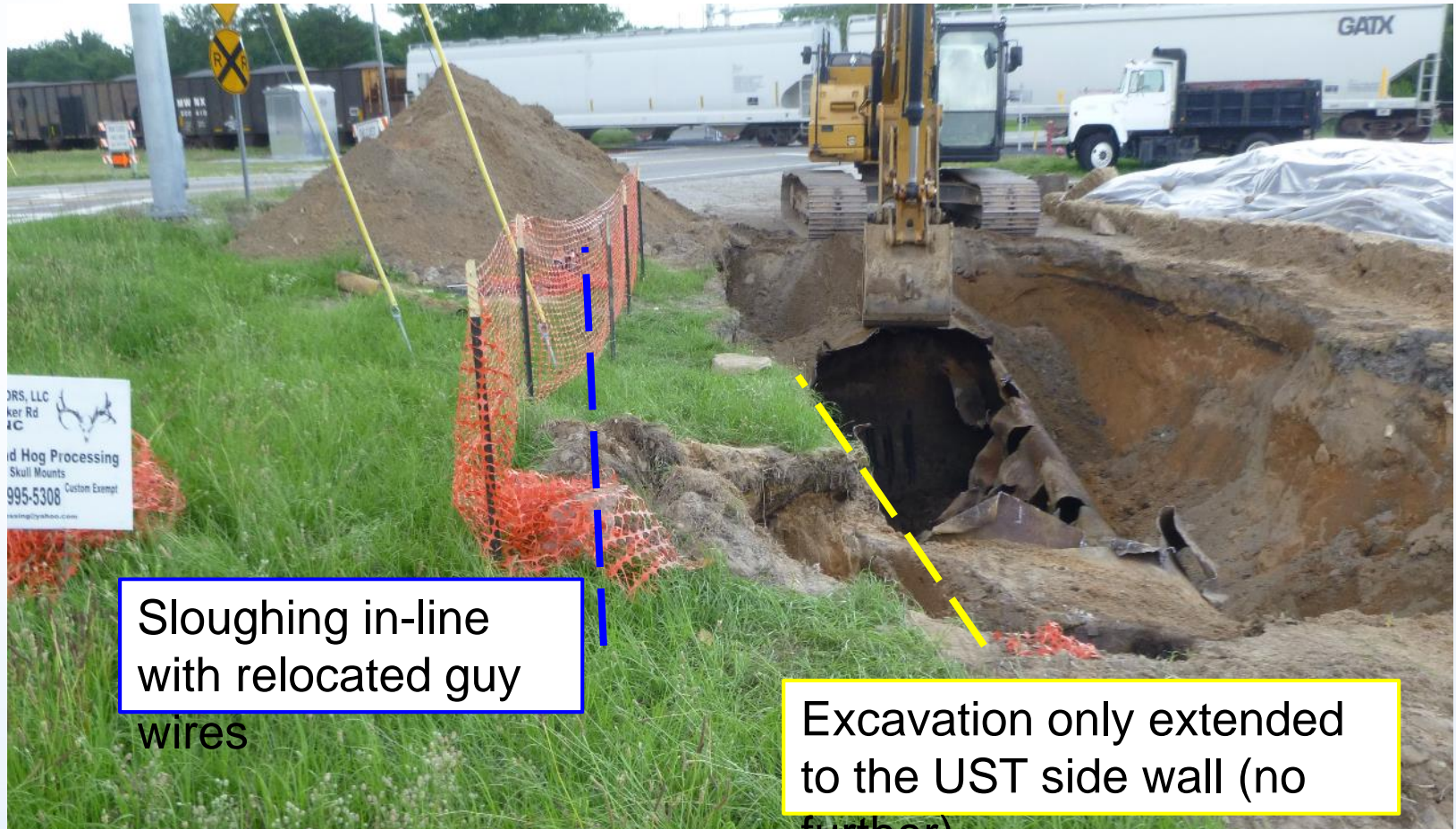
Old water
line

Relocated
guy wires

Preparing for UST Removal







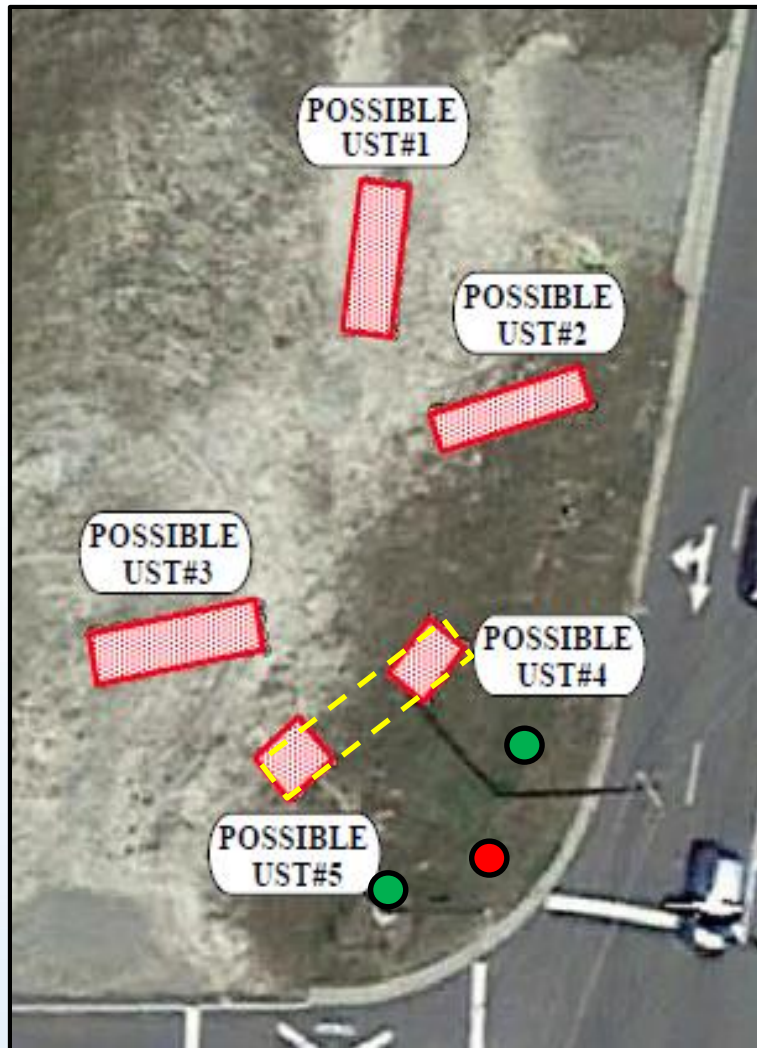
Sloughing in-line
with relocated guy
wires

Excavation only extended
to the UST side wall (no
further)

Acting as Temporary Sheet Pile Wall



- Stop work and cover excavation
- Duke Energy personnel visit Site and provide two options:
 1. Guy wires anchored at opposing angles off the power pole.
 2. Install second power pole over the excavation with horizontal support wire (i.e., span wire).
- **Chose Option 1: Anchor guy wires at opposing angles**
- Guy wire relocation is ongoing; field work planned for next week.



Legend

- Guy wire relocation
- Power Pole

Open Excavation Cover and Barricade



- Safety first; stop work authority
- Integration of multiple practice areas (Geotechnical and Environmental)
- Secure open excavation over long duration
- Dynamic field effort; multiple unanticipated conditions; adaptability
- Request Duke Energy anchor guy wires at greater depths (e.g., 15 ft. below grade)
- Anticipation of potential field challenges
 - i.e., regularly ask what is the worst thing that could happen?