

Relationship of Characterization, Packaging, Transportation, & Disposition

MHF  **SERVICES**

A N **ENERGYSOLUTIONS** C O M P A N Y

MHF Services Overview

- Acquired by *EnergySolutions* in March 2015
- Integrated Packaging, Transportation, and Logistics Provider for Environmentally Sensitive Materials
 - Radioactive, Hazardous, Non Hazardous, and Industrial Markets
 - Rail Equipment
 - Transload / Transfer Facilities
 - Packaging

ES Company Overview

- Packaging as one function out of Clinton, TN
 - Metal and Flexible
- Rail Logistics as one function out of Wexford, PA
 - 1,145 Rail Cars with 644 rail car lids
 - 2,485 containers
 - 82 Power Units, 381 Trailers, 100 Casks and Trailers
- Disposition Facilities Across the U.S.
 - Bulk Survey or Decontamination for Release
 - Volume Reduction via Compaction, Incineration, or Metal Melt
 - Direct Disposal

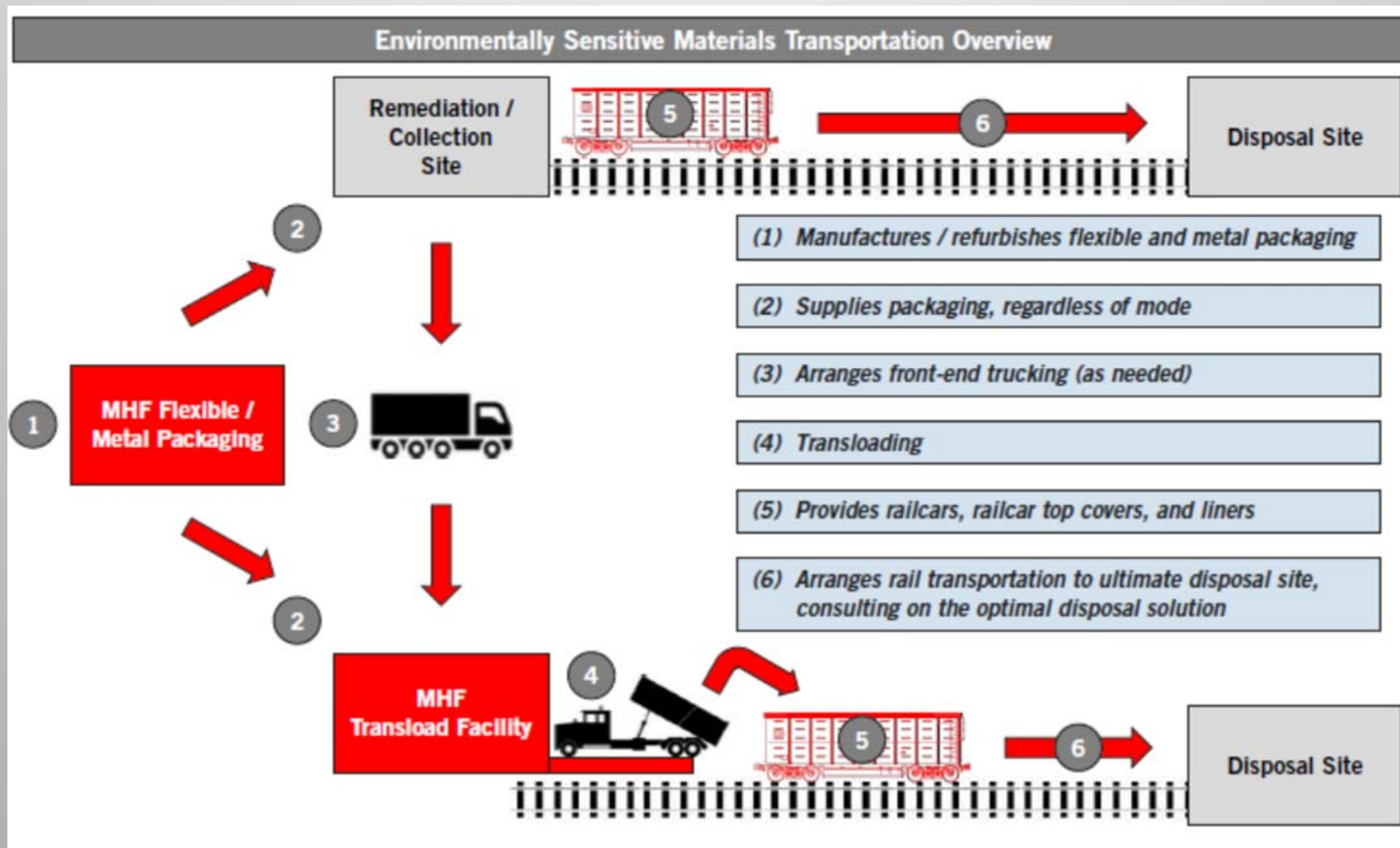
EnergySolutions Locations



Relationship between Characterization, Packaging, Transportation, and Disposition

- Material Characteristics Drive Packaging Type
 - IP-1, Type A, Cask
 - Dimensions and Weight of Material and Package
 - Special Handling
- Characteristics, Packaging, and Site Conditions Drive Logistics
 - Truck, Rail, and/or Marine Served
 - Dimensional or Over Weight Load
 - Routing or Control Requirements
- Disposition Alternatives
 - Waste Acceptance Criteria
 - Receipt Capabilities
 - Waste Type and Disposition Path

Each Function is Often Managed Independently at Sites



Project Example: Activity and Dose Increase

- Process knowledge of characterization data predicted low level activity and low dose rates of material
 - IP-1 Cargo Container on a standard flatbed with bulk disposal
- Increase in activity and dose rates of material once actually produced resulted in:
 - Shielded Package (Cask)
 - Specialty drop deck trailer and over weight permits
 - Increased handling on-site and at the disposal site
 - Bulk Waste Disposal
- Impact of Change
 - 1 Month delay to secure transportation equipment and permits
 - Additional costs due to change in packaging, transportation equipment, and disposition pathway.

Standard IP-1 Cargo on Chassis Trailer



Cask and Specialty Trailer



Project Example: Change In Package

- 6,000 Lb. increase in gross weight and 2" addition to width
- Impacted Onsite Handling and Truck to Rail Permits
 - Axle Loadings for Onsite and Highway Limits
 - Dimensional Limits of Truck and Rail Permits
 - Pricing Based on Weight
- Impacted Disposal Volume and Onsite Handling
 - Pricing Based on Volume
 - Onsite Axle Loadings
- Impact of Change
 - 2 week delay
 - Potential of more than \$500K but only ~\$30K as modified permits were accepted, axle loadings were in range, and Rail Road honored pricing
 - Not associated with Disposal Costs

Project Example: D&D Activities

- Government D&D Facility in mid west shipping to *EnergySolutions*
 - Produces Government Debris Waste Streams that are normally low in radioactivity and low in density
 - Material is loaded into super gondolas with rail car liners and lids
 - More efficient and cost effective than shipping to NNSS
 - Overall cost savings due to actual disposal volume and onsite costs for reduced sizing requirements

SuperGondola with Lid As One Package (6,275 cuft vs. 4,000 cuft)



Project Example: Package Certification

- Actual Testing vs. Engineered Analysis
 - Manufacturing Companies use engineering analysis to certify containers to packaging specifications
 - Rule Changes may require physical testing vs engineering for each package type and size
 - No longer able to use similar package testing to certify from one size to the next
 - Increased costs and timing for current and new designs

Conclusion

- Gain Participation from all Departments and Personnel associated with the Project
- Attempt to Bundle the Services in a Request for Proposal to Ensure a Link in Responsibility from One Phase of the Project to the Next
- If unable to Bundle, Open Dialog Between Vendors and Parties Associated with Each Phase



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