Global Leader in Munitions Response

M2S2-NAOC
Remedial Designs and MMRP

Case Study:
Former Camp Robinson
Area 5, Burns Park MRS Action Area
Remedial Design

Former Camp Robinson Area 5, Burns Park Action Area

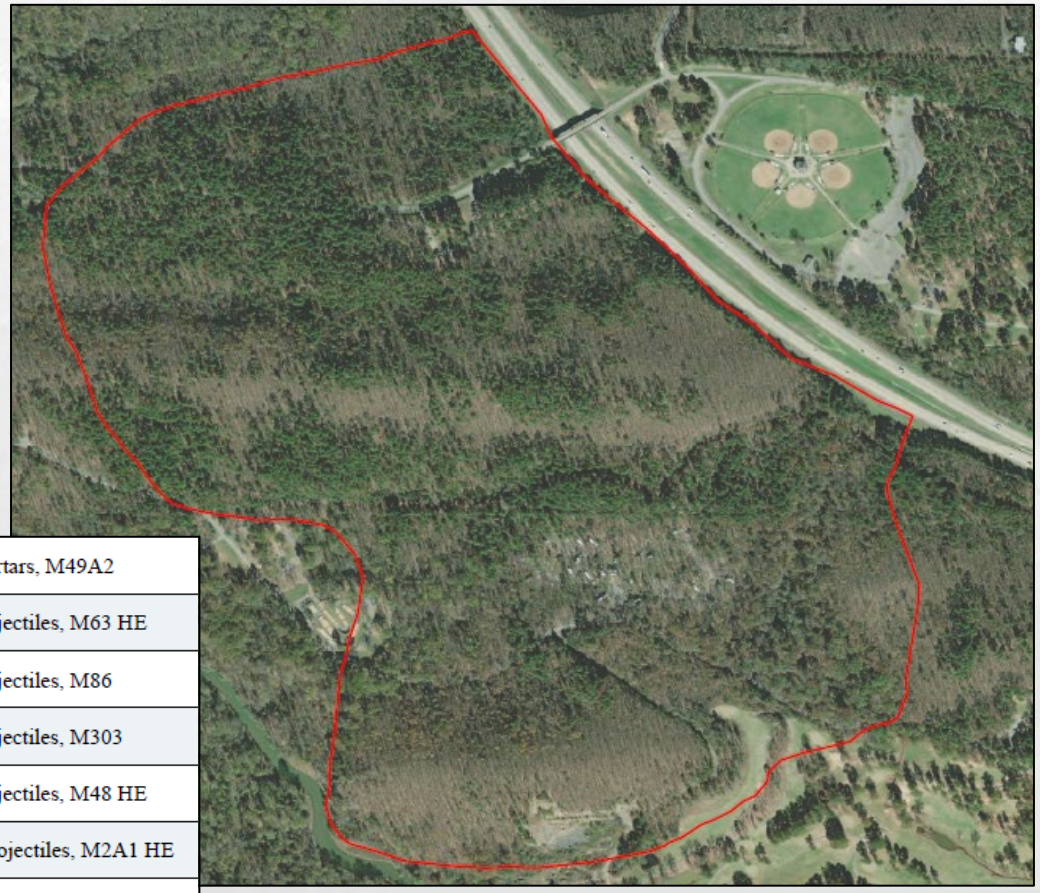
- Previous Investigations and Actions
  - 1985: Camp Robinson determined eligible for FUDS program
  - 1994-1997: ASR (site divided into Areas 1 through 5)
  - 2003: EE/CA (one MRS within Area 2 divided into 11 sectors)
  - 2008: Memorandum for Record (rifle range identified in Area 5)
  - 2011: TCRA at Area 5 Burns Park (~19 acres)
  - 2012: Little Rock AFB EOD Response for Area 5 Burns Park
  - 2015: RI for Area 5 Burns Park (no AGC)
  - 2016: FS for Area 5 Burns Park
  - 2016: PP for Area 5 Burns Park
  - 2018: DD for Area 5 Burns Park

Former Camp Robinson Area 5, Burns Park Action Area

- Project Background
  - Former Camp Robinson FUDS comprises 15 different MRSs
  - Pulaski and Faulkner Counties, Arkansas
  - Area 5 MRS is 1,357 acres
  - RI divided this MRS into two sections: No Action Area (1,080 acres) and Action Area (277 acres)
  - RD focused on the 277-acre Area 5 Burns Park MRS Action Area
  - RD Period of Performance: 2020-2024

Former Camp Robinson Area 5, Burns Park Action Area

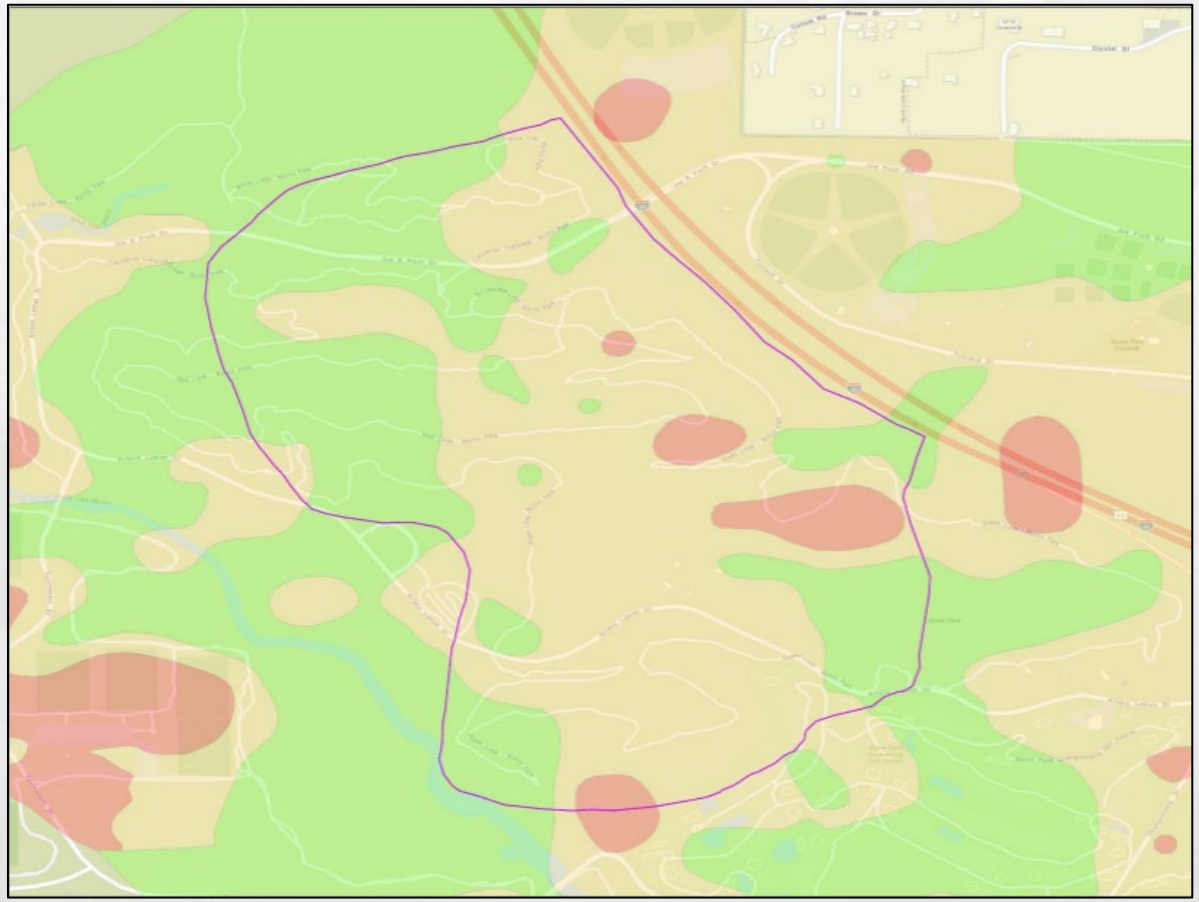
- Brief Site History
  - 1917: Camp Pike encampment cantonment and training area
  - 1937: Renamed Camp Jospeh T. Robinson
  - Served as infantry training center and POW camp during WW2
  - Declared surplus after WW2
  - MRS Action Area currently located within 1,633-acre recreational facility owned by City of North Little Rock
  - EF3 tornado directly hit the site in March 2023



60mm mortars, M49A2
37mm projectiles, M63 HE
57mm projectiles, M86
57mm projectiles, M303
75mm projectiles, M48 HE
105mm projectiles, M2A1 HE
155mm projectiles, M107 HE
Hand grenades, MKII

Former Camp Robinson Area 5, Burns Park Action Area

RI DGM Anomaly Density (EM61-MK2)



Low: 150 ApA

Medium: 375 ApA

High: 1,000 ApA

Former Camp Robinson Area 5, Burns Park Action Area

- Remedial Action Objective (2018 DD)
  - Reduce exposure through interaction of human receptors with surface and subsurface MEC to a minimum depth of 2 feet below ground surface within the Area 5 Burns Park MRS.
- Acceptable End States
  1. If a physical search for MEC is performed over 100% of the Area 5 MRS Action Area and the vertical extent for all recovered MEC is within the reliable detection depth ranges for each specific munition type, then the likelihood of a potential MEC encounter is negligible. Based on the post remediation data analysis, this end state may achieve UU/UE.
  2. If a physical search for MEC is performed over all accessible areas with the same vertical findings as #1, but the horizontal MEC distribution indicates MEC may exist under inaccessible areas (e.g., where existing slope/terrain make portions of the site inaccessible to remedial action field personnel, and/or where dense vegetation is impenetrable to field personnel and equipment), then user behavior modification is required to achieve a low likelihood a user would be seriously injured during a potential MEC encounter.
  3. If a physical search is performed but the vertical extent for one or more recovered MEC extends deeper than the reliable detection depth ranges for that specific munition type, then user behavior modification is required to achieve a low likelihood a user would be seriously injured during a potential MEC encounter.

Former Camp Robinson Area 5, Burns Park Action Area

- Goal of the RD
  - Prepare an acceptable RD and gather data, which will be used to:

    1) further characterize the MRS and determine if redefining the vertical and horizontal extents of MEC is required

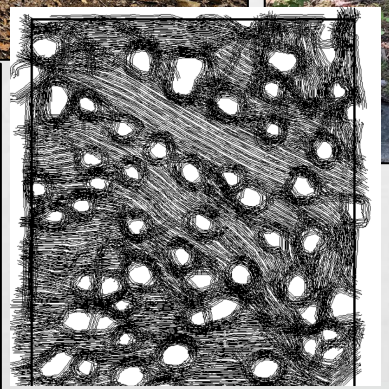
    2) evaluate the ability to implement the AGC elements of the selected alternative as described in the DD, which may support redefining the vertical and horizontal extents of MEC within the MRS.

Former Camp Robinson Area 5, Burns Park Action Area

- Principal Study Questions
  - What are the nature and extent (i.e., horizontal and vertical distribution) of explosive hazards at the MRS?
  - What is the geophysical anomaly density using an AGC sensor?
  - What and where are the inaccessible areas (i.e., roads, buildings, heavily vegetated areas, etc.) within Burns Park Area 5 MRS?
  - What are future plans for the park (trail renovation, recreational activities, construction, etc.) that may affect remedial activities?
- Key RD Scope Elements
  - Data Gap Analysis
  - MR-QAPP (Module 1)
  - 7 miles of AGC transects (125ft) spacing
  - 5 acres of non-contiguous grids
  - Intrusive investigation of 800 targets with management and disposal of MEC and MPPEH
  - RD Report and RA MR-QAPP Worksheets 10 and 11

Former Camp Robinson Area 5, Burns Park Action Area

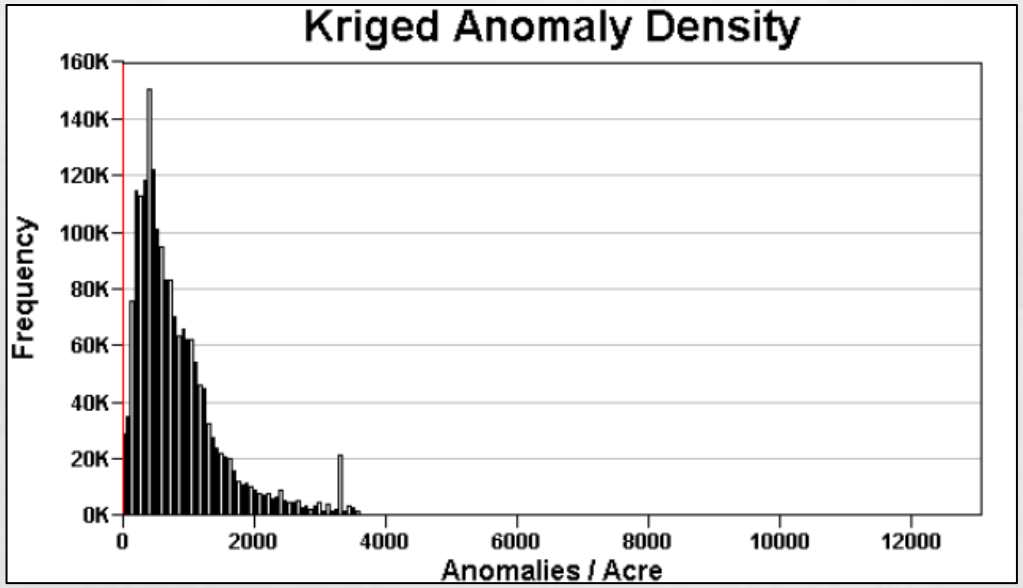
- Technology
  - MM2x2 transects
  - MM2x2 grids (dynamic)*
  - APEX grids (one pass classification)
  - RTS positioning on transects
  - SLAM positioning in grids



Former Camp Robinson Area 5, Burns Park Action Area

RD Results (Density)

RI Region	RD Region	Increase Multiplier for RD
Low: 150 ApA	Low: 500 ApA	3.33x
Medium: 375 ApA	Medium: 1,000 ApA	2.67x
High: 1,000 ApA	High: 4,000 ApA	4x
N/A	Extreme: >4,000 ApA	>4x



Low Density (500 ApA): 181.7 acres
Medium Density (1,000 ApA): 18.5 acres
High Density (4,000 ApA): 75.4 acres
Extreme Density (>4,000 ApA): 1.3 acres

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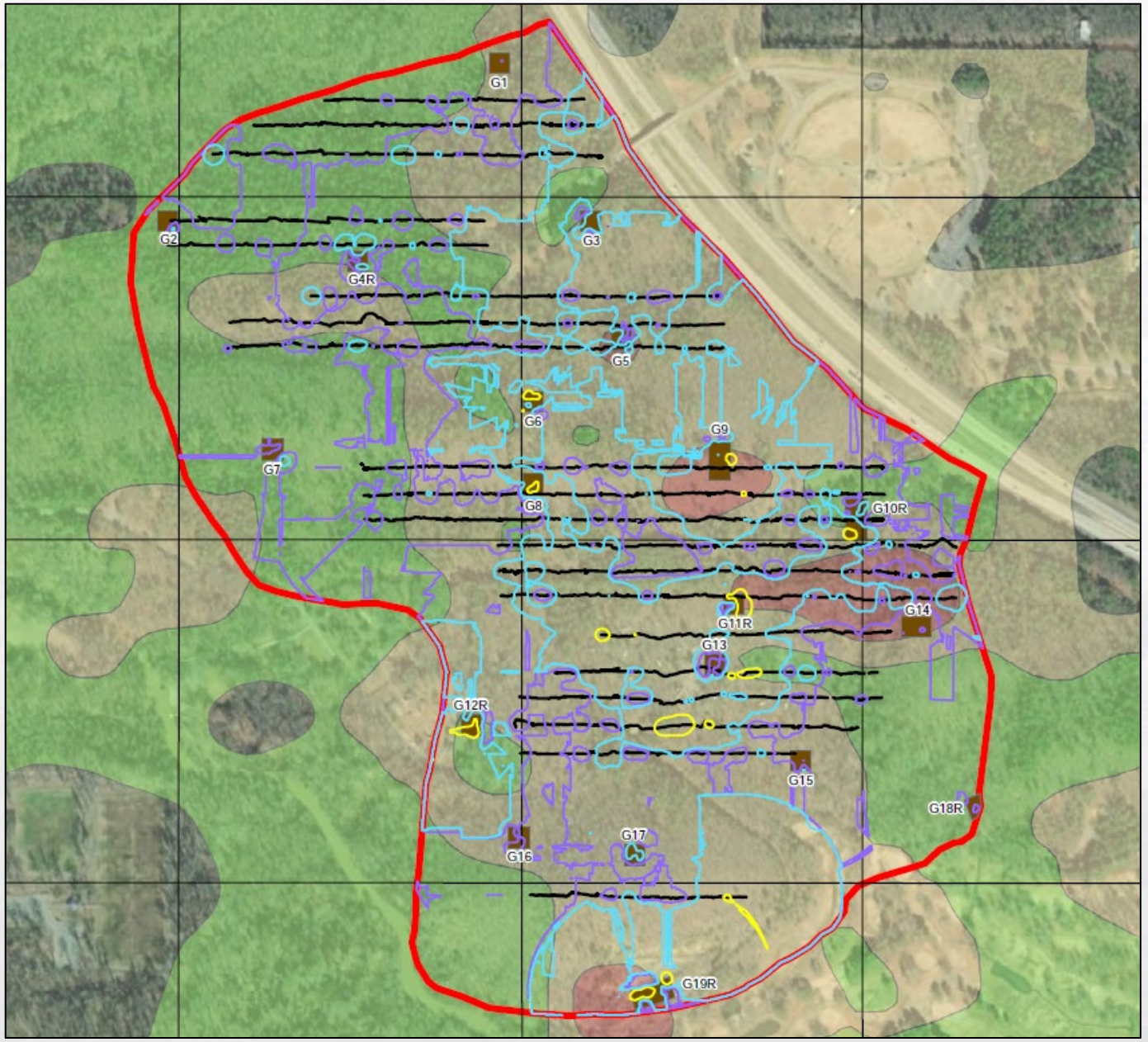
RD Results (RI vs RD)

- VSP-dervived Density Contour (500 ApA)
- VSP-dervived Density Contour (1000 ApA)
- VSP-dervived Density Contour (4000 ApA)
- Transects (MM2x2)
- USGS 500m Grid
- Grids (APEX)
- RI High Anomaly Density Areas (1,000 ApA)
- RI Medium Anomaly Density Area (375 ApA)
- RI Low Anomaly Density Area (150 ApA)
- Area 5 Burns Park MRS



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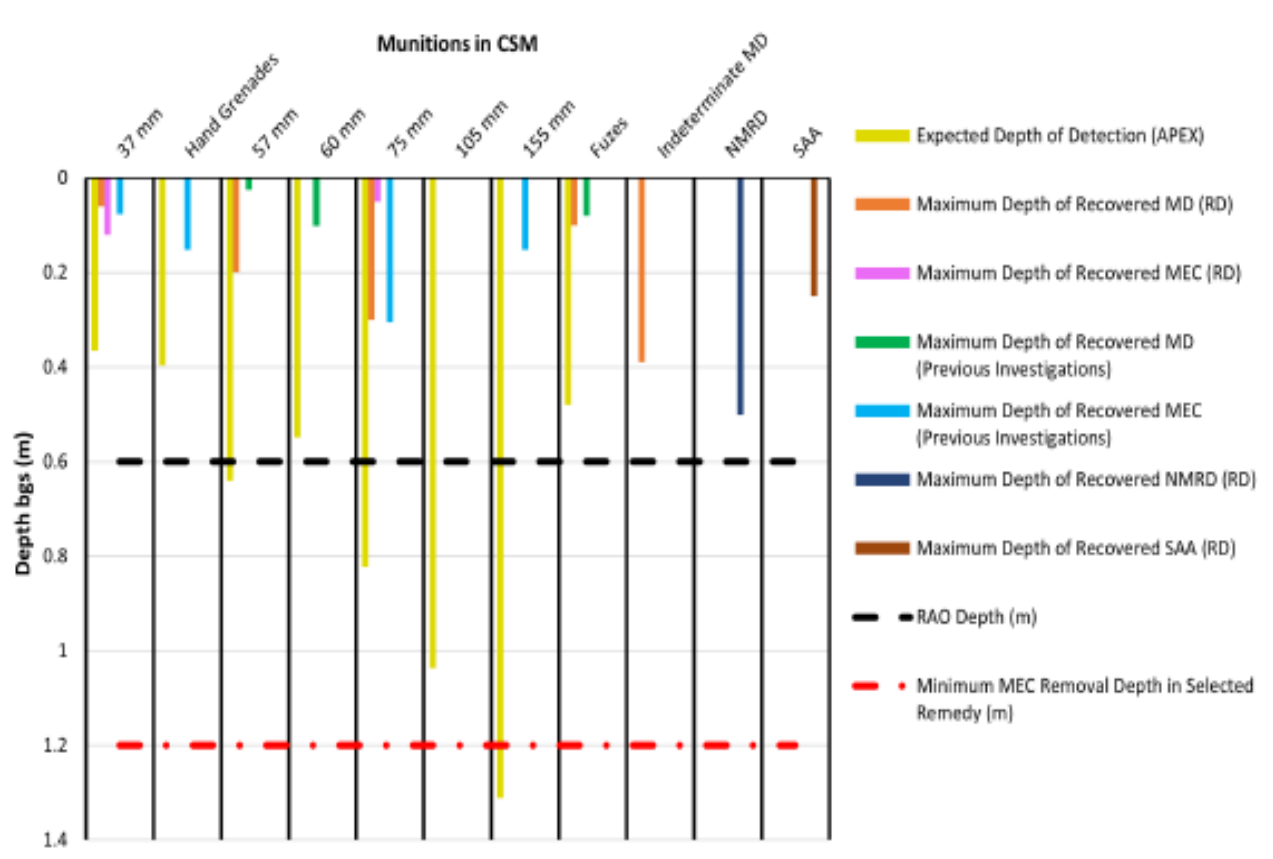


RD Results (Distribution)

	Actual Results	Estimated MRS Totals[3]
Classified TOI	851 (170 TOI/acre)[1]	47,145
Classified Cannot Analyze	34 (7 Cannot Analyze/acre)[1]	1,884
Recovered MEC	11 (0.42 MEC/acre)[2]	116
Recovered Small Arms Ammunition (SAA)	3 (0.6 SAA/acre)[1]	175

[1] RD Results
[2] TCRA, RI, and RD Results
[3] Estimated based on extrapolation of the results of the limited RD, RI, and TCRA acreage investigated

RD Region	RA TOI Estimate by Region
Low: 500 ApA	983
Medium: 1,000 ApA	2,090
High: 4,000 ApA	6,431
Extreme: >4,000 ApA	763
TOTAL	**10,267**

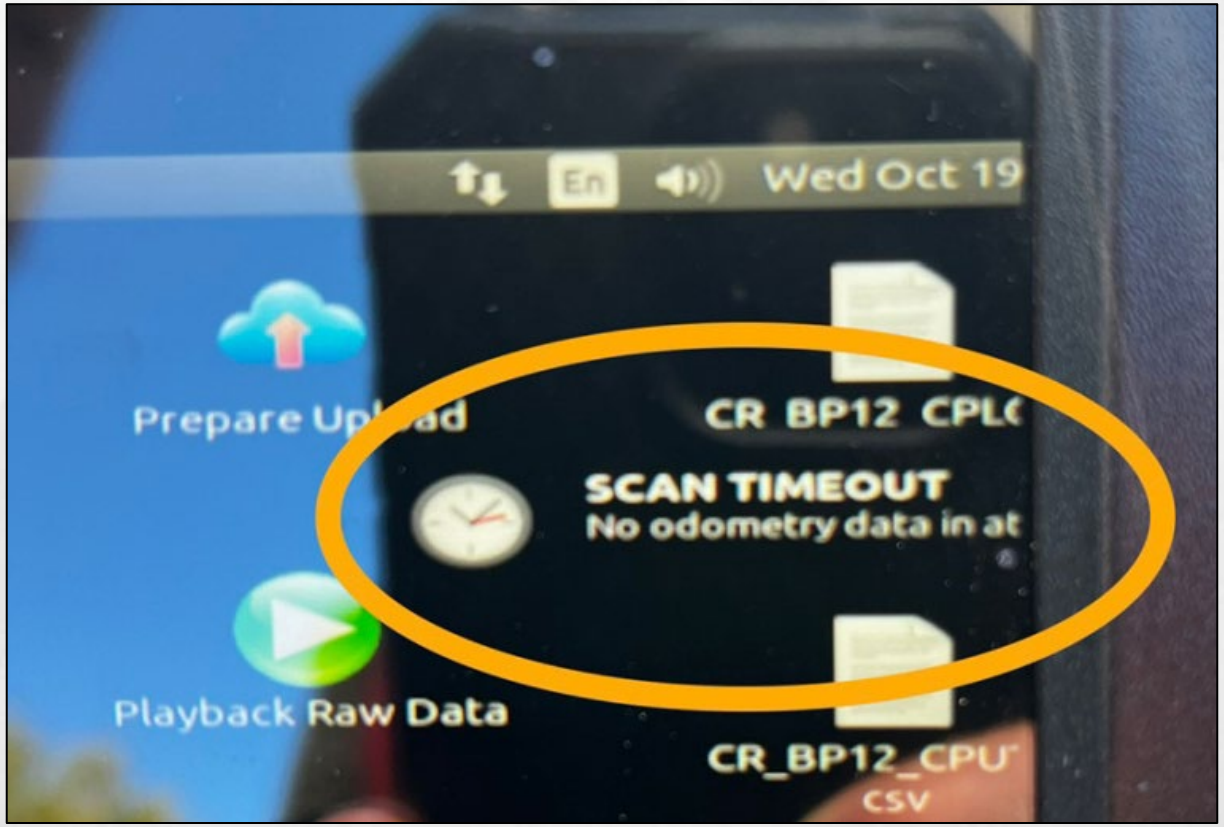
Former Camp Robinson Area 5, Burns Park Action Area

- Target density significantly higher that RI estimations
- TOI rate could not have been estimated without the RD
- Additional results to set up an RA for success:
  - Evidence of 75mm shrapnel projectile found during surface sweeps; declared TOI and added to target population
  - 75mm shrapnel projectile one of two MEC items recovered during digging
  - 267 of 277 acres within covered, closed canopy (prior to 2023 tornado)
  - 30 acres of obstructions (trees and rocks)
  - 3.1 acres with slopes between 22 and 26 degrees
  - 1.7 acres slopes >26 degrees
  - 0.25 acres standing water
  - 1.11 acres ravines
  - Achieved AGC data collection rates: 2.1 to 2.5 days/acre
  - Areas with density >4,000 ApA (est. 77 acres) suggest need for supplemental measures before final mapping with AGC
  - Fuzes confirmed during digging
  - Clear cutting of the site inconsistent with management of the site by North Little Rock Parks and Recreation Department
- AGC capable of achieving the remedy
- RD indicates MRS End State #2 is achievable

Project Thanks

- USACE – Tulsa and RPEC RSC Project Team
- Arkansas DEQ
- Arkansas Game and Fish Commission
- North Little Rock Parks and Recreation Department
- QRI MSE and Tetra Tech teams

Questions?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