Proposed Plan for Soils and Sediments
TNT Area C
Former Plum Brook Ordnance Works, Sandusky, OH

Public Briefing
12 March 2009

US Army Corps of Engineers
Huntington District

Purpose of the TNT Area C Proposed Plan

- Present the Preferred Alternative proposed for cleanup of contaminated soils and sediments
  - Based on results of remedial investigation / feasibility study (RI/FS) completed for TNTC soils and sediments
  - Prevents human exposure to soil containing constituents of concern (COCs) at concentrations above remediation goals
  - Reduces potential ecological hazards
- Provide for public comment

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Community Involvement

- The Proposed Plan is made available to the public for a 30-day review and comment period
- At the end of the 30-day review period, all comments will be:
  - documented in the administrative record (AR),
  - evaluated and incorporated into the overall remediation plans, if deemed feasible by USACE,
  - and included in the Responsiveness Summary of the Decision Document

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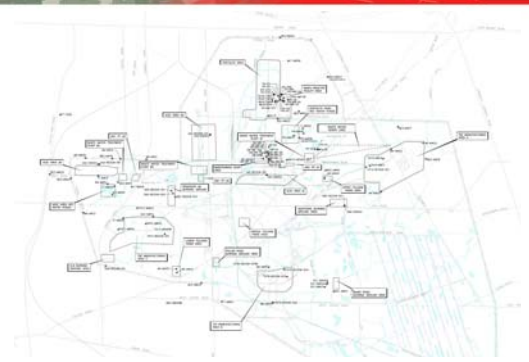

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Summary of Selected Response Action

- USACE to complete remedial action at TNTC consisting of:
  - Excavation of approx. 9,200 CY of site soils and sediment
  - Alkaline Hydrolysis and/or windrow composting treatment of soil and sediment
  - Chemical stabilization of lead-contaminated soil
  - Backfill with treated soil supplemented with imported clean fill
  - Surface restoration with compost
  - Off-site disposal of treated or stabilized soil and sediment that does not meet requirements for on-site disposal
- The selected response action will be documented in a Decision Document for TNTC by the USACE

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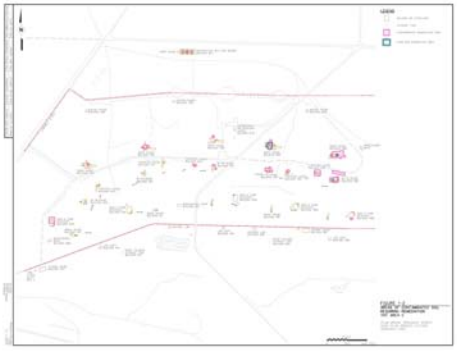

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Summary of TNTC RI

- Summary of remedial investigation (RI) fieldwork
  - Field investigation conducted in 2000
  - 332 surface and 51 subsurface (up to 10' deep) soil samples collected for screening laboratory analysis (without 2nd column confirmation)
  - 22 surface and 15 subsurface soil samples collected for laboratory analysis using standard SW-846 Method 8330
- Summary of HHRA Results
  - Total soil (on-site resident and construction worker)
    - OEPA ILCR criterion (1E-5) was exceeded for on-site resident (3E-3) and construction worker (5E-5)
    - OEPA HI criterion (1) was exceeded for on-site resident (1,240) and construction worker (360)

Summary of TNTC RI (continued)

- Summary of HHRA Results (continued)
  - Total soil (continued)
    - TNT accounts for over 75% of the total ILCRs and 99% of the HIs
    - Additionally, 2,4-DNT contributed appreciably to the total ILCRs
    - Additionally, 2-ADNT contributed to the HIs
  - Surface soil (groundskeeper, indoor worker, hunter, and child venison consumer)
    - OEPA ILCR criterion (1E-5) was exceeded for groundskeeper (5E-4), indoor worker (2E-4), and hunter (3E-5)
    - OEPA HI criterion (1) was exceeded for groundkeeper (95), indoor worker (41), and hunter (5)
    - *De minimis* cancer risk and noncancer hazard for child venison consumer

Summary of TNTC RI (continued)

- Summary of HHRA Results (continued)
  - Surface water (resident and construction worker)
    - *De minimus* cancer risk and noncancer hazard for on-site resident and construction worker
  - Sediment (resident and construction worker)
    - Total ILCRs for resident (1E-5) and construction worker (1E-6) are within the risk management range (1E-6 to 1E-5)
    - HIs for resident (6) and construction worker (14) exceed the OEPA criterion (1)

Summary of TNTC RI (continued)

- Summary of SLERA results
  - Surface soil ecological HIs using food chain modeling
    - NOAEL-based HIs ranged from 73 (hawk) to 36,400 (marsh wren)
    - The most significant "risk drivers" were TNT and Aroclor-1260
  - Sediment and surface water ecological HIs using food chain modeling
    - NOAEL-based HIs were 86 (raccoon) and 51 (duck)
    - Depending on receptor, the most significant "risk drivers" in sediment were (in general order, depending on receptor): TNT, selenium, aluminum, Aroclor-1260, 2-ADNT, and 4-ADNT
    - Potential ecological risks associated with surface water were *de minimis*

Summary of Evaluated Alternatives

- Alternative 1 – No Action
- Alternative 2 – Excavation, Windrow Composting, and Off-Site Disposal
- Alternative 3 – Excavation and Off-Site Disposal
- Alternative 4 – Excavation, Windrow Composting, Chemical Stabilization, and Off-Site Disposal
- Alternative 5 – Excavation, Alkaline Hydrolysis, Windrow Composting, Chemical Stabilization, On-Site and Off-Site Disposal

Alternative 1 Details

- No Action
  - Required by NCP as baseline for comparing other alternatives
  - Does not reduce human health risks to levels considered acceptable by US EPA
  - Does not employ removal, containment, or treatment actions that mitigate impact of source areas on receptors or other media
  - Thus, No Action was not considered the recommended alternative

Alternative 2 Details

- Excavation, Windrow Composting, and Off-Site Disposal
  - Excavate approximately 9,200 CY of contaminated soil
  - Backfill excavation with clean material
  - Windrow composting of excavated material
  - Off-site disposal of composted soil and untreated soil at a non-hazardous landfill
  - Off-site disposal of soil contaminated with lead in a RCRA Subtitle C TSDF

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Alternative 3 Details

- Excavation and Off-Site Disposal
  - Excavate approximately 9,200 CY of contaminated soil
  - Backfill excavation with clean material
  - Off-site disposal of soil that passes TCLP test and meets LDR requirements (estimated to be 75%) at a non-hazardous landfill
  - Off-site disposal of soil classified as hazardous due to 2,4-DNT and lead concentrations (estimated to be 25%) in a RCRA Subtitle C TSDF

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Alternative 4 Details

- Excavation, Windrow Composting, Chemical Stabilization, and Off-Site Disposal
  - Excavate approximately 9,200 CY of contaminated soil
  - Backfill excavation with clean material
  - Windrow composting of excavated material
  - Off-site disposal of composted soil and untreated soil at a non-hazardous landfill
  - Chemical stabilization and off-site disposal of soil contaminated with lead

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Alternative 5 Details

- Excavation, Alkaline Hydrolysis, Windrow Composting, Chemical Stabilization, On-Site and Off-Site Disposal
  - Excavate approximately 9,200 CY of contaminated soil
  - Alkaline Hydrolysis and/or windrow composting treatment of soil classified as hazardous due to 2,4-DNT
  - Off-site disposal of untreated non-hazardous soil at a non-hazardous landfill
  - Chemical stabilization and off-site disposal of soil contaminated with lead
  - Backfill with treated soil supplemented by clean imported fill
  - Use treated compost as top soil for site restoration

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Proposed Action Description – Alternative 5

- Excavate areas where RGO concentrations (Table 4 of the PP) are exceeded (approx. 9,200 bank CY; 12,000 loose CY)
- Segregate soil contaminated with lead greater than 400 mg/kg for chemical stabilization and disposal at a nonhazardous landfill
- Treatment of soil classified as hazardous due to 2,4-DNT
  - Use established treatment area at PRRWP
  - Alkaline chemical mixture (e.g., caustic soda and ferric chloride) mixed into soil and sediment using an excavator or wheel loader
  - Neutralization to adjust pH if necessary
  - Windrow composting using a mixture of manure and carbon source/bulking agent
  - Treat as required to allow on-site placement (meet RGOs) or to meet TCLP criteria for nonhazardous landfill disposal

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Proposed Action Description – Alternative 5

  - Windrow composting is effective at reducing both TNT and DNTs; however, TNT reduction may yield ADNTs at a concentration that would prohibit on-site disposal
  - Alkaline Hydrolysis is effective at reducing TNT (without producing ADNTs), and is somewhat effective at reducing DNTs
- Off-site disposal of untreated non-hazardous soil at a non-hazardous landfill
- Backfill with treated soil supplemented by clean imported fill
- Use treated compost as top soil for site restoration

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Remedial Performance of Proposed Action

- Alternative 5 is protective of human health and the environment
- Complies with Applicable or Relevant and Appropriate Requirements (ARARs)
- Permanently removes COCs from TNTC at concentrations above RGOs
- Permanently reduces toxicity and mobility of contaminants
- No risk to the community or environment during implementation
- Is technically & administratively implementable
  - No engineering or regulatory restrictions prevent implementation
  - Amendments and equipment required are readily available

Proposed Action Schedule

- Alternative 5 can be implemented in 22 to 28 months
  - Work plan development
  - Mobilization and excavation of 9,200 CY of contaminated soil
  - Pre-compliance testing to select treatment option
  - Alkaline Hydrolysis treatment as required
  - Neutralization as required
  - Windrow Composting as required
  - Confirmatory sampling
  - Disposal of treated and untreated nonhazardous soil and sediment
  - Backfill with clean soil (treated and imported)
  - Surface placement of composted material and site restoration
  - Demobilization

Proposed Action Costs

- The total projected construction cost for the entire scope of TNTC, as identified in the FFS Addendum for TNT Area C is $2.4 million.
- A detailed cost estimate is presented in Table 4-8 of the FFS Addendum.
- A general summary of the cost estimate is as follows:

1. Work Plans, Reports and Procurement	$25,000
2. Mobilization/Demobilization	$6,000
3. Excavation (9,205 CY)	$397,591
4. Alkaline Hydrolysis and neutralization (2,103 CY)	$254,568
5. Windrow Composting (421 CY)	$221,123
6. Chemical Stabilization of Lead-Contaminated Soil (400 CY)	$14,731
7. On-Site Disposal (compost 1,750 CY, soil 1,682 CY)	$38,869
8. Off-Site Disposal (10,432 tons)	$347,347
9. Site Restoration	$351,602
Subtotal	$1,656,831
Contingency (30%)	$497,049
PM Multiplier (7.5%)	$124,262
Fee/Profit (10%)	$165,683
Total Cost	$2,444,000