

# M2S2 Webinar

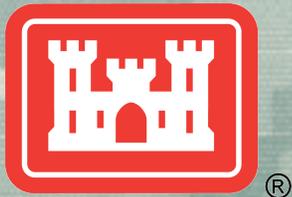
## Removal Action at Landfill 3, Former Joliet Army Ammunition Plant

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# Presentation Outline

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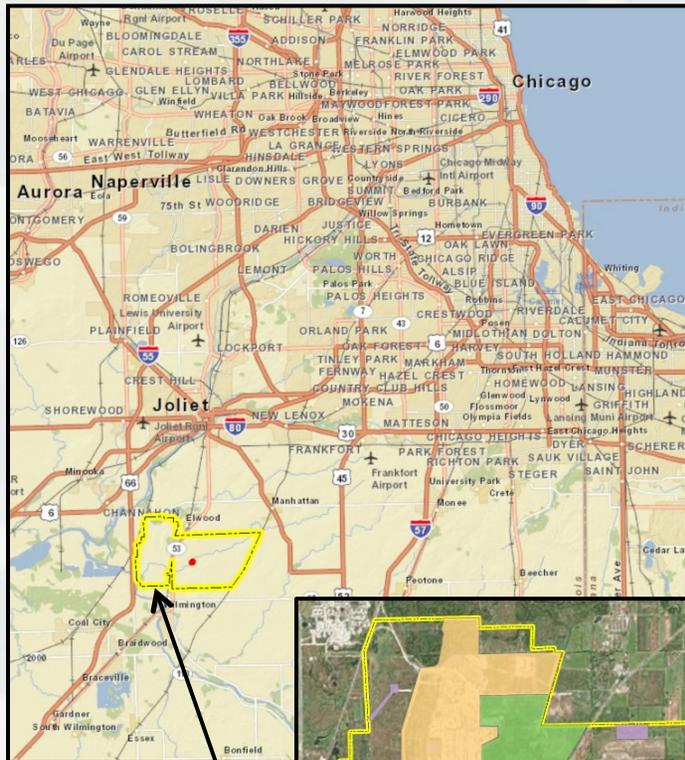


# Project Delivery Team

- U.S. Army
  - ▶ Art Holz, Joliet Army Ammunition Plant Facility Manager
  - ▶ Robin Paul, USAEC
- USACE
  - ▶ Glen Beckham, CELRL Project Manager
  - ▶ Don Peterson, CELRL COR
  - ▶ Travis R. McCoun, CENAB Technical Lead
  - ▶ Paul Greene, CENAB Safety
  - ▶ Tom Colozza, CENAB Geophysicist
  - ▶ Debbie McKinley, CENAB Environmental Engineer
- AECOM
  - ▶ John Heinicke, Project Manager
  - ▶ Mac Reed, MMRP Safety
  - ▶ Andreas Kothleitner, MMRP Quality
  - ▶ Tim Idom, SUXOS

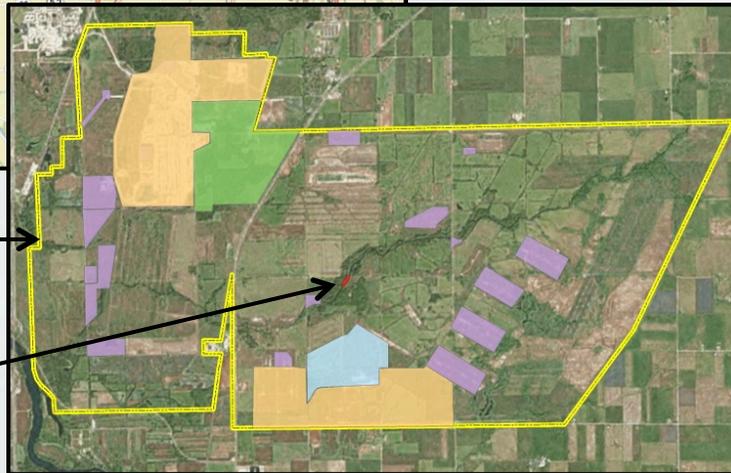


# Project Location



Former JOAAP  
boundary

L3 Capped  
Area MRS

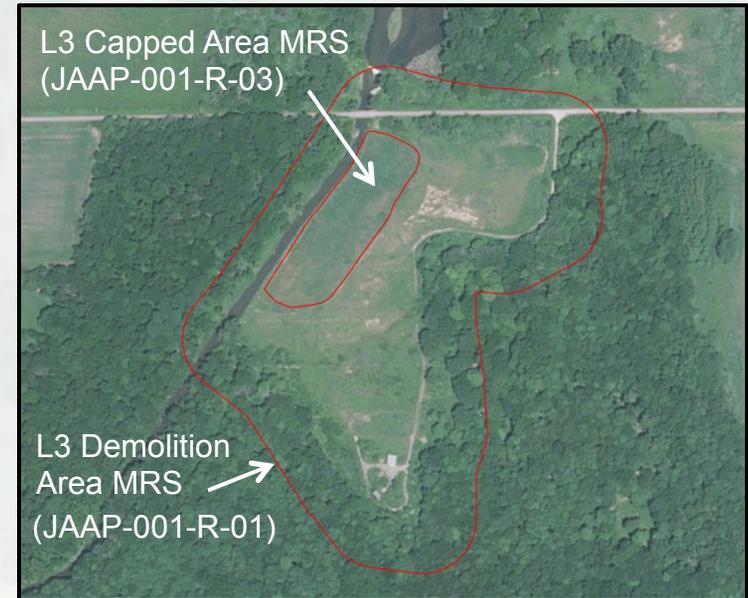


- Former Army munitions production facility in Will County, IL. Constructed during WWII and operated until 1977.
- Site L3 was used for open detonation of munitions and burning of combustible refuse and munitions crates.
- L3 Capped Area MRS property is currently undeveloped and owned by the Army.
- Property planned to be transferred to US Department of Agriculture and managed by the US Forest Service as part of the Midewin National Tallgrass Prairie.



# Previous IRP Activities

- RI/FS completed in 1990s at L3.
- In 1998, a ROD selected a RCRA Subtitle C landfill cap for what is now known as the LF3 Capped Area.
- In 2004, a separate ROD established cleanup goals for soil and requirements for excavation and confirmatory samples.
- In 2006-2008, final IRP remedy was completed:
  - ▶ 30,000 cy of contaminated soil (with MC and some construction debris) was consolidated over a 3 acre footprint and capped with a RCRA Subtitle C cap.
  - ▶ This remedial action left MEC in place under the cap.



# Decision for a TCRA

- In Spring 2011, heavy rains caused Prairie Creek to flood the site.
- Follow-up inspections found some rip rap that armored the RCRA Subtitle C cap had washed out and MEC was found downstream in Prairie Creek.
- MEC and MC were determined to pose a threat to human health and environment due to potential for erosion and migration.
- A cost analysis determined that removal costs were approximately equal to the long-term cost to monitor and maintain the landfill cap.
- After coordination with regulators, decision was made to remove the landfill.
- An Action Memo (2014) specified a TCRA to mitigate potential hazards associated with MEC and MC.

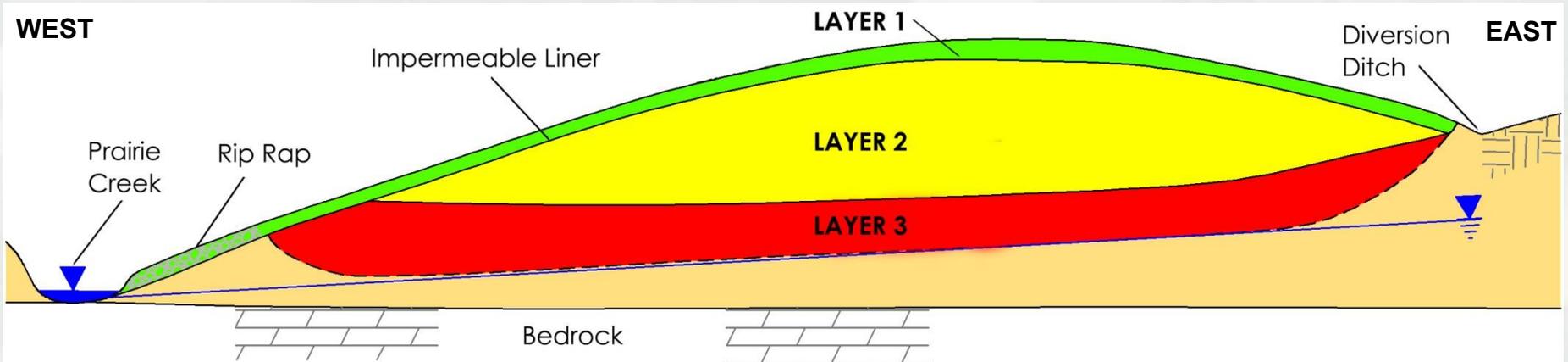


# TCRA Objectives

- Remove, characterize, and properly dispose of all potential MEC/MPPEH to eliminate potential explosives hazard.
- Remove, characterize, and properly dispose of MC-contaminated soil to eliminate potential health and environmental risks.



# Conceptual Site Model



Landfill covers approximately 3.5 acres

**Layer 1:** 22,000 cy, clean topsoil and impermeable liner.

**Layer 2:** 30,000 cy, MC-contaminated soil, low probability of MEC/MPPEH.

**Layer 3:** 31,000 cy, waste left in place, MC-contaminated soil and other debris with potential asbestos containing material (ACM), medium to high probability of MEC/MPPEH.



# TCRA Planned Approach

- **Layer 1:**
  - ▶ Remove soil above the liner, stockpile on site, and re-use as final grading fill.
  - ▶ Dispose of impermeable liner at off-site landfill.
- **Layers 2 and 3:**
  - ▶ Excavate and sort oversize materials (>6") within landfill footprint and perform MPPEH inspection.
  - ▶ Convey 6" minus to sift plant for sifting and MPPEH inspection.
  - ▶ Stockpile inspected material and characterize for disposal at appropriate off-site landfill.
- **Verification that removal objectives were achieved:**
  - ▶ Geophysics of excavation footprint.
  - ▶ Confirmatory soil samples for MC from excavation footprint.

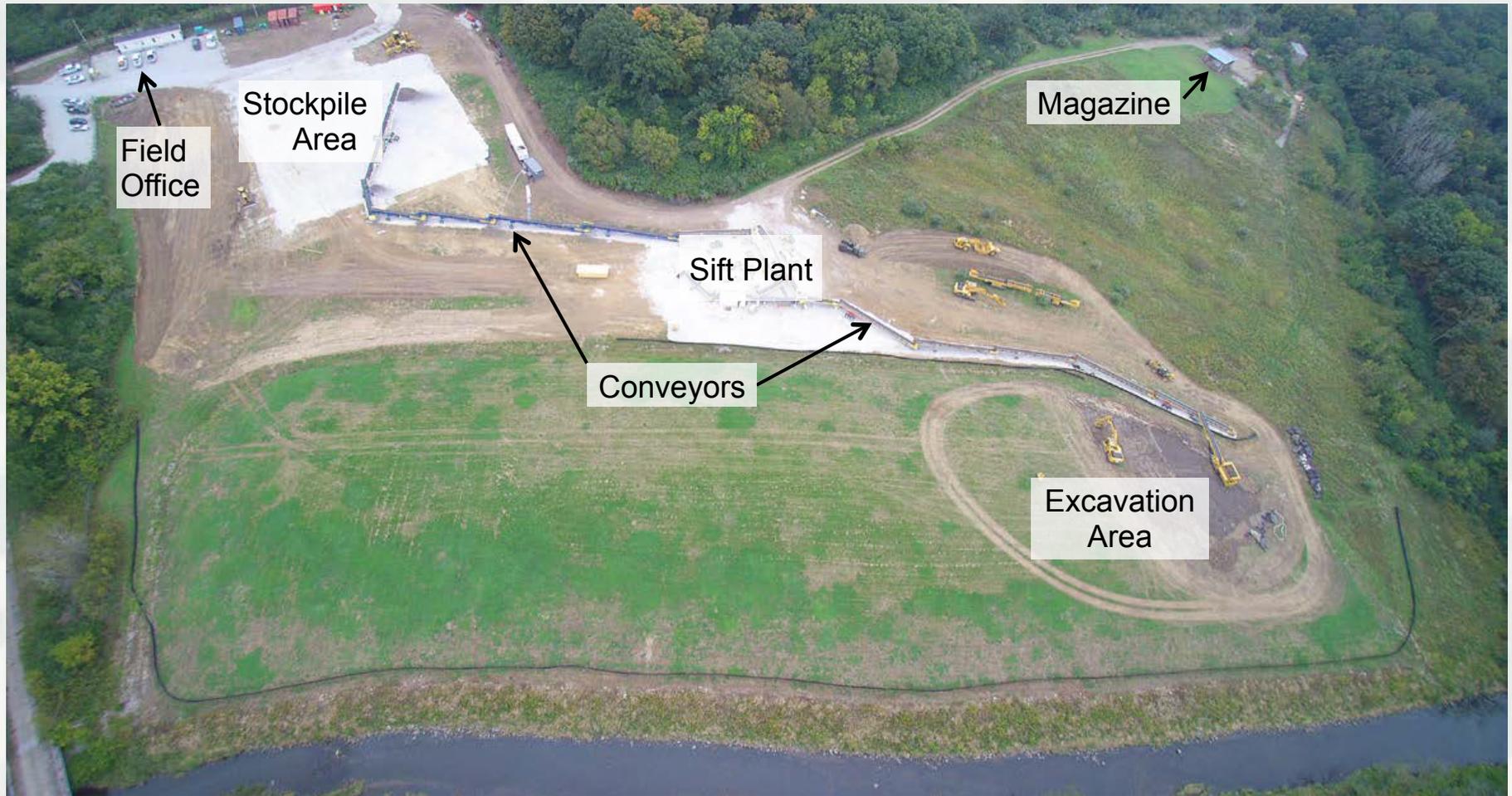


# TCRA Challenges

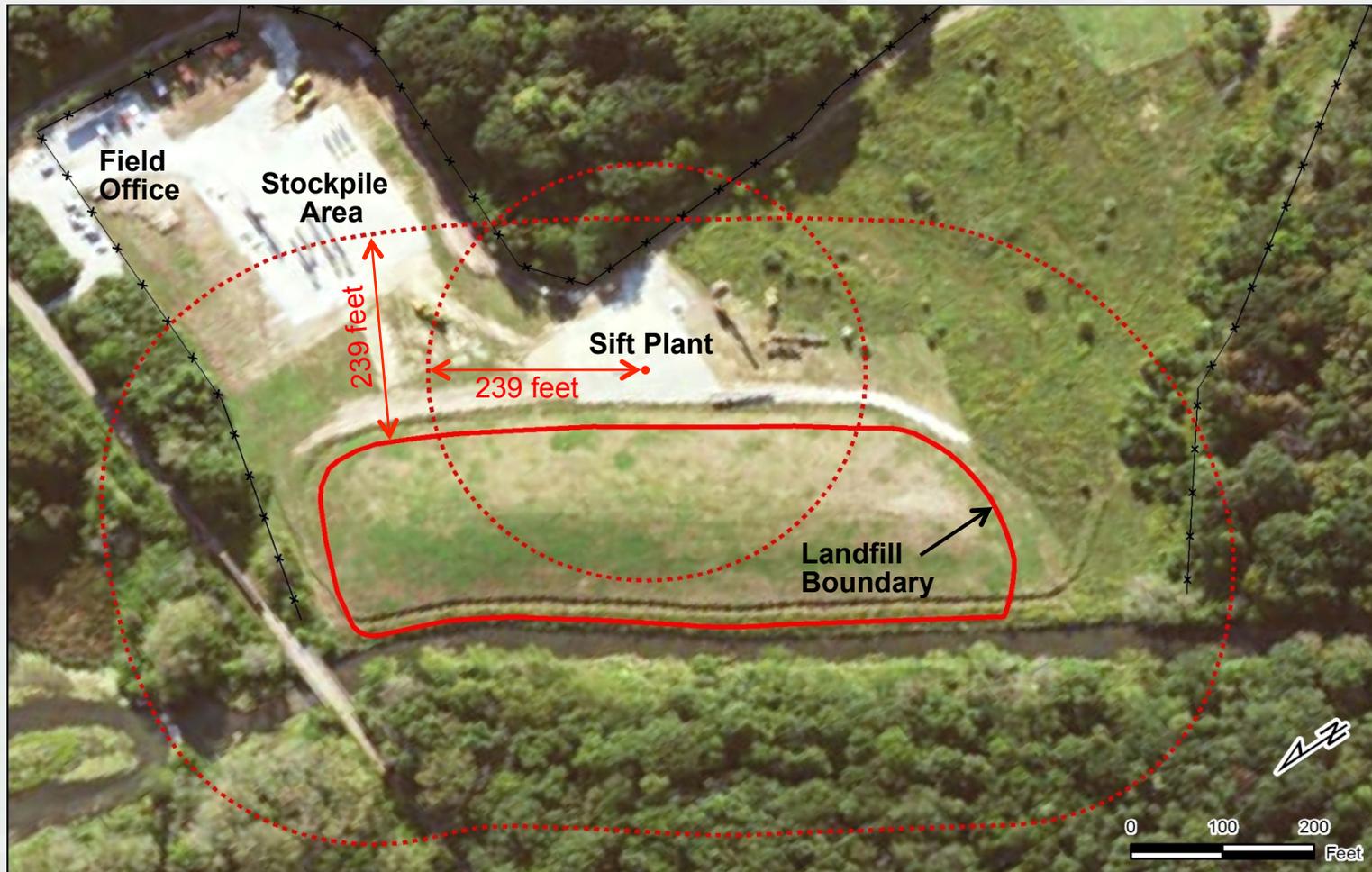
- Implement safety measures to protect workers from MEC, MC, and ACM during excavation and sifting.
- Lay out the required construction components (excavation, sift plant, MEC storage/disposal, and stockpiles) within a relatively small available footprint while maintaining Minimum Separation Distances (MSDs).
- Efficiently sort landfill materials mixed into predominantly clayey silt while using magnets to separate out the metal.
- Handle relatively large quantities of other debris (concrete, metal, etc.) mixed into landfill materials.
- Manage stormwater to minimize infiltration into landfill materials and to control erosion and sedimentation.



# Site Layout



# Site Layout with MSDs



# Excavation Operations - Safety

- MGFD = Mk1, 75mm HE projectile.
- HFD (unintentional detonations) = 239 ft.
- Selected manned excavators over remote control for more efficient removal operations.
- Excavator shielding meets “Minimum Thickness to Prevent Perforation,” Plexiglass = 3.32” and Mild steel = 0.72”.
- Operators positioned beyond the overpressurization distance (K18 = 21 ft) from cab seat to working end of bucket and wear double ear protection.



# Excavation Operations

- Maintain safe excavation slopes for safe ingress/egress/operations for equipment, operators, and UXO personnel.
- Prevent surface runoff from entering excavation by maintaining diversion ditches and berms.
- Control sediment transport by installing silt fencing between landfill excavation, sift plant, stockpile area and Prairie Creek.
- Minimize infiltration of direct precipitation by keeping the existing impermeable liner over landfill material as long as possible and excavating from a small footprint.
- Sequence excavation to methodically advance from the south to the north, draining water that falls within landfill to a settling/detention basin at south end.

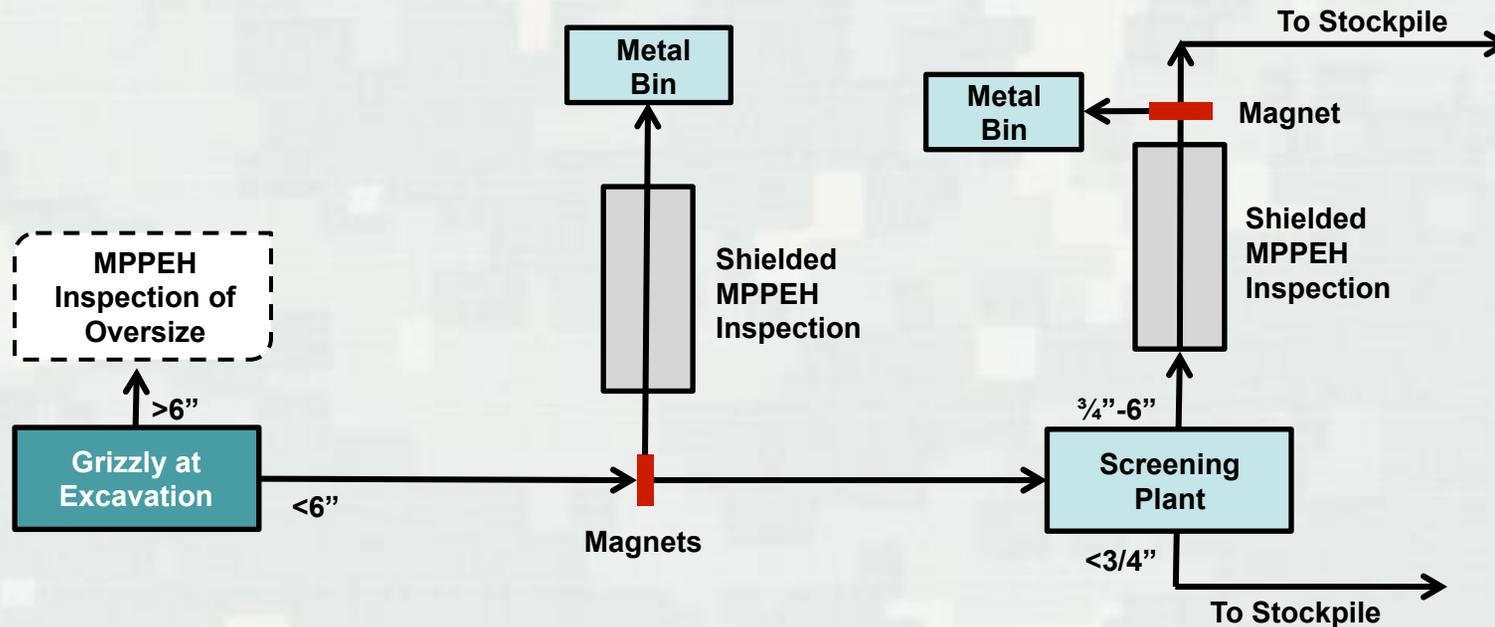


# Excavation Operations

- Shielded equipment used to feed material to sift plant.
- Periodically halt excavation to perform MPPEH inspection of oversize in excavation area.



# Sifting Operations



- Use magnets to remove metal from landfill soil material and perform MPPEH inspection on ferrous metal.
- Screen material, convey  $<3/4$ " to stockpile for disposal, inspect oversize and remove metal.
- Dispose of MEC by consolidated shots, haul MDAS/other debris to off-site smelter, and haul non-ferrous soil to off-site landfill.



# Sifting Operations

- Magnets remove ferrous metal for MPPEH inspection.
- Inspection line is protected by shielding to allow MPPEH inspection to occur while excavation and sift plant are operating.
- Inspectors have radio and video communications.



Magnet removes metal



Shielding at inspection line



Metal in bin after inspection



# MEC/MDAS Recovery

In first 2 months, 237 MEC items and 9,500 lbs of MDAS were recovered from 12,000 cy of sifted material.



# Questions?

