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**USACE PBOW RAB  
MEETING MINUTES  
PLUM BROOK ORDNANCE WORKS  
Thursday March 21, 2013  
Firelands Community College, Huron, OH**

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This document has been modified from the original to comply with DoD web policy.

**RAB Meeting Agenda**

- TNT C RA-C Final Presentation – TMG Services, Inc.
- TNT A RA-C Phase I Final Presentation – TMG Services, Inc.
- TNT A RA-C Phase II Update – USACE LRH
- Acid Area Land Farming Pilot Study – USACE LRH
- Status of Ground Water Decision Document – USACE LRH
- Investigation of Three New Areas of Interest – CB&I
- Status of Projects - Upcoming Documents – CB&I
- Open topics
- Schedule next RAB Meeting

**TNT C RA-C Final Presentation – TMG Services, Inc.**

Project Manager for TMG Services, Inc. gave the final presentation on TNT C RA-C through the completion of the field work and preparation of the final report. The presentation summarized the volumes of soil excavated, remediated (by AH), off-site disposal and a photographic review of the project. The presentation on the TNT C RA-C is included as part of these minutes.

One question from a meeting attendee was asked regarding how the concrete debris was handled. Project Manager for TMG Services, Inc. responded that the debris was placed back in the excavation.

**TNT A RA-C Phase I Final Presentation – TMG Services, Inc.**

Project Manager for TMG Services, Inc. provided the final presentation on TNT A RA-C Phase I through the completion of the field work and preparation of the final report. The presentation summarized the volumes of soil excavated, backfilled excavations, off-site disposal. The presentation on the TNT A RA-C Phase I is included as part of these minutes.

### **TNT A RA-C Phase II Update**

- Awarded to OTIE in February 2013
- Scope of Work includes:
  - Expand excavations in six open AOCs
  - Test pitting to determine excavation boundaries
  - Confirmation sampling of walls and floors produced during expanded excavations
  - Remediation of hazardous soil using alkaline hydrolysis
  - Stabilization of lead contaminated soil, if necessary
  - Backfilling of AOCs
- Work plans expected to be finalized in March-April and in the field in May 2013
- Field work to be completed by December 2013
- Final report due May 2014

### **Acid Area Land Farming Pilot Study**

- USACE LRH provided an update from when ERDC reported the process at the December 2012 RAB
- Bench scale conducted to test degradation capabilities of local bacteria
  - Molasses and yeast
  - Rhodococcus jostii and molasses
- Used soil from AA1, results showed it was not conducive to PCB treatment. Therefore, not a viable alternative for PBOW acid areas and it will not be pursued further
- Dig and haul favorable option for AA2 and AA3
- No questions were received from meeting attendees

### **Status of Ground Water Decision Document**

- One comment was received during the public review period which requested monitoring (of the groundwater).
- USACE Center of Expertise – There is no driver for groundwater monitoring.
- LRH Office of Council – Additional sampling was justifiable. When/if we are leaving contamination in place that doesn't allow for unrestricted use & unlimited exposure (UUUE), LRH OC says we are then required to conduct some level of monitoring that would be adequate to support the required 5-year report preparation, subsequent reviews and report finalization.
- USACE plans to conduct limited groundwater sampling to establish current conditions for groundwater in TNT A, B and C, and Red Water Ponds.

### **New Areas of Interest and Document Status**

Chicago Bridge and Iron (CB&I, formerly Shaw) provided the presentation on the new areas of interest. The presentation is included as an attachment to these meeting minutes. The presentation highlighted areas identified from historical photos and maps and the project document status. The areas of interest include:

- Acetone Storage Tanks - associated with pentolite manufacturing, minimal impact
- TNT A – Barren area, contamination not detected
- Ransom Road Disposal Area, elevated levels of contaminants

CB&I outlined the upcoming documents review status. The following is a list of the documents that will be submitted for review in the next 3 months:

- Ash Pit #3 Revised BHHRA – April 2013

- Powerhouse #2 Ash Pit BHHRA & SLERA Addendums – April 2013
- GMA (Sellite Area) BHHRA & SLERA draft docs – May 2013
- GMA (Unloading Area) BHHRA & SLERA draft docs – June 2013
- Reservoir #2 Burning Grounds DD – June 2013

**RAB Meeting**



Next RAB was scheduled tentatively for Wednesday June 5, 2013.

The meeting was adjourned.

**TNT C Remedial Action-Construction**  
**Remediation of Contaminated Soil and Sediment**

**Plum Brook Ordnance Works**  
**Sandusky, Ohio**


TMG Services, Inc.  
 Project Manager  
 March 21, 2013

US Army Corps of Engineers  
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## Project Overview


- Chemicals of Concern (COC)
- Results and Report Preparation
- Excavation
- Excavation Confirmation & Soil and Sediment Characterization
- Remediation
- Disposal
- Site Restoration
- Worker Safety
- Lessons Learned



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## Project Objective


- Excavate 15 Areas of Concern (AOCs)
  - ▶ Obtain clean closure on all 15 AOCs
  - ▶ Completed under two contracts
- Remediate hazardous soil
  - ▶ Alkaline hydrolysis
- Off-site disposal of non-hazardous soil
- Backfill excavations
  - ▶ Using remediated soil or purchased clean fill



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## Chemicals of Concern


- Nitroaromatics
- PAHs
- PCB
- Lead



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## Remediation Results


- TNT C RA-C
  - ▶ 15 AOC excavated
  - ▶ 10,954.91 tons – non-hazardous soil to landfill
  - ▶ 2,152 cy to remediation pad for AH
  - ▶ 6 AOCs did not meet clean closure
  - ▶ Remediated soil used for backfill



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## Remediation Results

- TNT C Follow-On
  - ▶ Excavate 6 AOCs to clean soil
  - ▶ 2,657 cy to pad for AH remediation
  - ▶ pH adjustment
  - ▶ 3,384.79 tons – non-hazardous to ECL
    - Due to elevated PAHs
    - Asphalt encountered during excavation
  - ▶ Remediated soil used for backfill



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## Remediation Results

- Alkaline hydrolysis is effective at reducing nitroaromatics and some PAHs
- All AOCs are below risk criteria
  - ▶ Hazard Index (HI)  $\leq 1$
  - ▶ Incremental Lifetime Cancer Risk (ILCR)  $\leq 1E-5$



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## Excavation

- Survey and stake coordinates
- Staging equipment and AOC clearing
- Digging and stockpiling
- Erosion control and security



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## Survey AOC Coordinates



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## Staging Equipment and Clearing



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## Digging and Stockpiling



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## Debris



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## Erosion Control and Security



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## Soil and Sediment Characterization

- Excavation
  - ▶ Confirmation samples
  - ▶ Walls and floors
  - ▶ Risk evaluation ( $HI \leq 1$ ,  $ILCR \leq 1E-5$ )
  - ▶ Clean closure determination
- Stockpile
  - ▶ Characterization samples
  - ▶ Remediation
  - ▶ Off-site disposal



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## Confirmation Samples

- Parameters
  - ▶ Nitroaromatics
  - ▶ SVOCs
  - ▶ Metals
  - ▶ PCBs
- How is data used?
  - ▶ Risk evaluation
  - ▶ Determination of clean closure of AOC



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## Characterization Samples

- Parameters
  - ▶ Full Toxic Characteristic Leaching Procedure (TCLP)
- How is the data used?
  - ▶ Determine if soil or sediment is hazardous or non-hazardous
  - ▶ Remediation – is it required?
  - ▶ Off-site disposal – is it non-hazardous?



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## Remediation

- Alkaline Hydrolysis
  - ▶ Tetra Tech – subcontractor
  - ▶ Field oversight of process
  - ▶ Reduce hazardous levels of 2,4-DNT and some PAHs
- Other COCs
  - ▶ Lead (Pb) - Below RG
  - ▶ PCBs – Below RG



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## Disposal

- Non-hazardous soil to Erie County Landfill
- Remediated soil was used as backfill in the TNT C excavations
- Remediated, non-hazardous soil that was above PAH RG was disposed at landfill
  - ▶ PAH due to asphalt

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## Site Maintenance and Restoration

- Pad modifications/expansions
- Sump expansion
- Sump liner replacement
- Road repair
- Seeding at AOCs

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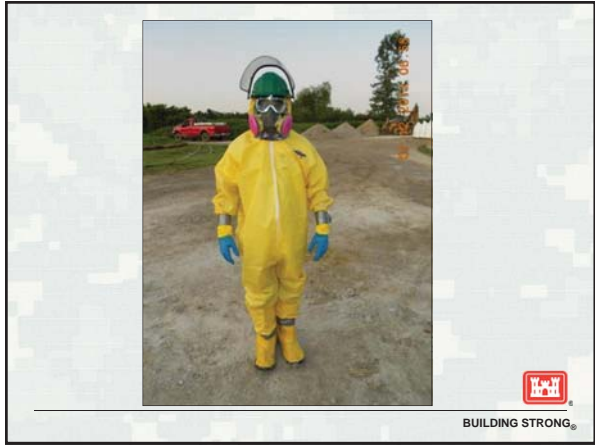




## Safety

- PPE
  - ▶ Respiratory protection
  - ▶ Eye, ear protection
  - ▶ Skin protection
  - ▶ Head and foot protection
- Equipment
  - ▶ Fire extinguishers
  - ▶ Material handling and storage

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## Lessons Learned

- AH Remediation
  - ▶ Add a little extra chemical
  - ▶ Sandy soil is difficult to treat using AH
  - ▶ Addition of chemical in 2000# supersacs
  - ▶ Putting down straw as a "marker" when turning windrowed soil



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**TNT A Remedial Action-Construction  
Remediation of Contaminated Soil and Sediment  
Phase I - Excavation**

**Plum Brook Ordnance Works  
Sandusky, Ohio**


TMG Services, Inc.  
Project Manager  
March 21, 2013

US Army Corps of Engineers  
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## Project Overview


- Chemicals of Concern (COC)
- Results and Report Preparation
- Excavation
- Excavation Confirmation & Soil and Sediment Characterization
- Disposal/Soil Staging
- Site Restoration



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## Project Objective


- Excavate 18 Areas of Concern (AOCs)
- Off-site disposal of non-hazardous soil
- Stage hazardous soil on remediation pad
- Backfill excavations
  - ▶ Using purchased clean fill



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## Chemicals of Concern


- Nitroaromatics
- PCB
- Lead



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## Remediation Results

- TNT A RA-C
  - ▶ 18 AOCs excavated
  - ▶ 21000 tons – non-hazardous soil to landfill
  - ▶ 1853 cy to remediation pad for AH
  - ▶ 6 AOCs did not meet clean closure
    - Completed under Phase II



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# Potential New Sites Update and Document Status


Shaw E&I, Inc.,  
Knoxville, Tennessee  
21 March 2013



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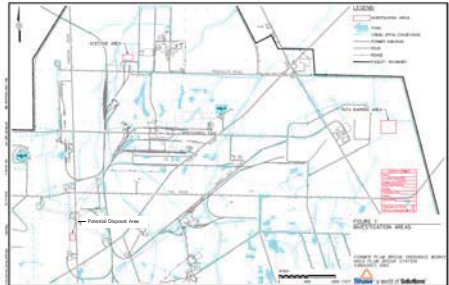
## Potential New Sites

- Areas identified from historical photos/maps
  - Acetone Storage Tanks
    - Part of the Pentolite Manufacturing Area
    - Acetone used in manufacture of PETN
    - 4 soil samples collected
  - TNT A "Barren Area"
    - Area of soil disturbance east of TNT Area A
    - Six composite soil samples collected
  - Ransom Road Disposal Area
    - Apparent disposal area for general site-related debris
    - Six samples collected





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## Potential New Sites



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## Acetone Storage Tanks



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## TNTA Barren Area



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## Ransom Road Disposal Area



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## Ransom Road Disposal Area



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## Potential New Sites Preliminary Results

- ▶ Acetone Storage Tanks
  - 4 soil samples collected
  - Minimal impact to soil (PAHs at low concentrations)
- ▶ TNT A "Barren Area"
  - Six composite soil samples collected along with soil pH
  - Soil pH ranged from approximately 6.6 to 8.8 S.U.
  - Contamination not detected in six samples
- ▶ Ransom Road Disposal Area
  - Seven soil samples collected from six locations
  - Elevated metals (copper and lead) detected
  - Elevated PAHs consistent with observations of charred material.



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## Upcoming Documents for Review

- ▶ Ash Pit 3 Revised BHHRA – April 2013
- ▶ Powerhouse #2 Ash Pit BHHRA Addendum – April 2013
- ▶ Powerhouse #2 Ash Pit SLERA Addendum – April 2013
- ▶ GMA (Sellite Area) Draft BHHRA – May 2013
- ▶ GMA (Sellite Area) Draft SLERA – May 2013
- ▶ GMA (Unloading Area) Draft BHHRA – June 2013
- ▶ GMA (Unloading Area) Draft SLERA – June 2013
- ▶ Reservoir #2 Burning Ground DD – June 2013



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